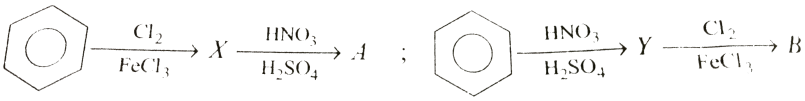
doubtnut
India's Number 1 Education App

CHEMISTRY

BOOKS - GR BATHLA & SONS CHEMISTRY (HINGLISH)

AROMATIC HYDROCARBONS

Level 1 (Q.1 To Q.25)

1. 

A and B are :

A. identical

B. positional isomers

C. geometrical isomers

D. none the these

Answer: B

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2. Benzene reacts with Cl_2 in the presence of $FeCl_3$ and in absecne of sunlight to from :

A. benzyl cholride

B. benzal chloride

C. chlorobenzene

D. benzenehexa chloride

Answer: C

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3. Phenol gives Reimer Tiemann reaction with :

A. $CHCl_3$

B. CCl_4

C. $CHCl_3$ and CCl_4

D. C_6H_5CHl

Answer: A

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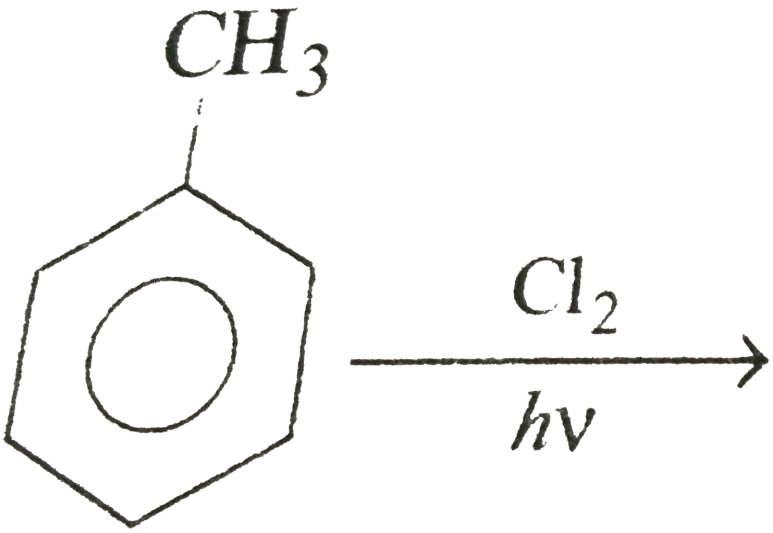
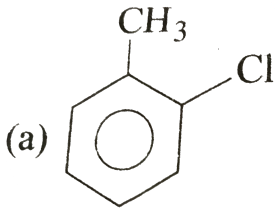
4.



Product.

Find correct prouduct.

A.



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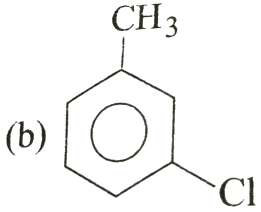

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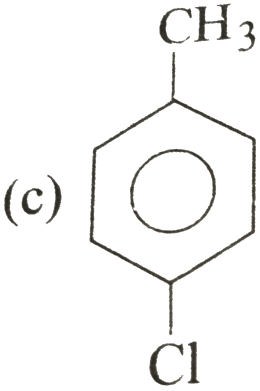
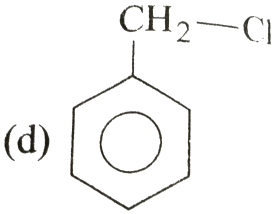


D.



Answer: D

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5. Benzyl choride can be perpared by reacting :

A. Toluen with Cl_2 in the presence of $FeCl_3$

B. Benzene with CH_3Cl in the presence of $AlCl_3$

C. Toluen with Cl_3 in the presence of sulight

D. Benzene with Cl_2 in the presence of $FeCl_3$

Answer: C

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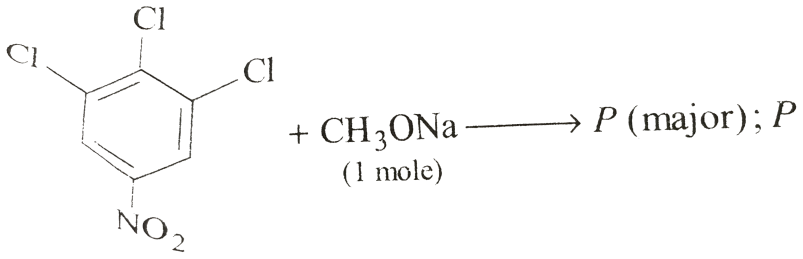
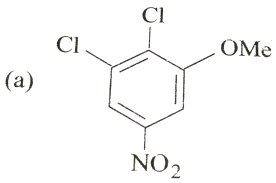
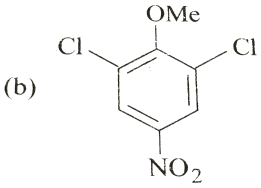
6.

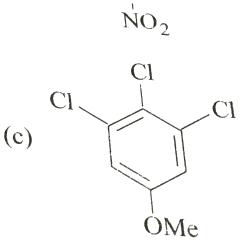


+underset("

1 mole")CH_(3)ONa to P ("major") , P` is

A. 

B. 

C. 

D. none the these

Answer: B

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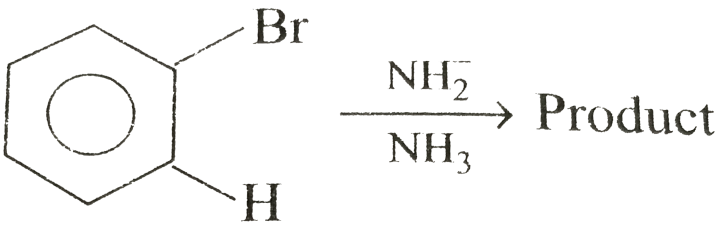
7. Complete the following reaction



A. II is more reactive than I.

B. I is more reactive than II

C. Both have same reactiviy.

D. none the these

Answer: B

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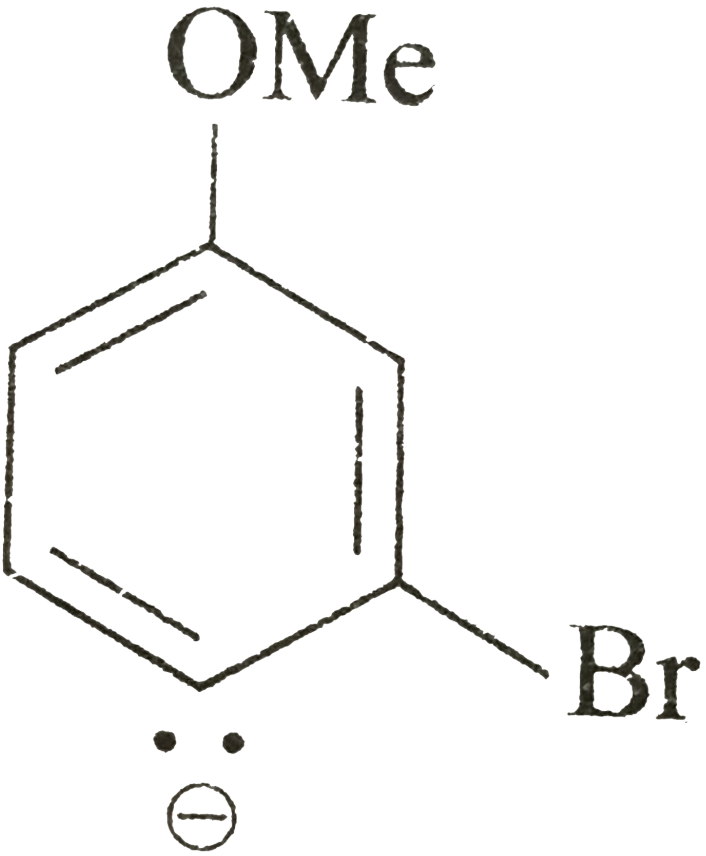
8. Complete the following reaction



(II)

A. (I) is more stable than (III)

B. (II) is more stable than (I)

C. (I) and (II) have same stability

D. none the these

Answer: A

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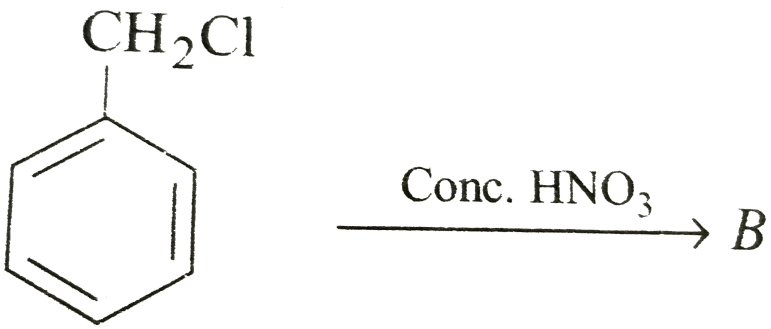
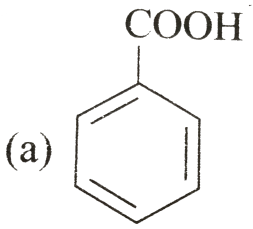
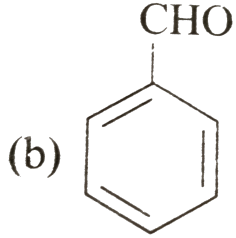
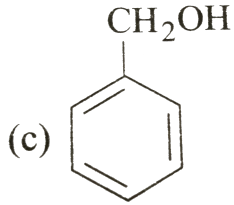
9. Complete the following reaction





A.

B. 

C. 

D. All of these

Answer: A

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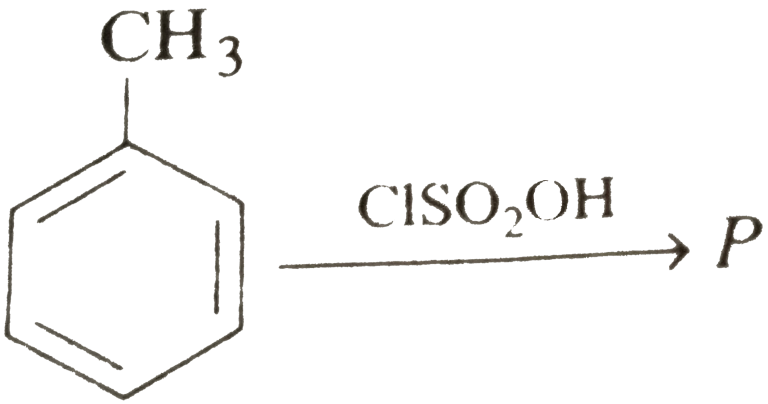
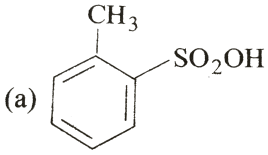
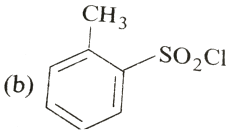
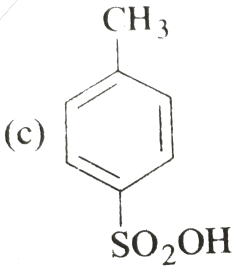
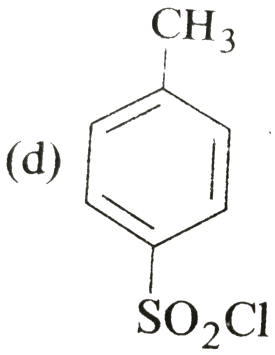


10. (Major product)

A. 

B. 

C. 



D.

Answer: C

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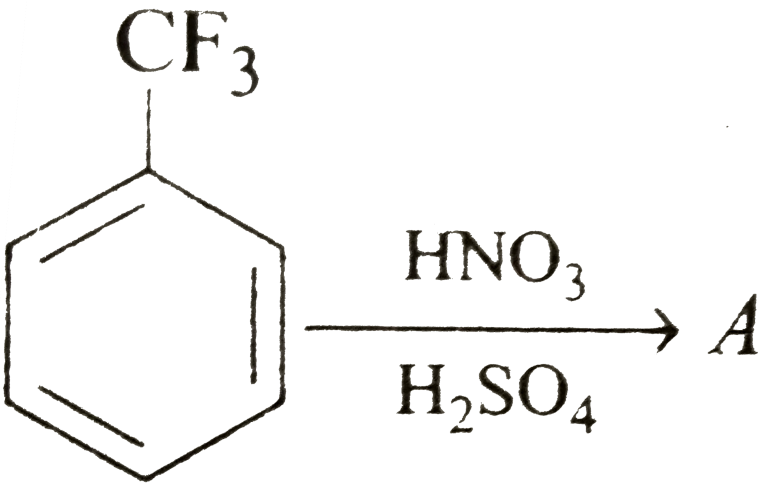
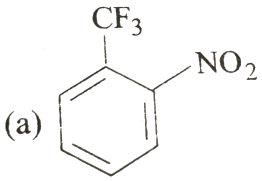
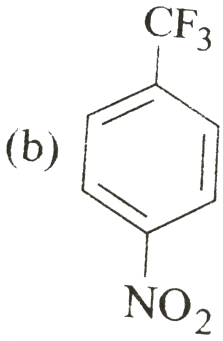
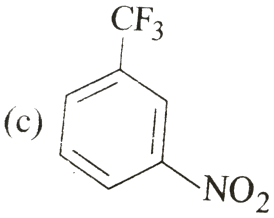


11.

A. 

B. 

C. 

D. All of these

Answer: C

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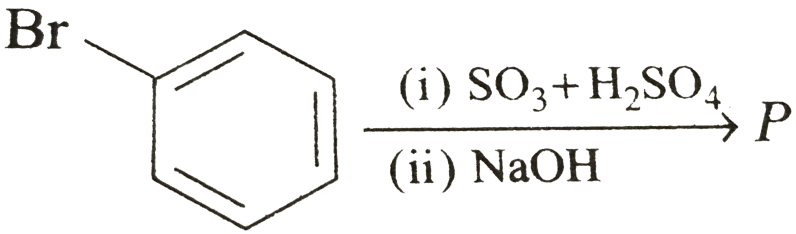
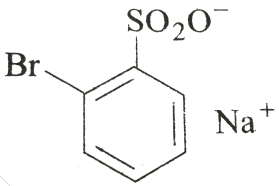
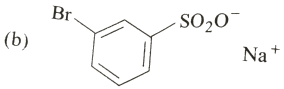
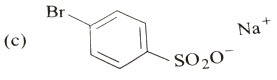


12. underset("

(ii) NaOH")overset((i) SO_(3)+ H_(2)SO_(4))toP(68 % yeild) : P ̀i s:

A. 

B. 

C. 

D. none the these

Answer: C

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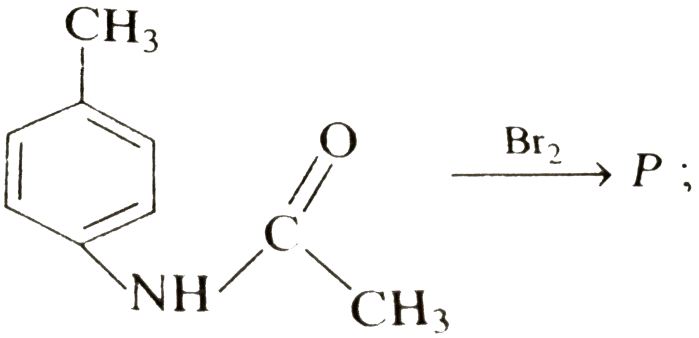
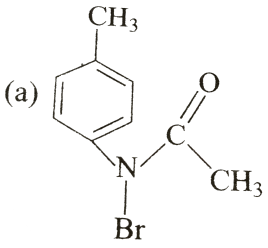
13.

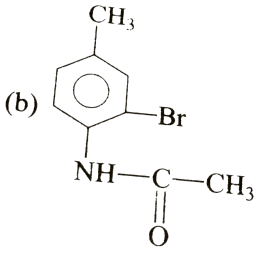


overset(Br_(2))toP , P` is:

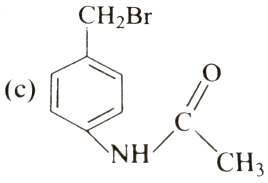
A.



B.



C.



D. none the these

Answer: B

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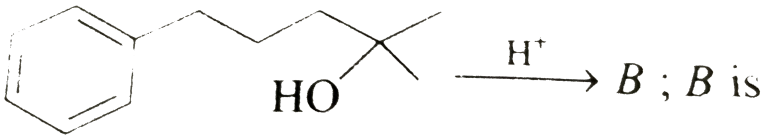
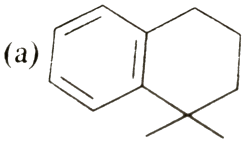
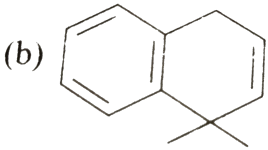
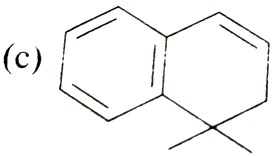
14.

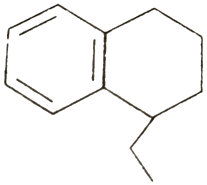


overset(H^(+)) B , B` is :

A. 

B. 

C. 

(d) 

D.

Answer: A

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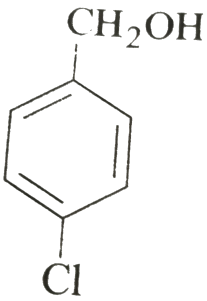
15.

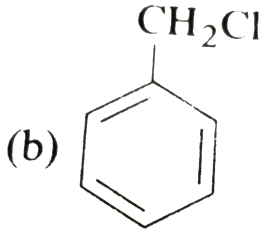


+HCHOoverset(HCl)to (A) ("Final product")`

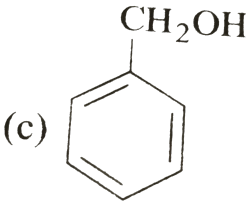
(a) 

A.

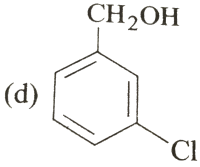
B.



C.



D.



Answer: C

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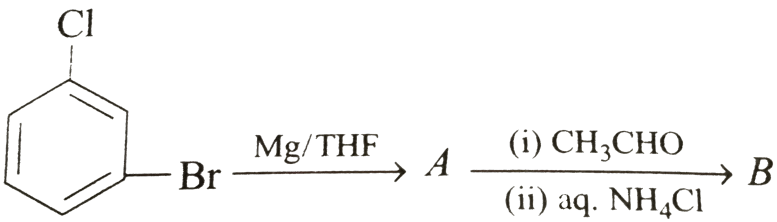
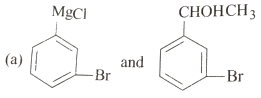
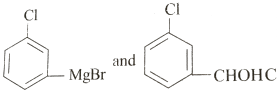
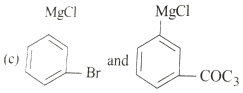
16. What are A and B in the following reaction ?



overset(Mg//THF)toA underset((ii) aq.NH_(4)Cl)overset((i) CH_(3)CHO)toB`

A. 

B. 

C. 

D. none the these

Answer: B

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17. When phenol reacts with bromine in CS_2 at a low temperature, the product is :

A. m-bromophenol

B. p-bromophenol

C. o- and p- bromophenol

D. 2,4,6- tribromophenol

Answer: C

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18. Pheol reacts with conc. HNO_3 in the presence of conc. H_2SO_4 to give :

A. meta nitrophenol

B. ortho nitrosophenol

C. ortha and para nitrophenol

D. picric acid

Answer: D

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19. Phenol on heating with $NaNO_2$ and a few drops of conc. H_2SO_4 gives :

A. p- Nitrophenol

B. p - Nitrosophenol

C. o- Nitrophenol

D. m- Nitrosophenol

Answer: B

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20. In Liebermann nitroso test:

A. phenol react with $NaNo_2 + HCl$ or HNO_2

B. aniline reacts with nitrous acid

C. phenol and aniline reacts with $NaNO_2 + HCl$

D. none the these

Answer: A

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21. Kolbe's reaction consists in obtaining :

A. anisol from phenol

B. saclicylaldehyde from phenol and CHl_3

C. salicylic acid from phenol $+CO_2 + NaOH$

D. salicylic acid from phenol and CO_2

Answer: C

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22. Which derivative of phenol gives effervescence with $NaHCO_3$?

A. $o - Cresol$

B. Catechol

C. 2, 4, 6- Trinitrophol

D. 2, 4, 6-Tribromophenol

Answer: C

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23. Phenol and benzoic acid can be distingusihed by :

A. aqueous $NaHCO_3$

B. aqueous $NaNO_3$

C. aqueous $NaOH$

D. conc. H_2SO_4

Answer: A

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24. Phenol and cyclohexanol can be distinguished by using :

A. $FeCl_3$

B. Na

C. PCl_3

D. CH_3COCl

Answer: A

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25. The compound which will be readily couple with benzene diazonium chloride is :

A. benzoic acid

B. phenol

C. benzene

D. benzaldehyde

Answer: B

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Level 1 (Q.26 To Q.50)

1. Phenol can be converted into salicyclic acid by heating with :

A. CO_2 (under pressure) and alkali

B. CCl_4 and alkali

C. $CHCL_3$ and alkli, followed by oxidation

D. all of the above

Answer: D

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2. In chlorobenzen, the - Cl group :

A. activates the benzene ring more, via resonamce effects than deactivaitng it via inductive effect

B. deactivates the benzene ring more ,via inductive effect than activating it via resonamce effects

C. activates the benzene ring via resonance effects and deactives it via inductive effects. Both these effects are evenly matched.

D. it is a et deactivating group with director characterisstic

Answer: B

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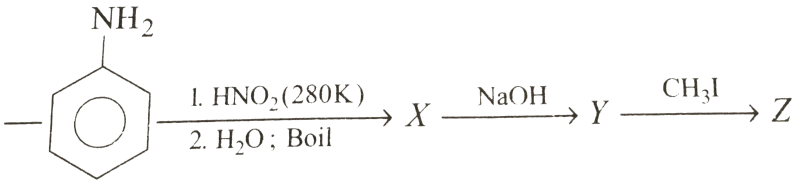
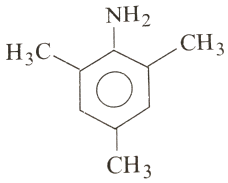
3. Identify 'Z' in the reacting given below :



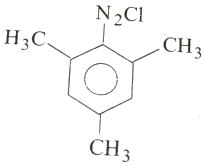
A.

(a)



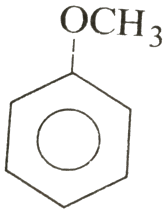
B.

(b)



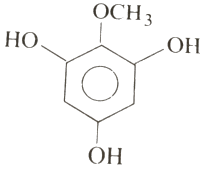
C.

(c)



D.

(d)



Answer: C

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4. Rate of substitution reaction in phenol is:

A. slower than the rate of benzene

B. faster than the rate of benzene

C. equal to the rate of benzene

D. none of these

Answer: B

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5. Identify (A), (B) and (C) in the following reaction sequence.

$$C_5H_5OH \xrightarrow{(A)} C_6H_6 \xrightarrow{(B)} C_6H_5NO_2 \xrightarrow{(C)} \text{Azobenzene}$$

A.

$$(A) = NaOH + CaO, (B) = conc.\ H_2SO_4 + conc.\ HNO_3, 60 - 70^\circ$$

B.

$$(A) = \text{Zn power}, (B) = conc.\ H_2SO_4 + conc.\ HNO_3, 100^\circ C, (C) =$$

C.

$$(A) = Zn, (B) = conc.\ H_2SO_4 + conc.\ HNO_3, 60 - 70^\circ C, (C) = Z$$

D.

$$(A) = NaOH + CaO, (B) = conc.\ HNO_3 + conc.\ H_2SO_4, \text{Reflux24}$$

Answer: C

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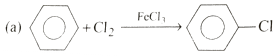
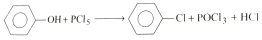
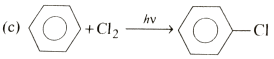
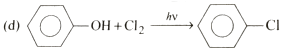
6. The best method for the perparation of chlorobenzene is :

A. 

B. 

C. 

D. 

Answer: A

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7. Which of the following reaction is called 'Schotten- Baumann' reaction ?

A. $C_6H_6 \xrightarrow{AlCl_3 / CH_3COCl} C_6H_5COCH_3$

B. $C_6H_5NH_2 \xrightarrow{CH_3COCl} C_6H_5NHCOCH_3$

C. $C_6H_5OH \xrightarrow{C_6H_5COCl} C_6H_5OCOC_6H_5$

D. $C_6H_6 \xrightarrow[C_6H_5COCl]{AlCl_3} C_6H_5COC_6H_5$

Answer: C

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8. Which of the following is not correctly matched ?

A. $Phenol + CHCl_3 + NaOH \xrightarrow{\text{Heat}}$ Salicylaldheyde

B. $Phenol + Phthalicanhydride \xrightarrow[H_2SO_4]{\text{Heat}} Anthrace \neq$

C. $Phenol \xrightarrow[H_2SO_4]{Br_2 water}$ Tribromophenol

D. $Sodiumphenate + CO_2 \xrightarrow{\text{Heat , Pressure}} Salicylicacid$

Answer: B

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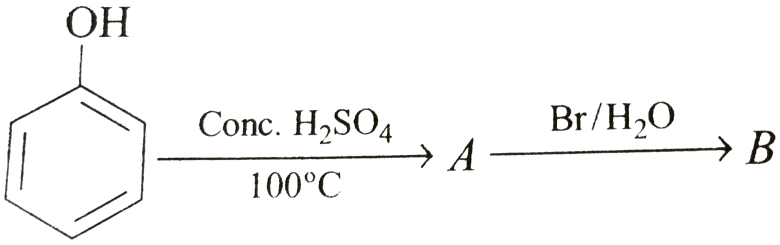
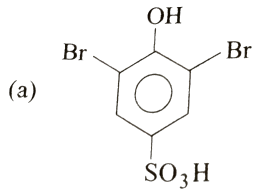
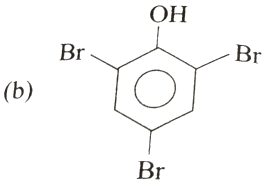
9. Indenify the end product (b) of the following sequence of reaction



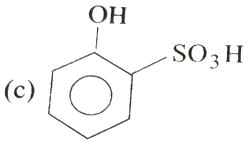
A.



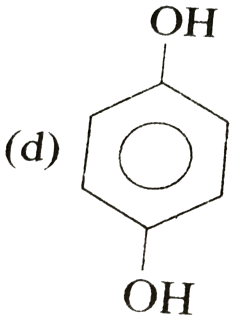
B.



C.



D.



Answer: B

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10. Benzene can be obatined by :

A. $C_6H_5OH + NaOH \xrightarrow[\Delta]{CuO}$

B. $C_6H_5OH + Zn \xrightarrow{\Delta}$

C. $C_6H_5 - N = N - Cl + H_2O \rightarrow$

D. All of these

Answer: B

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11. Point out incorrect statement about resonace.

A. Resonance structure should have equal energy .

B. In resonance structures, the constituent atoms should be in the same position

C. In resonance strutures should be the same number of electron pairs.

D. Resonance structure should differ only in the location of electrons around the constituent atoms.

Answer: A

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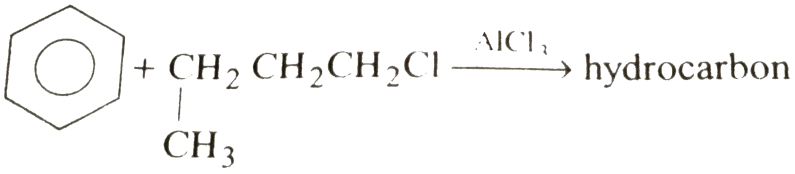
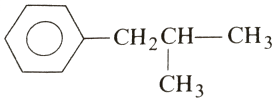
12.

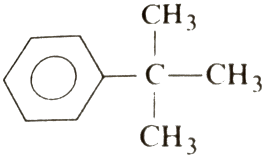


The major product X is :

A.



B.



C.



D. none is correct

Answer: D

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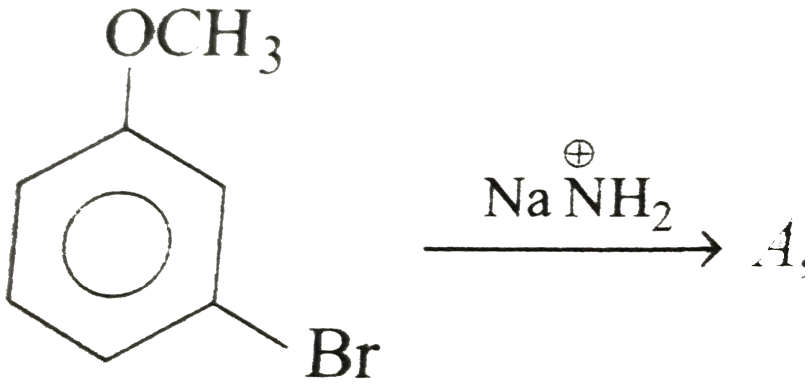
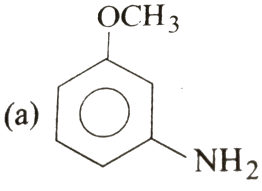
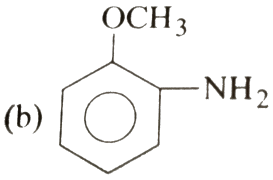


13.

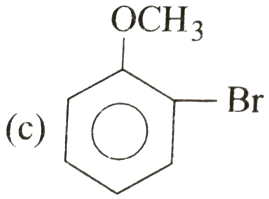
overset(Na^(o+)NH_(2))toA`, major product A and reaction R are :

A. 

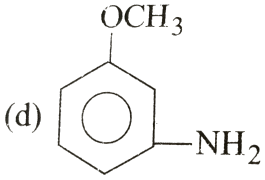
elimination addiation

B. 

elimination addition

C. 

cine substitution

D. 

, addition elimination

Answer: A

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14. In the sulphonation, acetylation and formlylation of benzene the group of effective electronphiles would be ? (X)

A. $SO_3^+, CH_3C \equiv \overset{+}{O}, H\overset{+}{C}O$

B. $SO_3, CH_3 - C \equiv \overset{+}{O}, H\overset{+}{C}O$

C. $SO_3, CH_3CHO, CO + HCI$

D. $HSO_{3,CH_3CO,HCO}$

Answer: B

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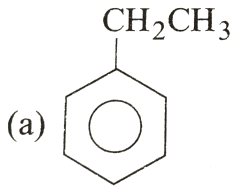
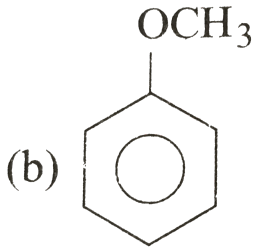
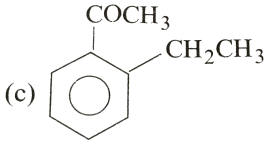
15. Benzoic acid may be prepared by the oxidation of :

A. 

B. 

C. 

D.

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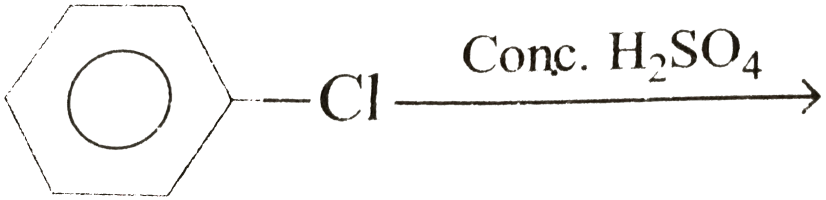

16. Chloral

product.The product is :

A. Iindane

B. DDT

C. tefflon

D. ethaneperchlorate

Answer: B

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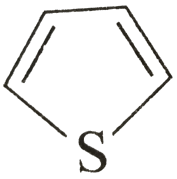
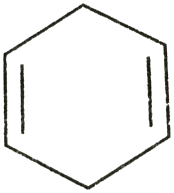
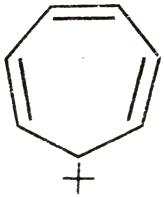
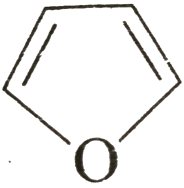
17. Which of the following is not an aromatic compound ?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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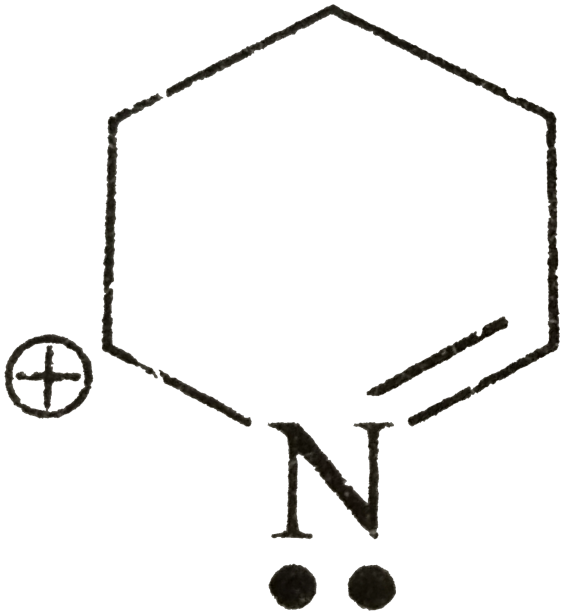
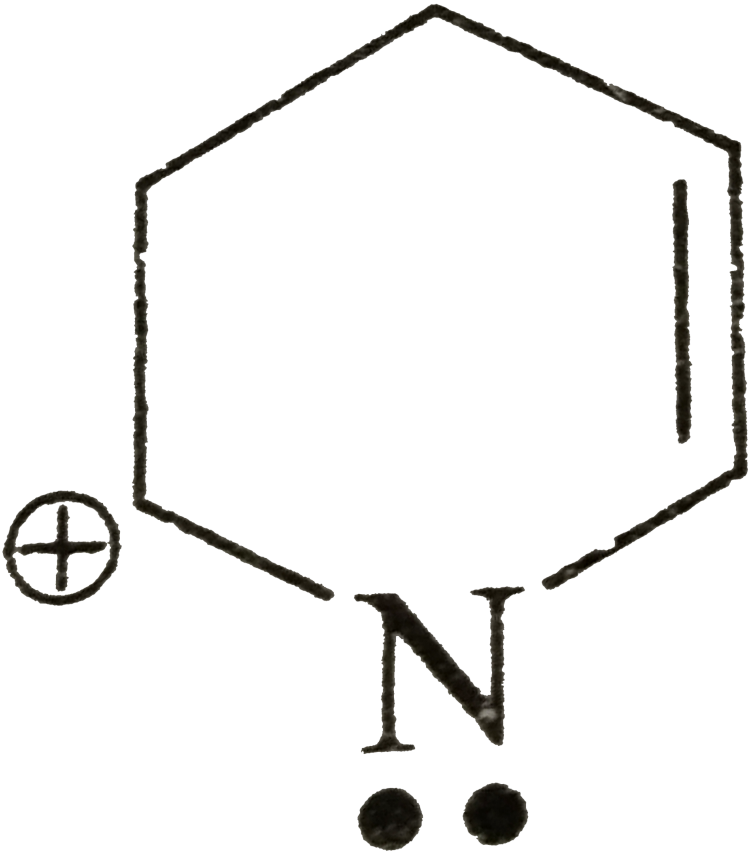
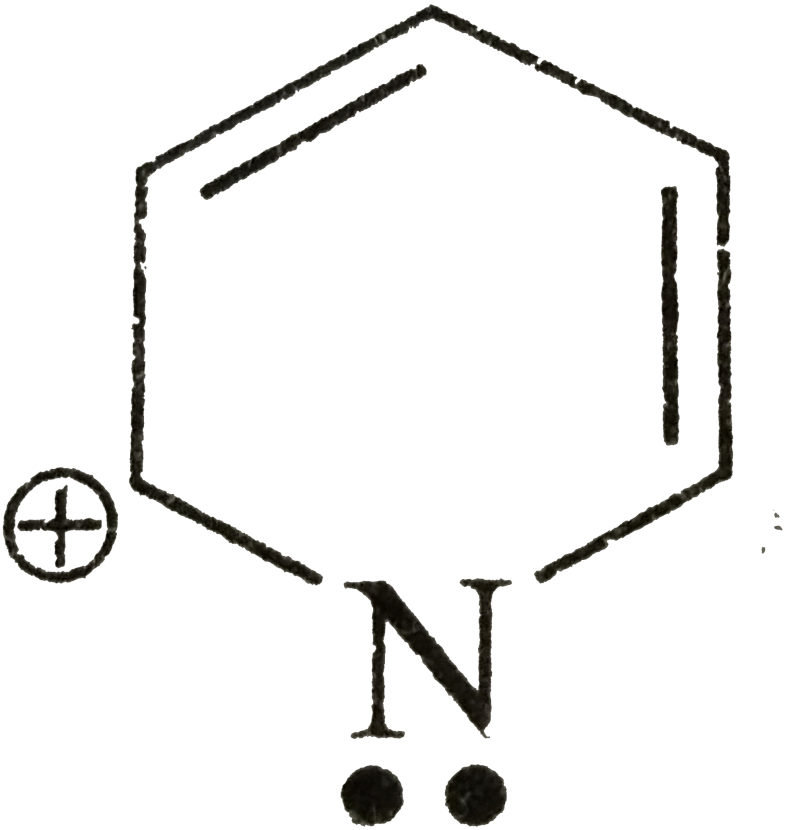
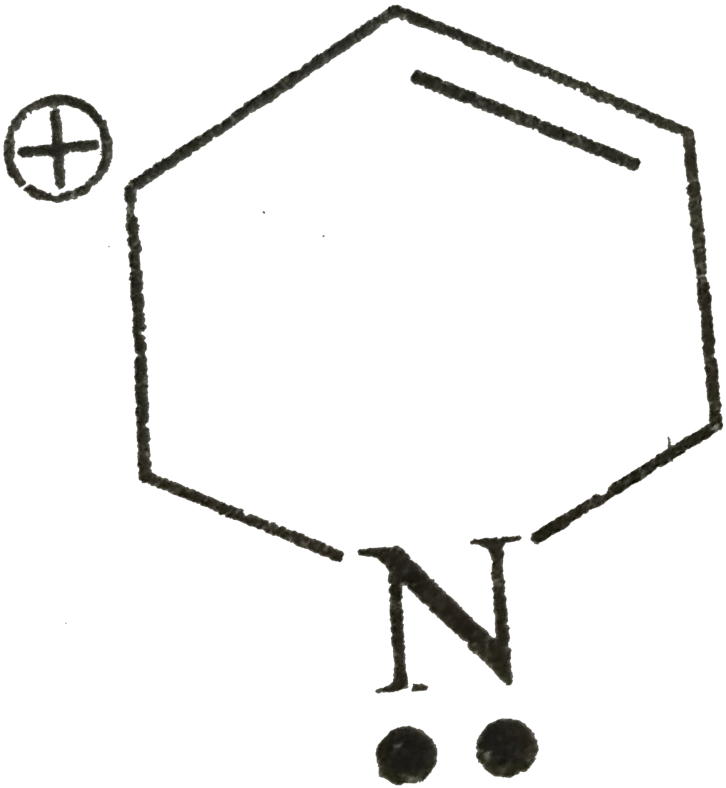
18. The correct order of stability of ions is :

(I)









A. $I < IV < II < III$

B. $III < II < IV < I$

C. $IV < I < II < III$

D. none of these

Answer: A

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19. Number of π electrons present in naphthalene is :

A. 2

B. 4

C. 10

D. 14

Answer: C

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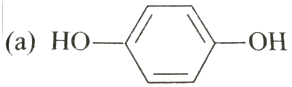
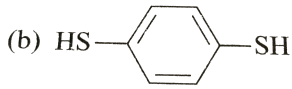
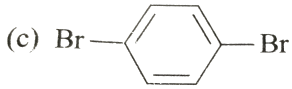
20. Dipole moment of which compound will zero ?

A. 

B. 

C. 

D. All of these

Answer: C

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21. $X \xrightarrow{Cl_2}$ Benzotrichloride overset("Hydrolysis")toY`. What are X and Y respectively ?

A. Benzene, Benzaldehyde

B. Toluene, Benzaldehyde

C. Toluene, Benzoic acid

D. Benzene, Benzoic acid

Answer: C

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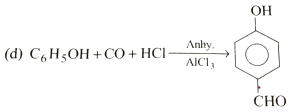
22. Which of the following reaction is not an example of electrophilic substitution ?

A. $C_6H_6 + {}^{+}\ NO_2 \rightarrow C_6H_5NO_2 + H^{+}$

B. $C_6H_6 + CH_3Cl \overset{AlCl_3}{C}{}_6H_5 - CH_3 + HCl$

C. $C_6H_5 + CH_3Cl_2 \xrightarrow{\text{UV light}} C_6H_6Cl_6$

D. 

Answer: C

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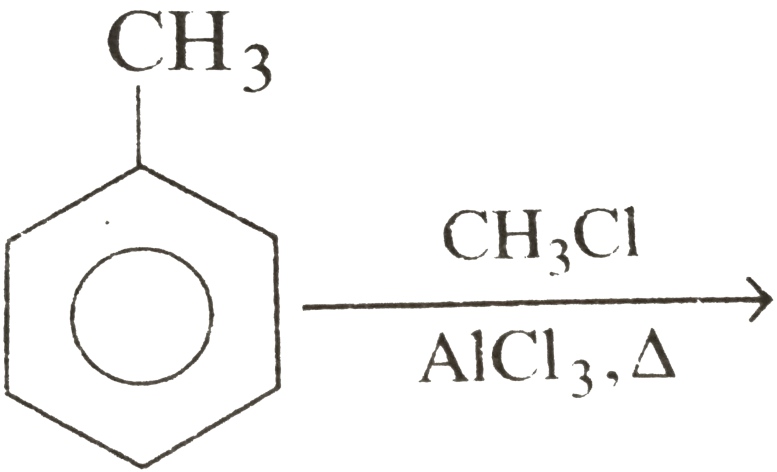
23. Major product of this reaction will be :



A. o- xylene

B. p- xylene

C. both

D. m- xylene

Answer: B

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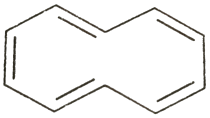
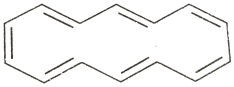
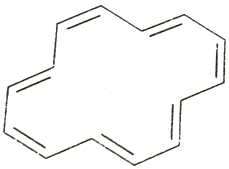
24. Which of the following may best be called aromatic ?

A. (a) 

B. (b) 

C. (c) 

D.

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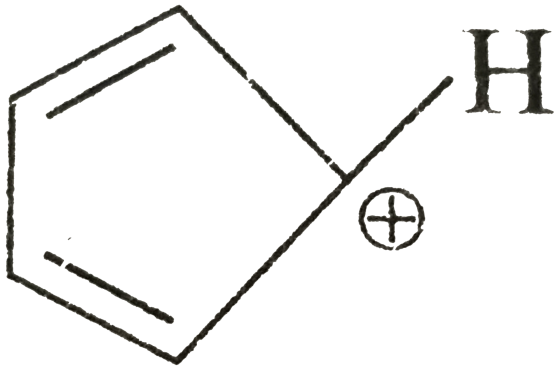
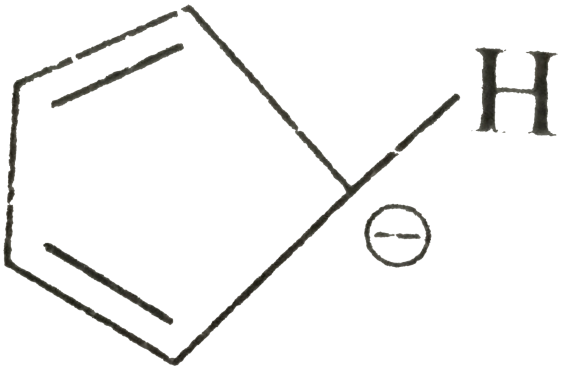
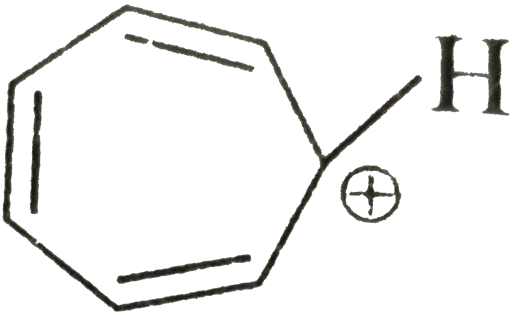
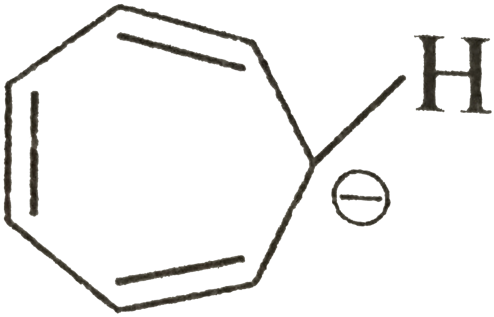
25. Amongst the ions, the aromatic character is shown by :

(I) 

(II) 

(III) 

(IV) 

A. I and III

B. II and IV

C. II and III

D. I, II, III and IV

Answer: C

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Level 2 (Q.1 To Q.25)

1. The carbon atoms of benzene are:

A. sp^2- hydridised

B. sp -hybridised

C. sp^3- hydridised

D. non - hydridised

Answer: A

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2. The C-C bond order in benzene is :

A. 1

B. 2

C. 1.5

D. 1.3

Answer: C

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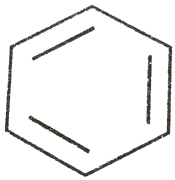
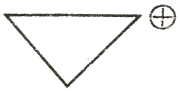
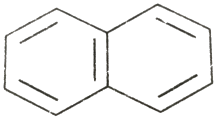
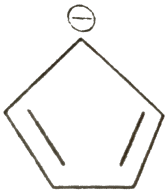
3. Which of the following compounds is non aromatic?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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4. Which of the following copmpounds will show aromatic character ?



A. II and IV

B. I, II, and IV

C. II and III

D. I and II

Answer: A

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5. A molecular of benzene has :

A. 6σ and 9π bonds

B. 9σ and 3π bonds

C. 12σ and 3π bonds

D. 6σ and 3π bonds

Answer: C

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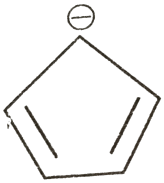
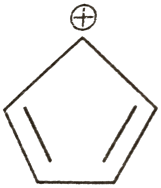
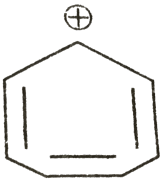
6. Which of the following species is not aromatic ?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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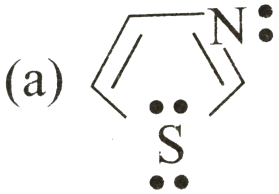
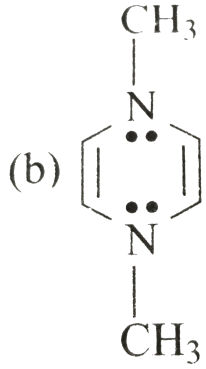
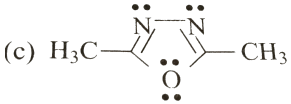
7. Which one of the following compounds is not aromatic ?

A. 

B. 

C. 

D.

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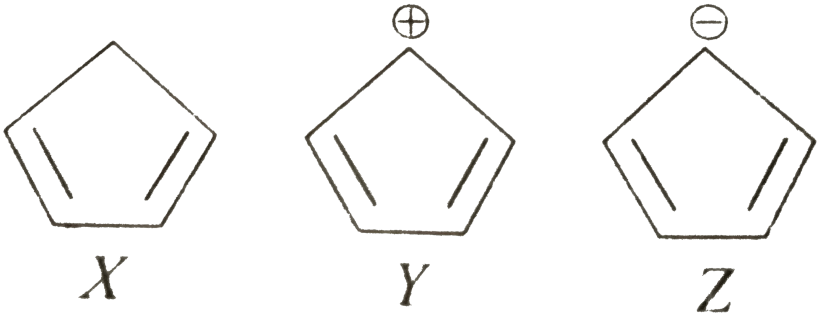
8. The order of stability of compounds X, Y and Z :



A. $X > Y > Z$

B. $Y > Z > X$

C. $Z > X > Y$

D. $X > Z > Y$

Answer: C

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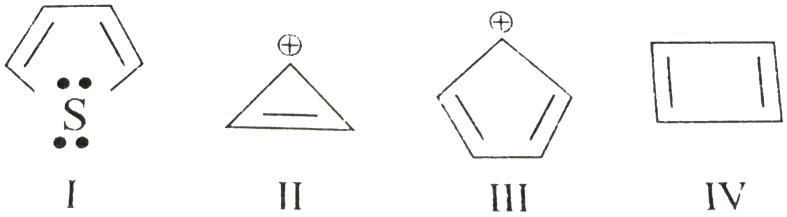
9. Which of the following species are antiaromatic ?



A. III and IV

B. I and III

C. I and II

D. I and IV

Answer: A

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10. When sodium benzoate is heated with soda lime, the product formed is :

A. phenol

B. chlorobenzen

C. benzene

D. benzaldehyde

Answer: C

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11. Among the following compounds that can be most readily nitrated is :

A. benzene

B. benzaldehyde

C. toluene

D. chlorobenzene

Answer: A

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12. Which of the following compounds that can be most readily nitrated ?

A. benzene

B. phenol

C. toluene

D. nitrobenzene

Answer: B

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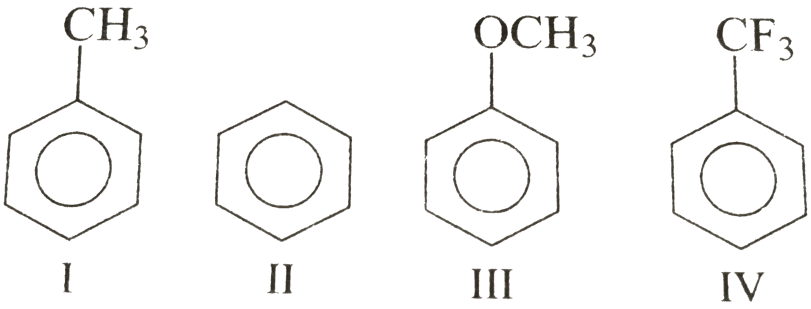
13. Among the compounds the order of decreasing reactivity towards electrophilic substance is :



A. $II > I > III > IV$

B. $III > I > II > IV$

C. $III > I > IV > II$

D. $II > I > IV > II$

Answer: B

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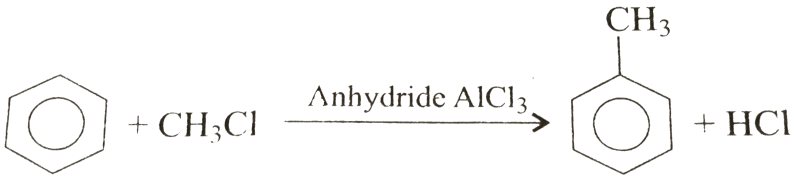
14. The following reaction is an example of :



A. Wurtz reaction

B. kolbe electrolysis

C. Friedels - Crafts reaction

D. Grignard synthesis

Answer: C

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15. The function of anhydrous $AlCl_3$ in Friedel- Carfts reaction is to :

A. absorb water

B. produce a nucleophile

C. produce an electrophile

D. absorb HCl

Answer: C

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16. The presence of which one of the following group on benzene nucleus activate it towards electrophilic substitution :

A. $-C \equiv N$

B. $-\overset{\overset{O}{||}}{C}-H$

C. $-\overset{\overset{O}{||}}{C}-OR$

D. $-O-\overset{\overset{O}{||}}{C}-R$

Answer: D

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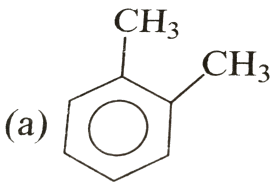
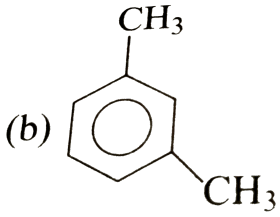
17. Which one of the following compounds give only one isomer upon nitration ?

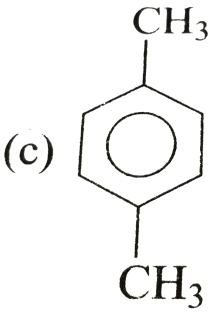
A.



B.



C.



D.

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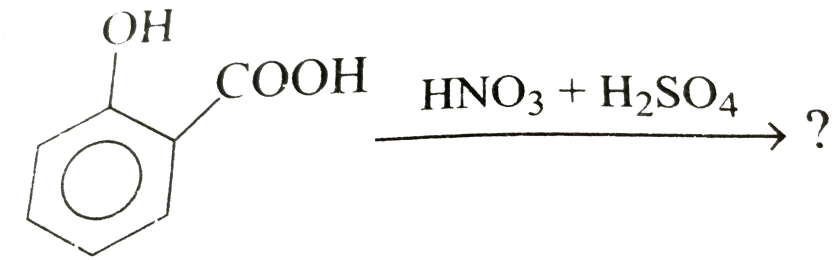
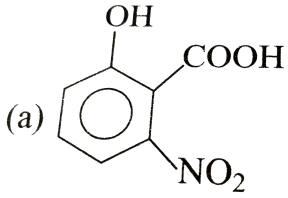
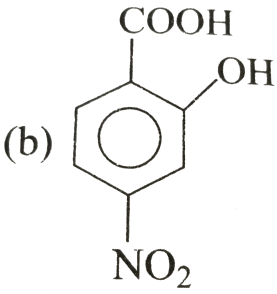
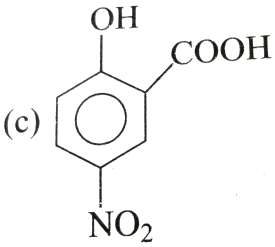
18. In the given reaction



A. 

B. 

C. 

D.

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19. Which one of the following aromatic compojunds fails to undergo Friedel - crafts reactions ?

A. $C_5H_5 - CH_3$

B. C_6D_6

C. $C_6H_5 - NO_2$

D. C_6H_5Cl

Answer: C

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20. The reaction least likely to occur is :

A. $C_6H_6 + HNO_3 \xrightarrow{H_2SO_4} C_6H_5NO_2$

B. $C_6H_6 + H_2SO_4 \rightarrow C_6H_5SO_3H$

C. $C_6H_6 + Br_2 \overset{Fe}{C}{}_6H_5Br$

D. $C_6H_6 \_ Cl_2 \xrightarrow[\text{light}]{UV} C_6H_5Cl$

Answer: D

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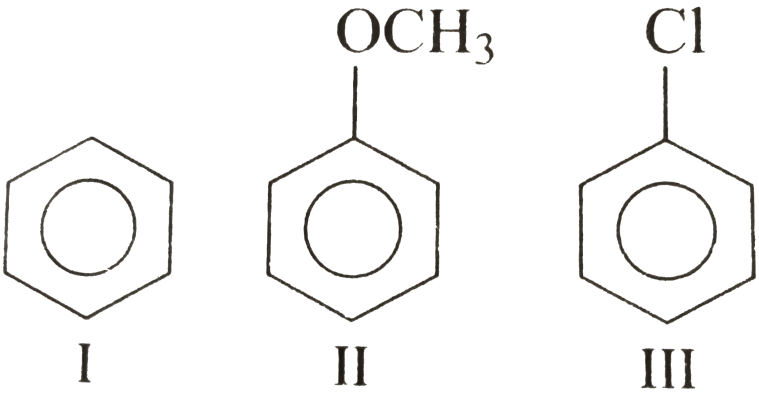
21. Consider the following compounds



The relative reactivity towards halonium ions is such that :

A. $I > II > III$

B. $II > I > III$

C. $II > III > I$

D. $III > I > II$

Answer: B

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22. In the gives reaction, $C_6H_5 - NH_2 \xrightarrow[\text{Pyridine}]{Ac_2O} X \xrightarrow[FeCl_3]{Cl_2} Y \xrightarrow{H_2O} Z$

The product Z will be :

A. o- chorolaniline

B. mixture of o- and p- chloroaniline

C. 2,4- dichloroaniline

D. 2, 4, 6-trichoroaniline

Answer: B

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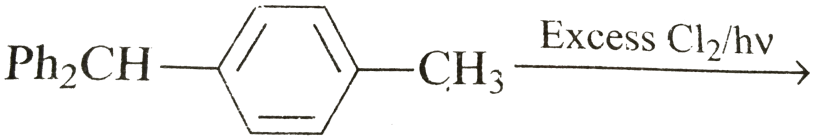
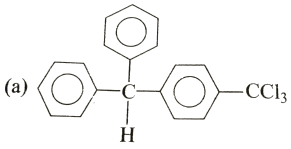
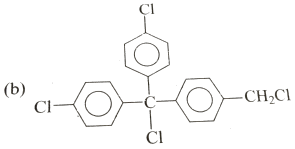
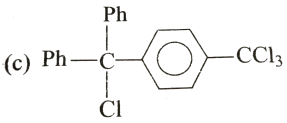
23. 

gives :

A. 

B. 

C. 

D. None of t\

Answer: C

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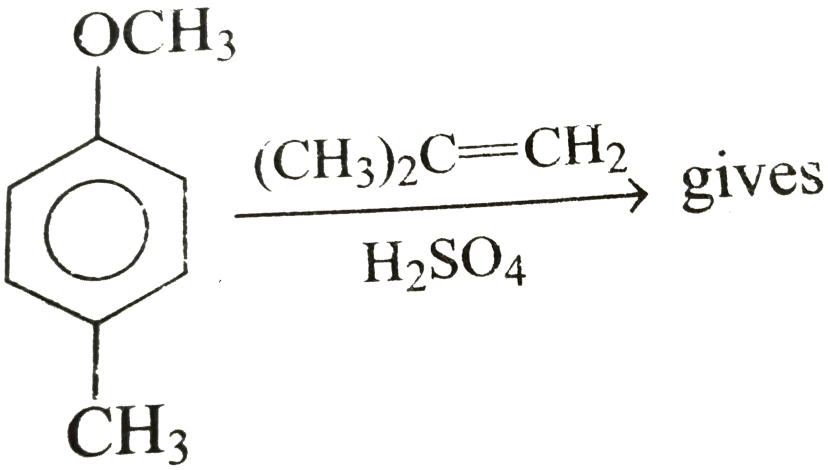
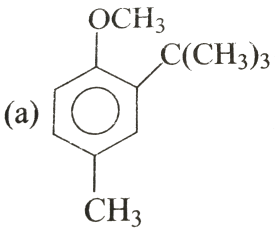
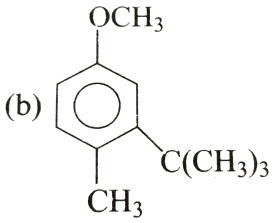
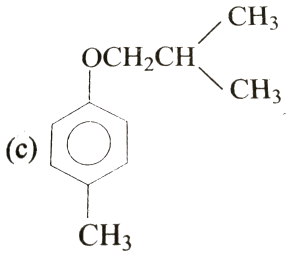
24. 

gives :

A. 

B. 

C. 

D.

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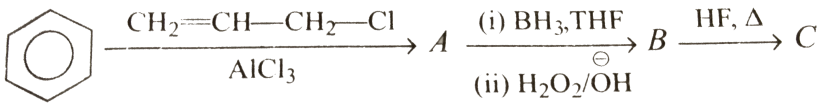
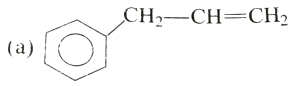
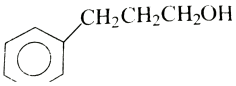
25. 

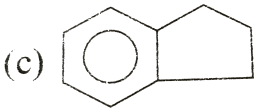
underset(AlCl_(3))overset(CH_(2) = CH- CH_(2) -Cl)to A underset((ii)

H_(2)O_(2)//O^()H)overset((i) BH_(3),THF)toB overset(HF, Delta)toC`

coompound C will be :

A. 

B. 

C. 

D.

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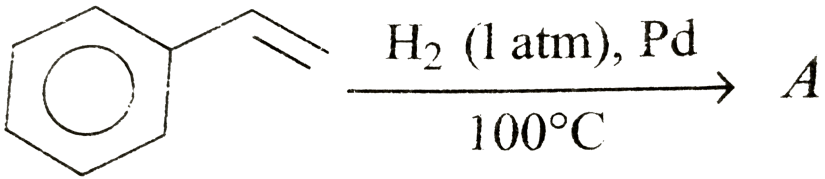
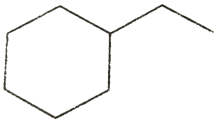
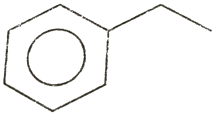
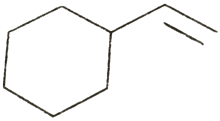
Level 2 (Q.26 To Q.50)

1. 

underset(100^(@))overset(H_(2)("1 atm"), Pd)toA `, Product A is the reaction is :

A. (a) 

B. (b) 

C. (c) 

D. all of these

Answer: B

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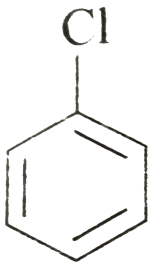
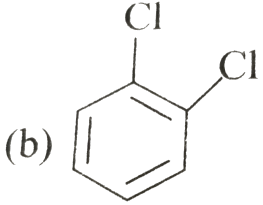
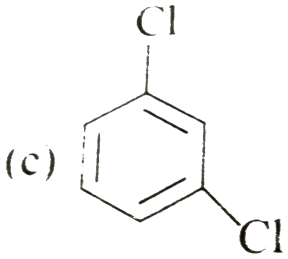
2. Which of the following substituted benzene derivatives would furnish three isomer when one more substituent is introduced ?

A. (a) 

B. 

C. 

D.

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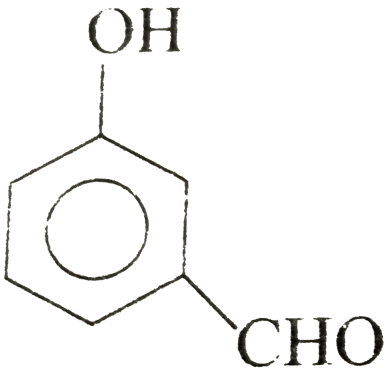
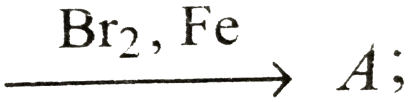
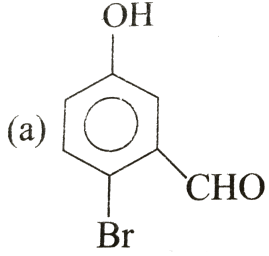
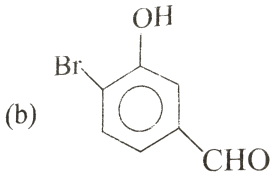
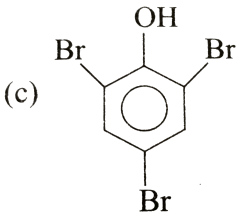
3. 



A, A can be :

A. 

B. 

C. 

D. no reaction

Answer: B

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4. According to Huckel rule a cyclic conjugated polyene is aromatic if it constants :

A. $(4n+1)\pi$ - electron

B. $(4n+2)\pi$-electron

C. $(2n+2)\pi$-electron

D. $4n\pi$- elecrton

Answer: B

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5. Phenol $\xrightarrow{\text{Zn-dust}} A \xrightarrow[+H_2SO_4]{Conc.HNO_3} B \xrightarrow[NaOH]{Zn} C$

In the above reaction A, B and C are :

A. benzene, nitrobenzene and aniline

B. bezene, dinitrobenzene and m- nitroaniline

C. benzene, nitrobenzene and hydrazobenzene

D. toluene, m-nitrobezene and m-toludine

Answer: C

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6. When phenol is treated with excess of bromine water, it gives :

A. m-bromophenol

B. o- and p-bromophenol

C. 2, 4-dibromophenol

D. 2, 4, 6- tribromophenol

Answer: D

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7. Picric acid is yellow coloured compounds, its chemical name:

A. m-nitrobenzoic aicd

B. 2, 4, 6- tribromophenol

C. trinitrotoluence

D. trinitrophenol

Answer: B

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8. The produced of following reaction is $C_6H_6 + Cl_2 \xrightarrow{hv}$?

A. C_6H_5Cl

B. ortho $C_6H_4Cl_2$

C. $C_6H_6Cl_6$

D. para $C_6H_4Cl_2$

Answer: C

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9. When of the following compounds react slower than benzene in electrophilic bromination ?

A. $C_6H_5CH_3$

B. C_6H_5OH

C. $C_6H_5NO_2$

D. $C_6H_5NH_2$

Answer: C

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10. The reaction  , is known as :

A. Wurtz reaction

B. Sandmeyer reaction

C. Gattermann reaction

D. Friedel-Crafts reaction

Answer: B

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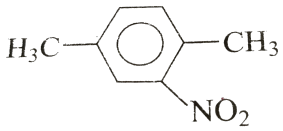
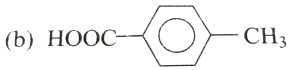
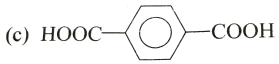
11. Complete the following reaction

A. 

B. 

C. 

D. none the these

Answer: C

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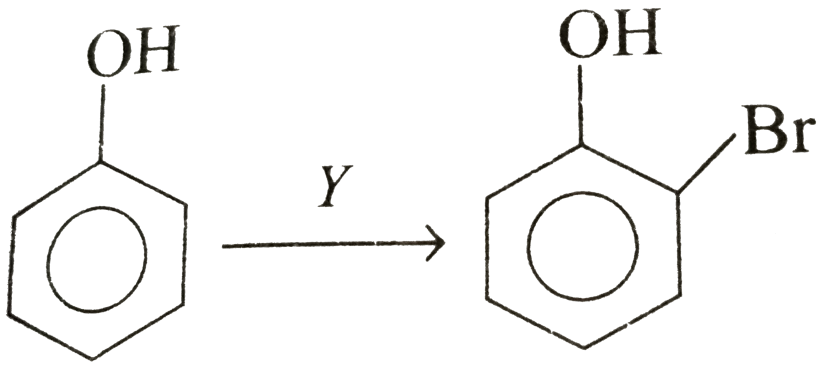
12. 

: Y can be:

A. Br_2 water

B. Br_2 / CS_2

C. Both (a) and (b)

D. none is correct

Answer: B

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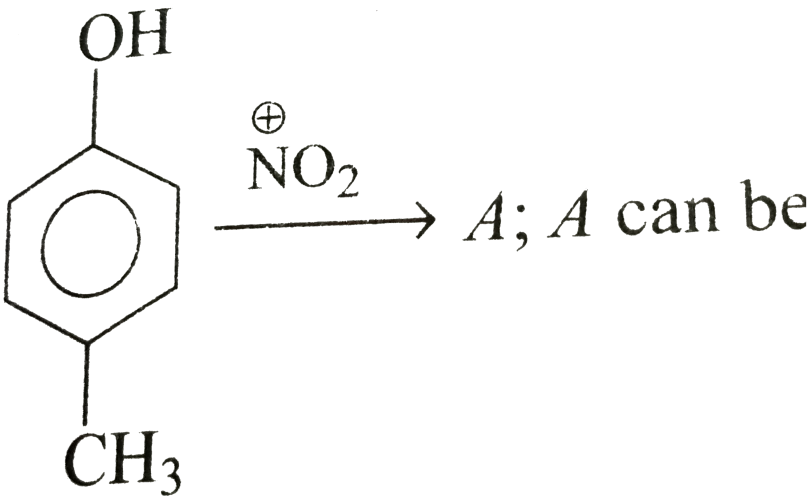
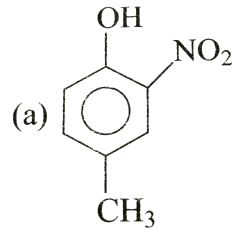
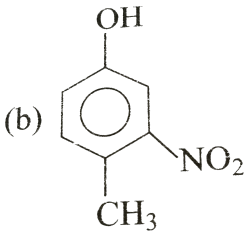
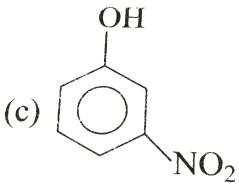


13. : A can be :

A. 

B. 

C. 

D. no reaction

Answer: A

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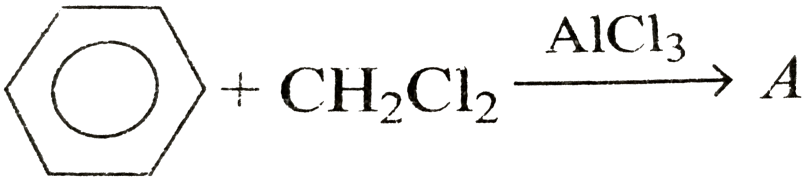
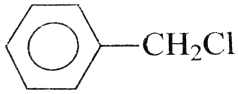
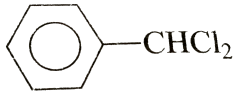
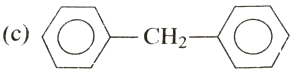
14. Complete the following reaction



A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: C

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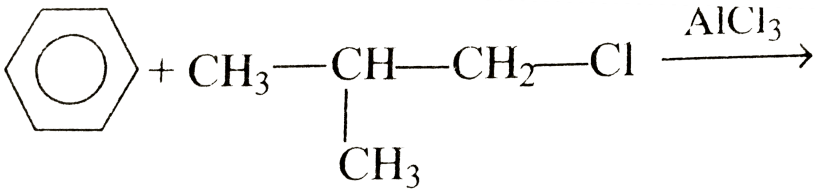
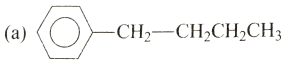
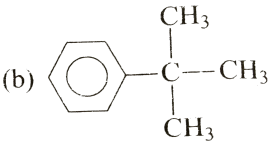
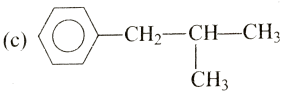
15. 

+CH_(3)-underset(CH_(3))underset(|)(CH)-CH_(2) - Cloverset(AlCl_(3))tocompound X ,`is:

A. 

B. 

C. 

D. all are correct

Answer: B

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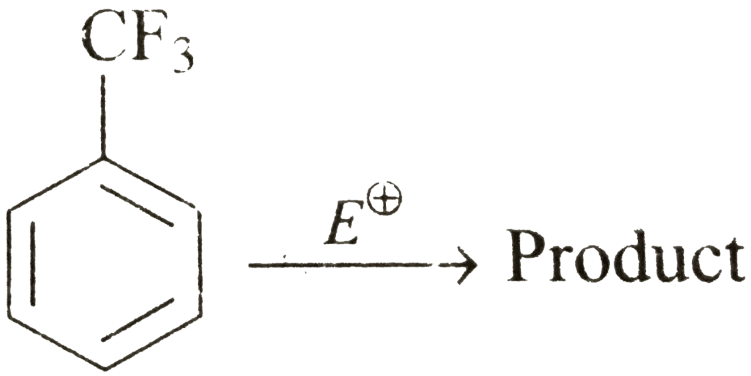
16. Consider the following reaction :



(i) CF_3 will activate benzene ring" " (ii) CF_3 will deactivate benzene ring

(iii) CF_3 is m-directing " " (iv) CF_3 is o/p directing

Select the correct options :

A. (i) and (iv)

B. (ii) and (iii)

C. (i) and (iii)

D. (i) and (iv)

Answer: B

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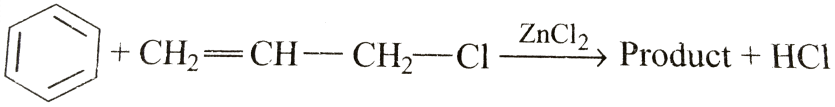
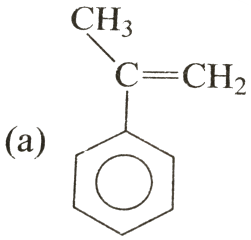
17. In the given reaction, what is the product ?



A.



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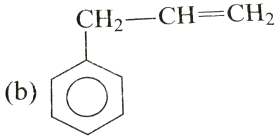

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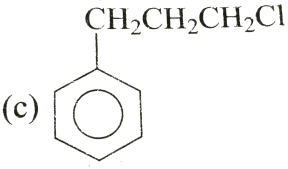
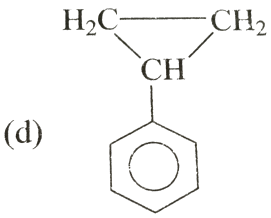


D.



Answer: B

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18. The reactions of tolunce with Cl_2 in pressnce of $FeCl_3$ gives :

A. benzoyl choride

B. benzyl chloride

C. o- and p- bromophenol

D. m-chlorotoluene

Answer: C

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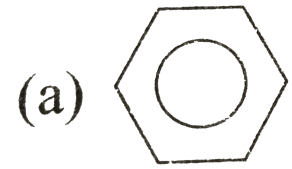
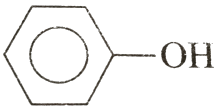
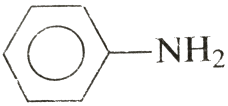
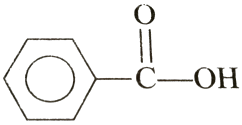
19. Chlorination of tolunce in the presence of light and heat followed by treatment with aq. KOH and subsequently with dil. HCl gives :

A. 

B. (b) 

C. (c) 

D. d) 

Answer: D

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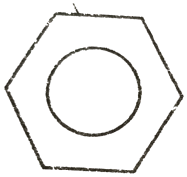
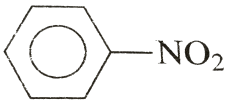
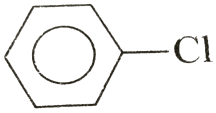
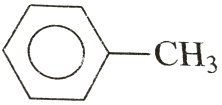
20. Among the following compounds that the can be most readily sulphonated is :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: D

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21. Aniline react with $NaNO_2$ and dil. HCl at $0-5^\circ C$ to from :

A. p-nitro aniline

B. 2, 4,6-trinitroataniline

C. benzene diazonium

D. benzene

Answer: C

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22. In the chorination of benzene with Cl_2 in the presence of $FeCl_3$ the electrophilic species that attcak the benzene ring is :

A. $C^{\oplus}$

B. $Cl - \overset{\oplus}{C}l - \overset{\ominus}{F}eCl_3$

C. $Cl^{\ominus}$

D. $Cl^{\cdot}$

Answer: A

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23. Which of the following represents Friedel - Carafts reaction ?

A. $C_6H_6 + C_2H_5Cl \xrightarrow{AlCl_3} C_6H_5C_2H_2 + HCl$

B. $C_6H_5OH + HCl \xrightarrow{ZnCl_2} C_6H_5Cl + H_2O$

C. $C_6H_5Cl + CH_3COCl \xrightarrow{AlCl_3} C_6H_5COCH_3 + Cl_2$

D. $C_2H_5Br + Mg \xrightarrow{\text{ether}} C_2H_5MgBr$

Answer: A

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24. The major product fromed in the reacation

$C_6H_5 - \overset{\oplus}{N} \equiv \overset{\ominus}{N}Cl + H_3PO_2 + H_3PO_2 + H_2O \rightarrow$ is:

A. C_6H_5OH

B. C_6H_5Cl

C. C_6H_6

D. $C_6H_5C_6H_5$

Answer: C

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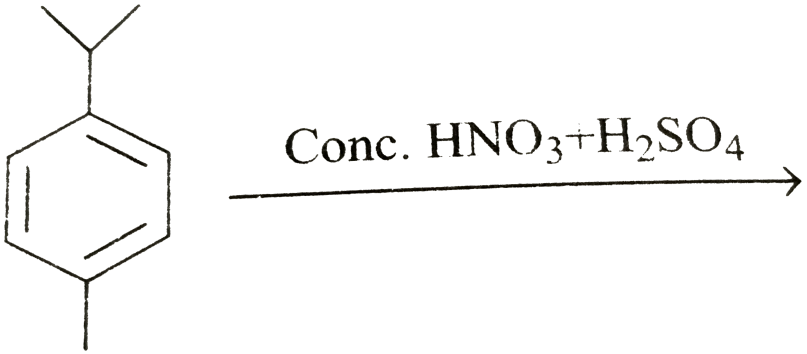
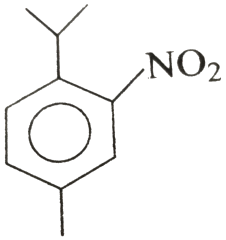
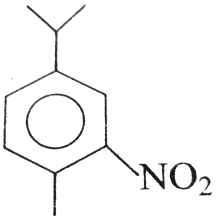
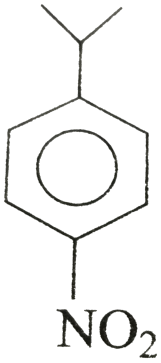
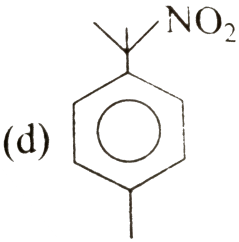
25. The major product fromed in the reacation



A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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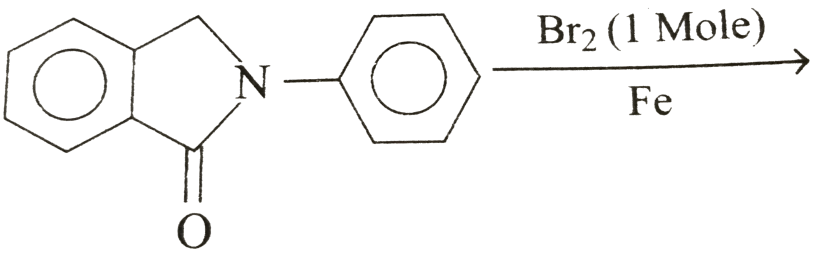
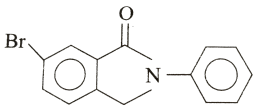
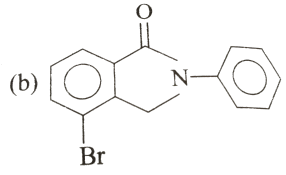
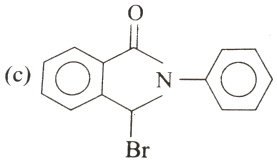
Level 3 (Q.1 To Q.25)

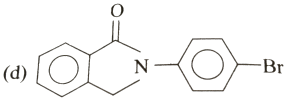
1. In the reaction the major product formed is :



A. (a) 

B. 

C. 

D. 

Answer: D

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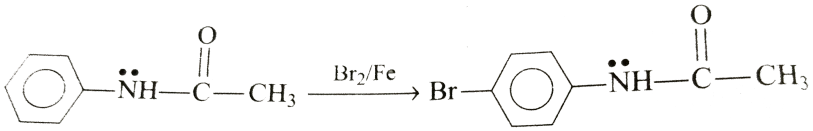
2. This reaction is an example of :



A. substitution reaction

B. additional reaction

C. condensation reaction

D. elimaination reaction

Answer: A

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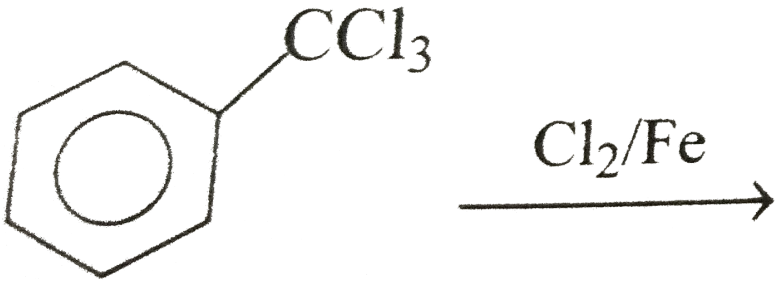
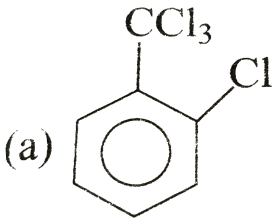
3. The major product formed in the reaction is :



A.



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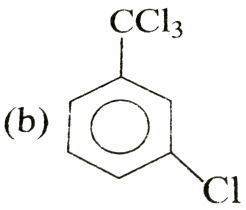

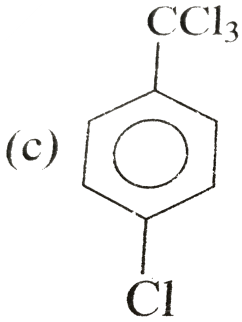

C.

D. All in the equal amount

Answer: B

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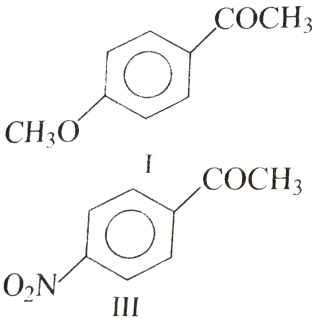

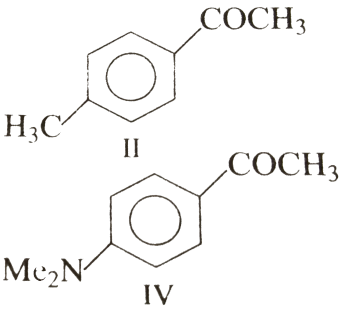

4.

Freidel -Crafts acylation reaction can be used to obtained the compounds :

A. II, III and IV

B. I,II and IV

C. I and II

D. II and III

Answer: B

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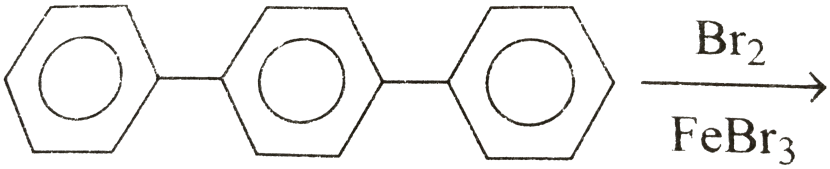
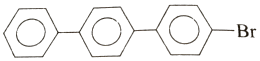
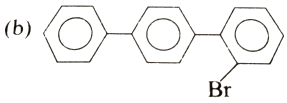
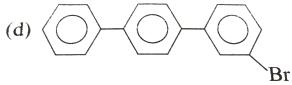
5. Complete the following reaction



A. 

B. 

C.

D. 

Answer: C

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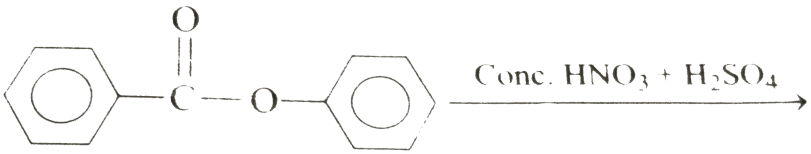
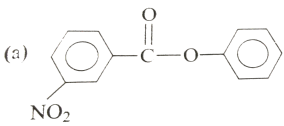
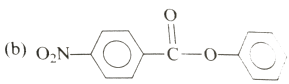
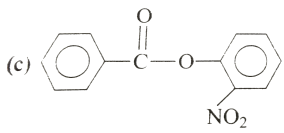
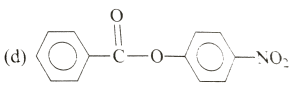
6. The major product in the reaction is :



A. 

B. 

C. 

D. 

Answer: D

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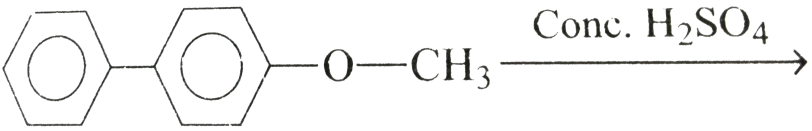
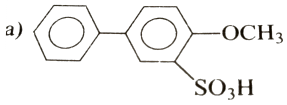
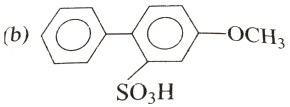
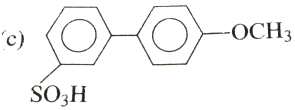
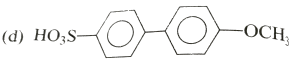
7. The major product fromed in the reaction :



A. 

B. 

C. 

D. 

Answer: A

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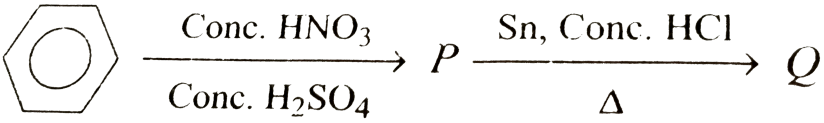
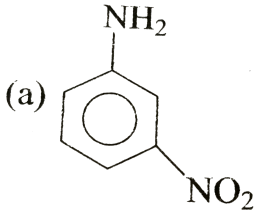
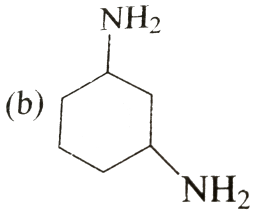
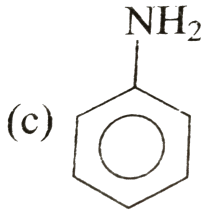


8. underset (Conc. H_2SO_4) overset (Conc. HNO_3) to P underset (Delta) overset (Sn, Conc. HCl) to Q`

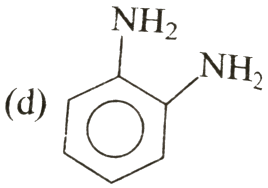
The product Q is :

A. 

B. 

C. 

D.



Answer: C

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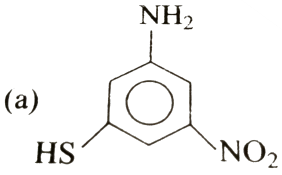
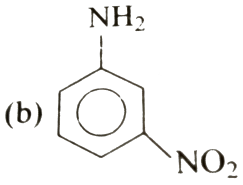
9. Which of the following is foomed as a product when m-dinitrobenzene is treated with $(NH_4)_2S$?

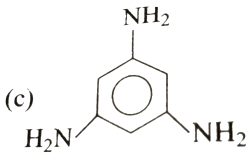
A.

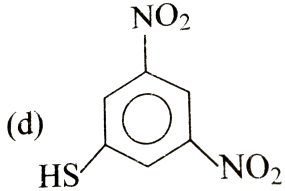


B.



C.



D. 

Answer: B

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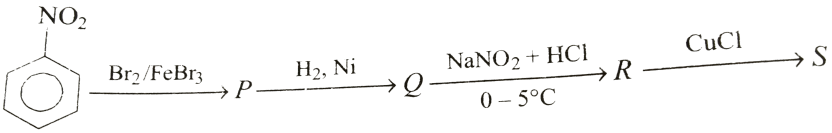
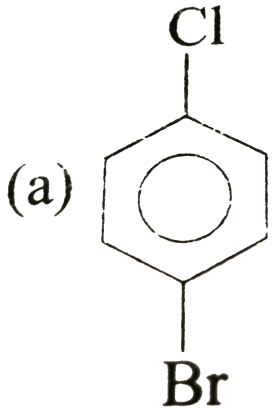
10. Consider the following reactions,



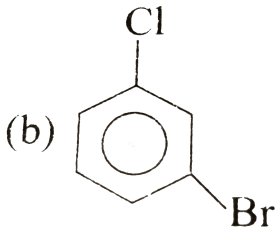
overset(Br_(2)//FeBr^(3))toPoverset(H_(2), Ni)toQ overset(NaNO_(2)+ HCl)toR overset (CuCl)toS`

The end product 'S' is :

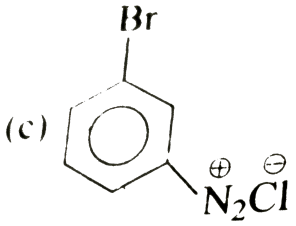
A.



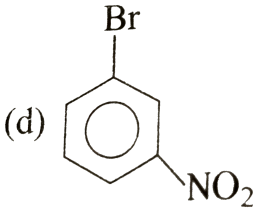
B.



C.



D.



Answer: B

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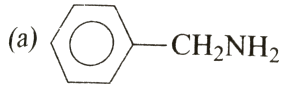
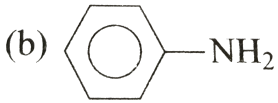
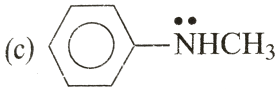
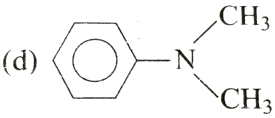
11. Which of the following compounds will form a yellow-coloured oily compound on treatment with $NaNO_2$ and HCl at $0-5^\circ C$?

A. 

B. 

C. 

D. 

Answer: B

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12. In Friedel-Carfts acylation reaction the electrophile is :

A. $R^{\oplus}$

B. $R - \overset{\oplus}{C} = O$

C. $R - \dot{C} = O$

D. $R - \underset{Cl}{\overset{\oplus}{C}} - O - \overset{+}{\ominus} AlCl_3$

Answer: B

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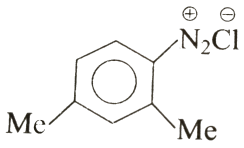
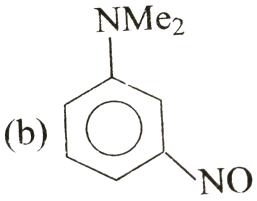
13. N,N- Dimethyl aniline react with $NaNO_2$ and dilute HCl at $0 - 5^\circ C$ to from :

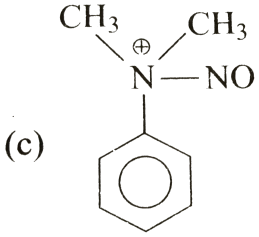
A. (a)



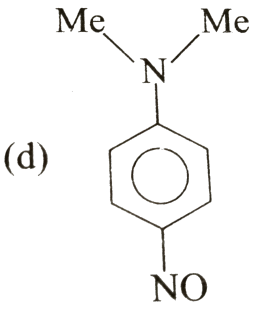
B. (b)



C.



D.



Answer: D

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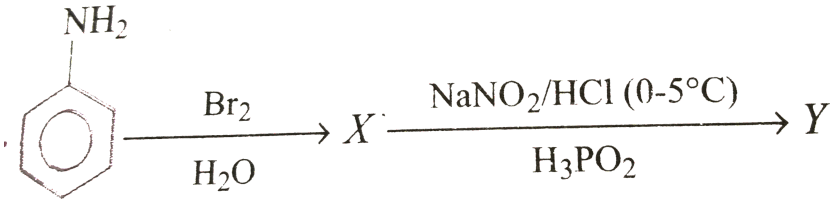
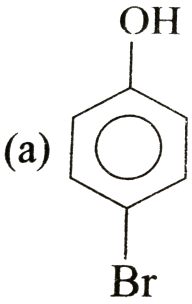
14.



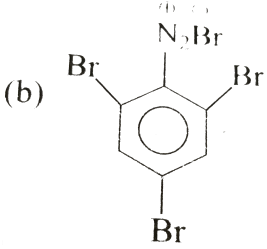
underset (Hr_(2))overset(Br_(2))to Xunderset(H_(3)PO_(2))overset(NaNO_(2)//Hcl(0-5^(@)C))to Y`

The end product Y is :

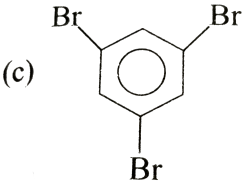
A.



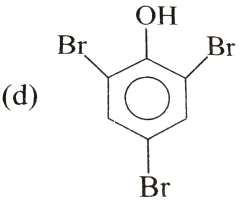
B.



C.



D.



Answer: C

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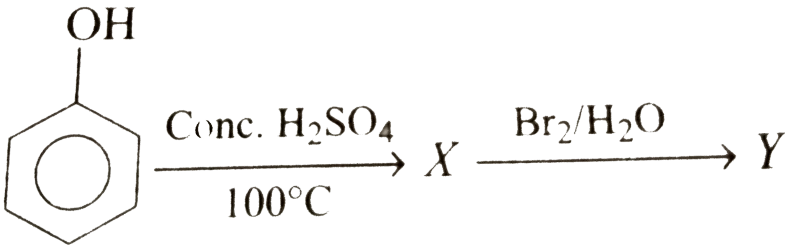
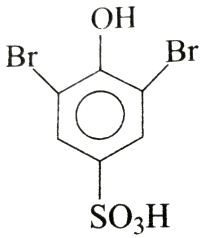
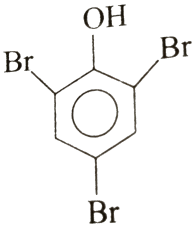
15. Identify the end product (Y) of the following sequence of reaction :



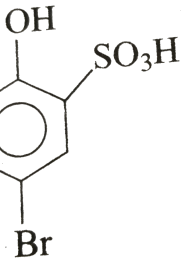
A. (a)

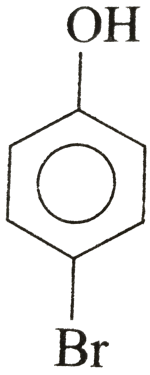


B. (b)



C. (c)



D. (d) 

Answer: B

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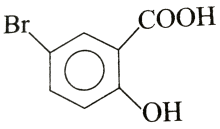
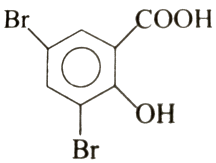
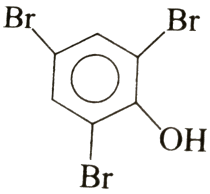
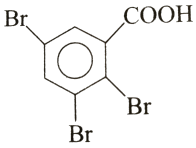
16. The action of Br_2 / H_2O on salicylic acid results in the formation of :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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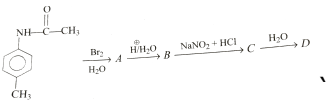
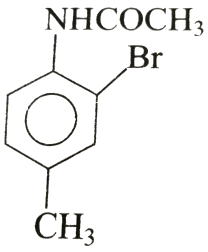
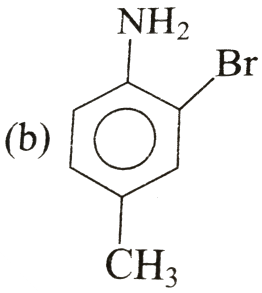
17. 

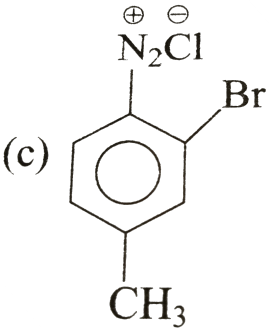
In the above sequence of reactions which one is not correct ?

A. (a) 

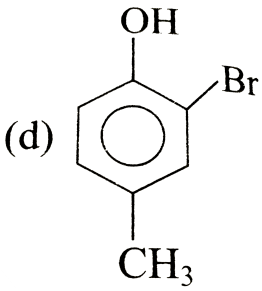
B.



C.



D.



Answer: D

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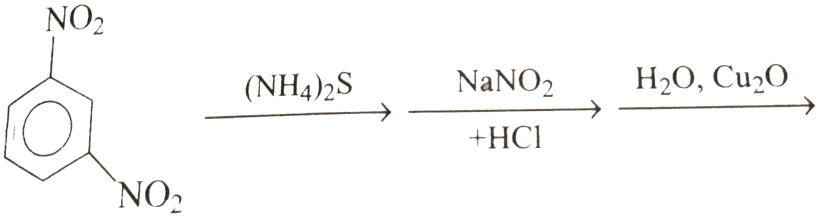
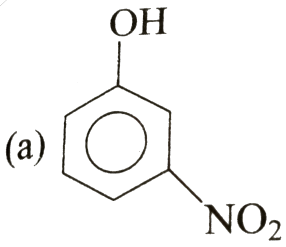
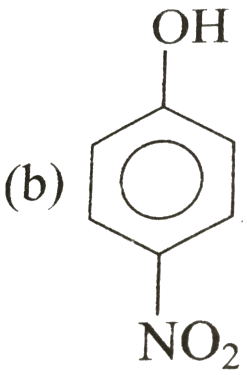
18. The final product of the given reaction sequence :



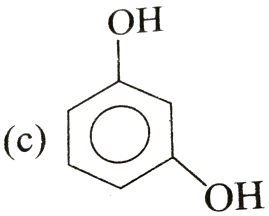
A.

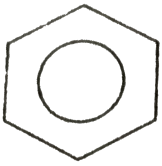


B.



C.



D. (d) 

Answer: A

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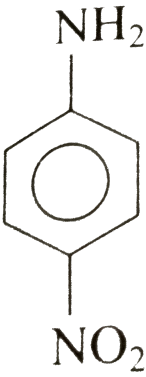
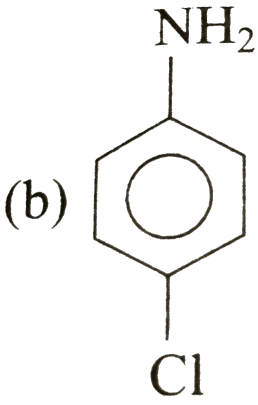
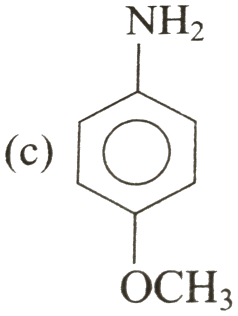
19. Which one of the following aryl amine undergoes diazotisation most readily ?

A. (a) 

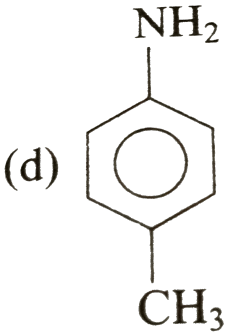
B.



C.



D.



Answer: C

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20. In the given reaction sequence

$$C_6H_5NO_2 \xrightarrow{Sn/HCl} A \xrightarrow{NaNO_2+HCl} B \xrightarrow{CuCN/HCN} C \xrightarrow[\Delta]{H_2\emptyset/\overset{\oplus}{H}} D$$

which one is not correct ?

A. A is $C_6H_5NH_2$

B. B is $C_6H_5-\overset{\oplus}{N}\equiv\overset{\ominus}{N}Cl$

C. C is $C_6H_5CH_2CN$

D. D is C_6H_5COOH

Answer: C

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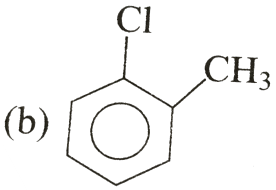
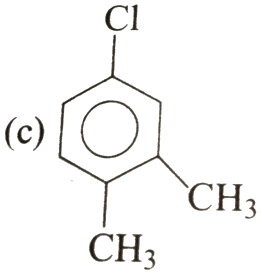
21. Which one of the following substrate will not form benzyne when treated with $NaNH_2$?

A. C_6H_5CI

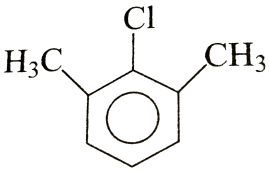
B.



C.



D.



Answer: D

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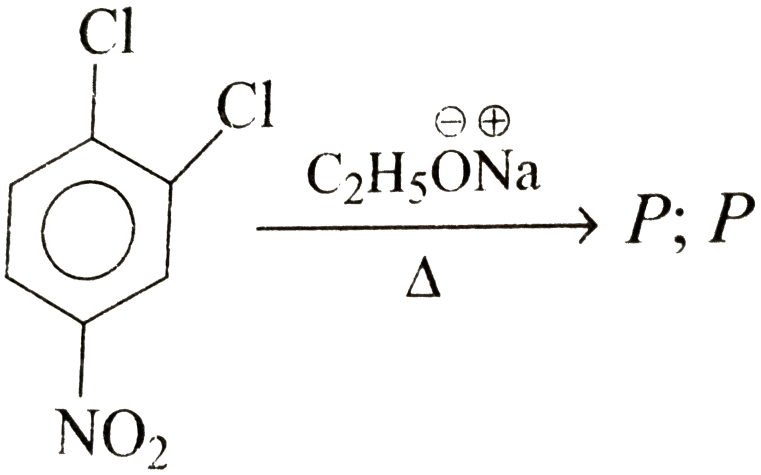
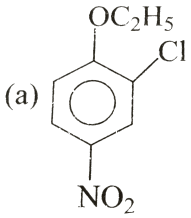
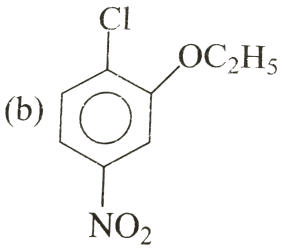
22. Complete the following reaction



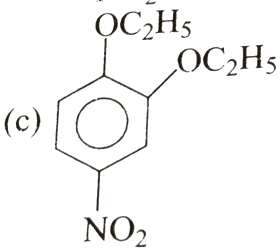
A.



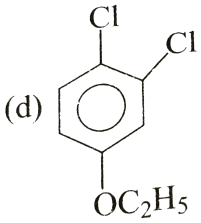
B.



C.



D.



Answer: A

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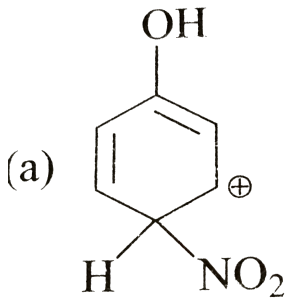
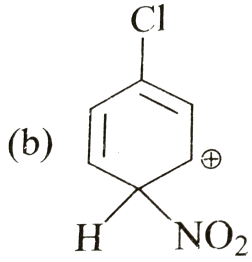
23. Which one of the following is most stable carbocation ?

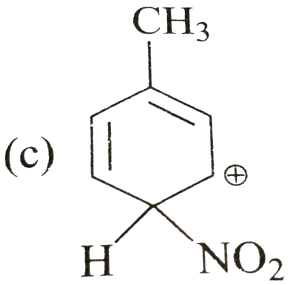
A.



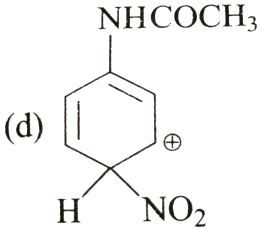
B.



C.



D.



Answer: A

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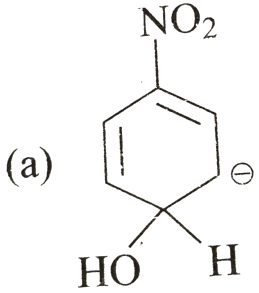
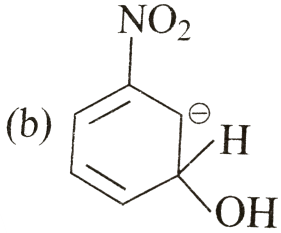
24. Which one of the following is most stable carbanion ?

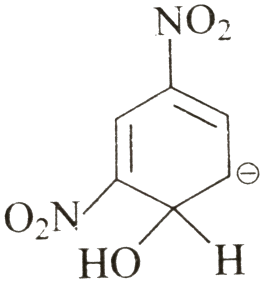
A.



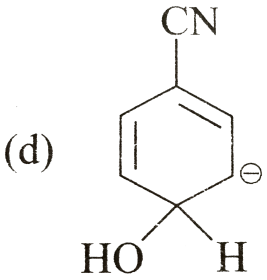
B.



C.



D.



Answer: C

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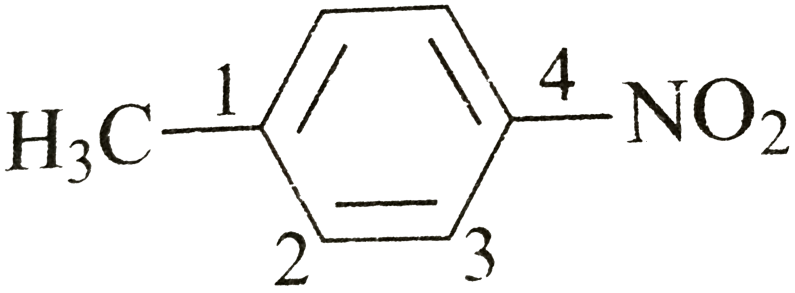
25. Nitrantion of the following compound will occur at which position ?



A. at C--1

B. at C-- 2

C. at C-- 3

D. at C-- 4

Answer: B

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Level 3 (Q.26 To Q.50)

1. Nitrating agent for aromatic compound may be :

A. N_2O_5

B. $C_2H_5ONO_2$

C. $NO_2CF_3SO_3$

D. All of these

Answer: D

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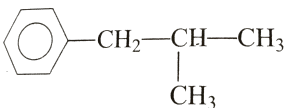
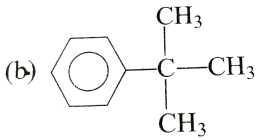
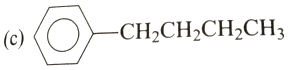
2. 

+ CH_(3)-CH_(2)CH_(2)CH_(2)- Cloverset (AlCl_(3))to X,` Major product Xis :

A. 

B. 

C. 

D. none of these

Answer: D

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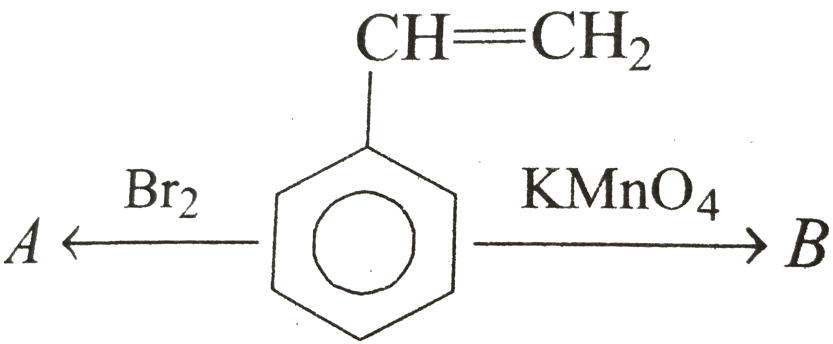
3.



Compound A and B respectively are :

A. o- bromo styrene, benzoic acid

B. p- bromo styrene, benzaldehyde

C. m- bromo styrene , benzaldehye

D. styrene dibromide, benzoic acid

Answer: D

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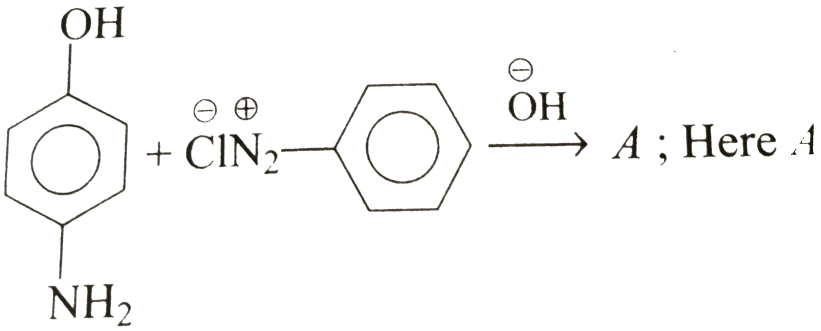
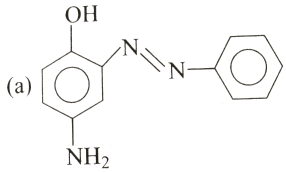
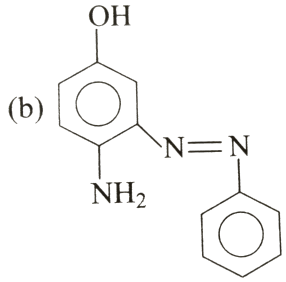
4. Consider the reaction

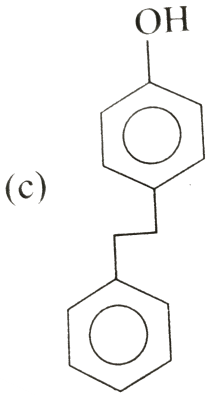


, Here A is :

A. (a)



B. 

C. 

D. none of these

Answer: A

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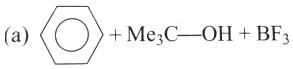
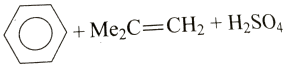
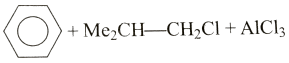
5. In which of the following reaction tertiary butyl benzene is formed ?

A. 

B. 

C. 

D. All of these

Answer: B

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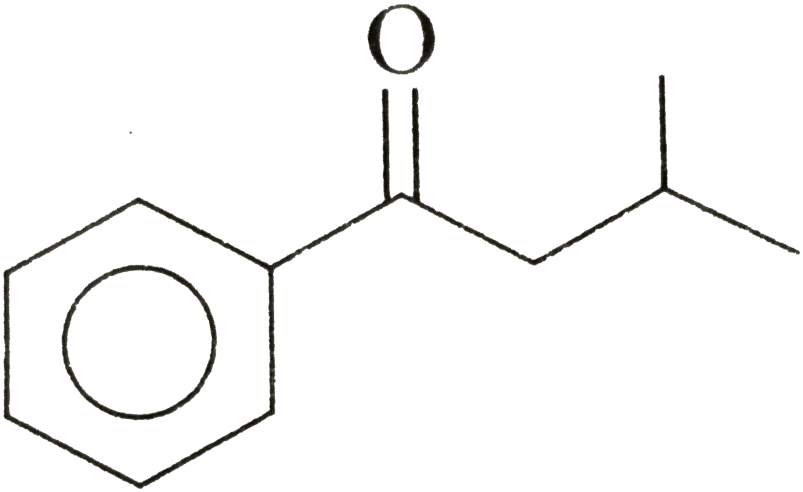
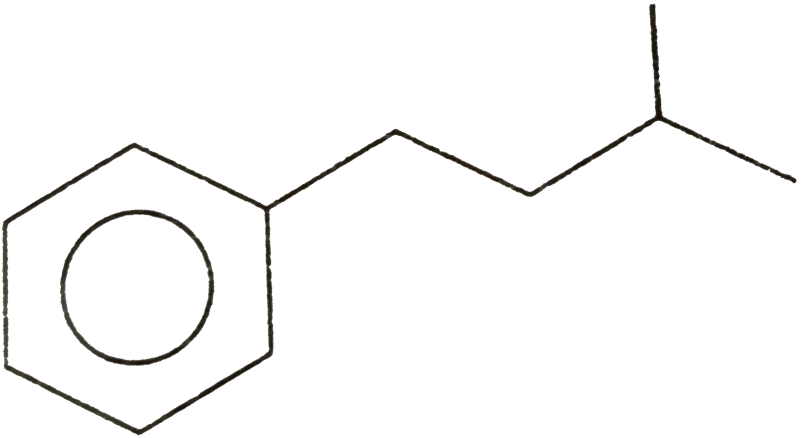
6. Benzene on reaction with A from

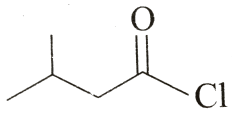


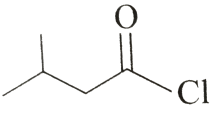
which on

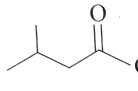
reaction with B from

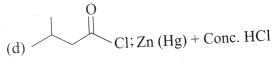


, A and B are :

A. (a) 

B. $HCl;$ 

C. (c)  ; $NaBH_4$

D. 

Answer: D

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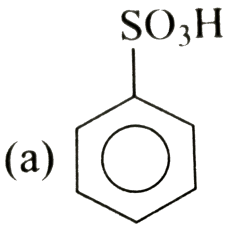
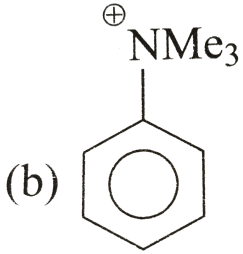
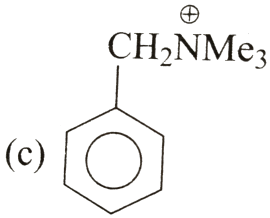
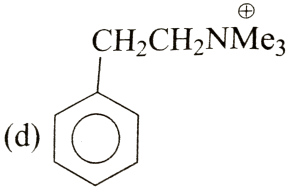
7. Which of the following underges suluphonation fast ?

A. 

B. 

C. 

D. 

Answer: D

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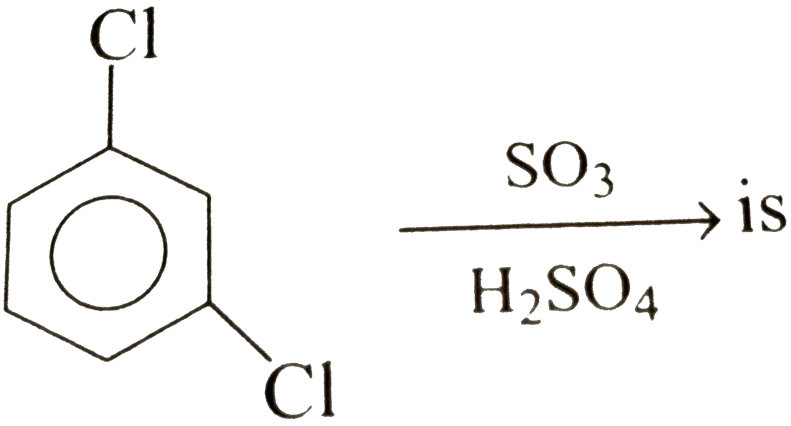
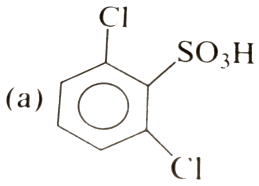
8. The major product obatined in the reaction



A.



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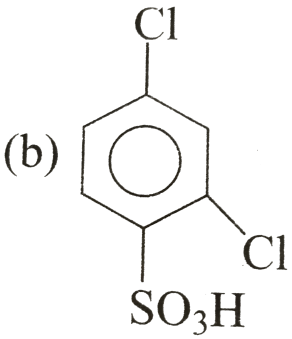
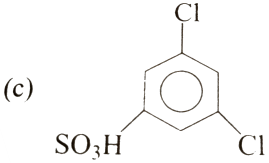
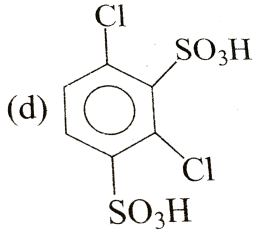


C. 

D. 

Answer: D

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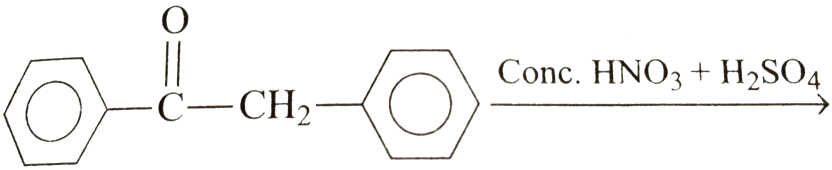
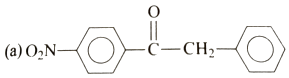
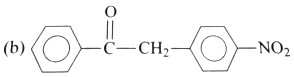
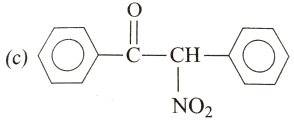
9. The major product obatined in the reaction

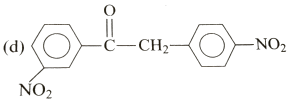


is expected to be :

A. 

B. 

C. 

D. 

Answer: B

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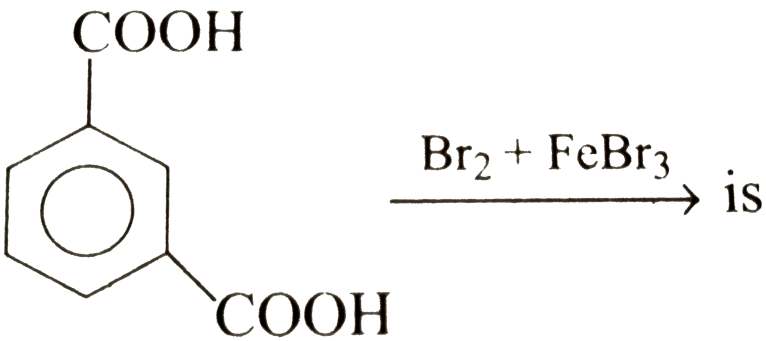
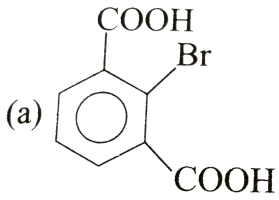
10. The major product in the reaction



A. 

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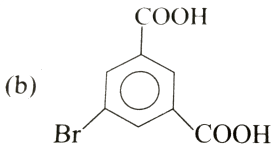

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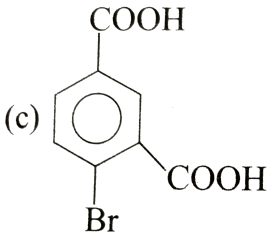

D.

Answer: B

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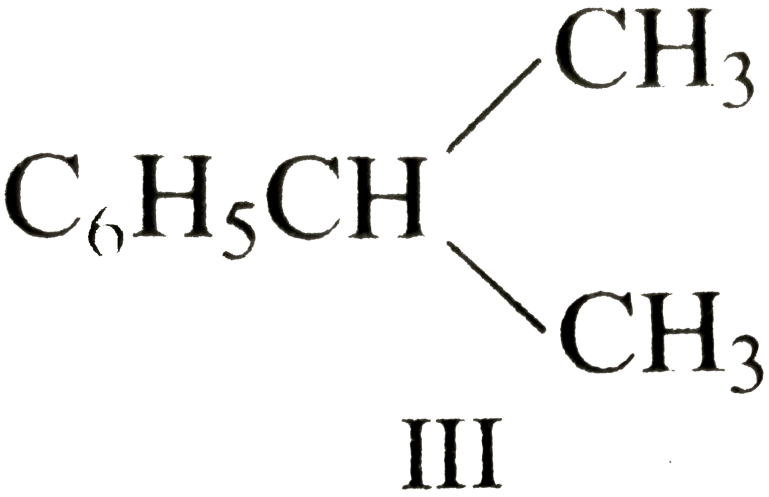
11. The order of reactivity of the following compounds

$C_6H_5CH_3$ $C_6H_5CH_2CH_3$



III

towards electrophilic substritution will be :

A. $I > II > III > IV$

B. $IV > III > II > I$

C. $II > I > III > IV$

D. $III > II > I > IV$

Answer: A

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12. In sulphonation, acylation and formyaltion of benzene the group of electrophilies would be :

A. $SO_3^{\oplus}CH_3 - C \equiv \overset{\oplus}{O}, H\overset{\oplus}{C}O$

B. $\overset{\oplus}{S}O_3H, CH_3CO, HCO$

C. $SO_3^{\oplus}CH_3 - C \equiv \overset{\oplus}{O}, H\overset{\oplus}{C}O$

D. $\overset{\oplus}{S}O_3CH_3, CHO, CO + HCl$

Answer: C

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13. A Friedel- Crafts reaction of benzene with chloroform produces :

A. $C_6H_5CHCl_2$

B. $C_6H_5 - \underset{H}{\overset{Cl}{\overset{|}{\underset{|}{C}}}} - C_6H_5$

C. $C_6H_5 - \underset{H}{\overset{C_6H_5}{\overset{|}{\underset{|}{C}}}} - C_6H_5$

D. all of these

Answer: C

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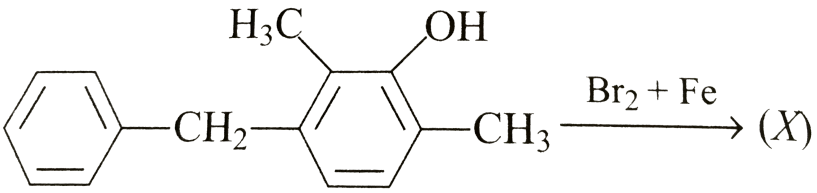
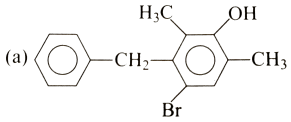
14. Identify the product obatined in the following reaction :



A.



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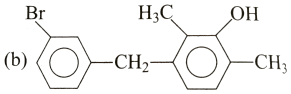
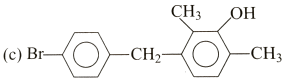
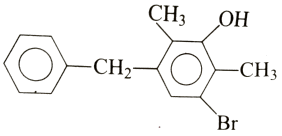


C.



D.



Answer: A

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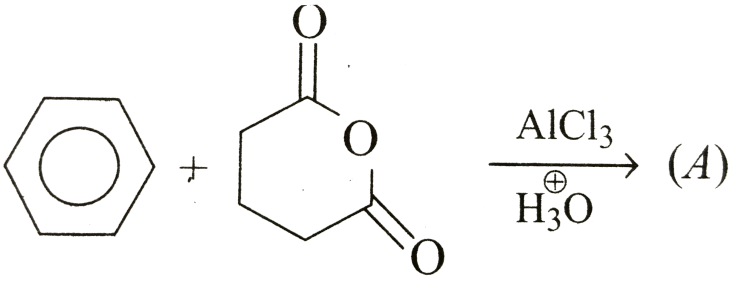
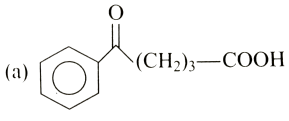
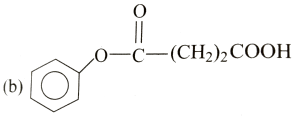
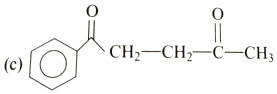
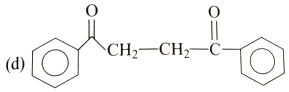
15. Product of the given reaction :



A. 

B. 

C. 

D. 

Answer: A

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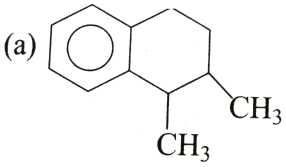
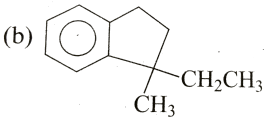
16. Consider the following reaction

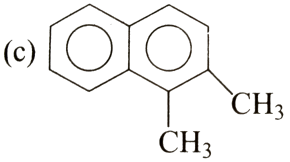
 CH_(2)CH_(2)overset(CH_(3))overset(|)CH-CH=CH_(2)"

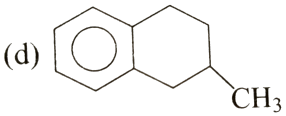
"overset(Conc.H_(2)So_(4))to`

the major product is expected to be :

A. 

B. 

C. 

D. 

Answer: B

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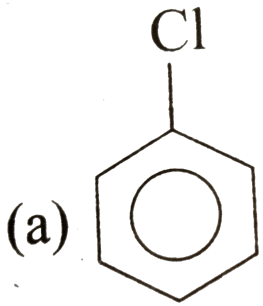
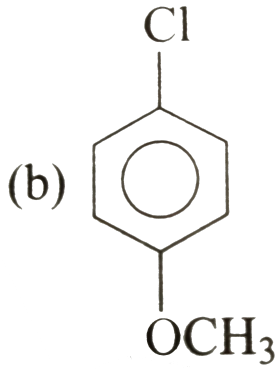
17. Which one of the following compounds undergoes hydrolysis most readily by aq. NaOH to furnish corresponding phenol ?

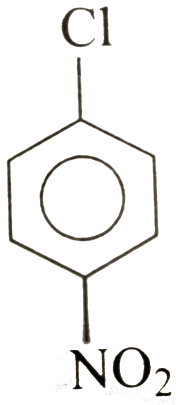
A.



B.

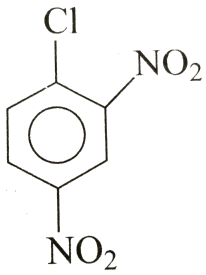


(c)



C.

(d)



D.

Answer: D

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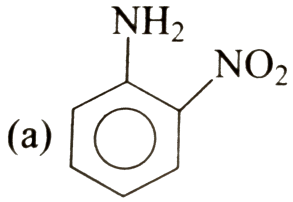
18. Consider the following sequence of reaction

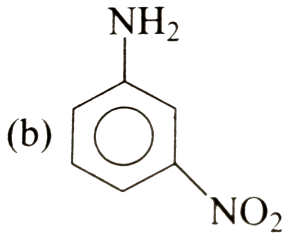
$$C_6H_5NH_2 \xrightarrow[\Delta]{Ac_2O} A \xrightarrow[H_2SO_4]{Conc.HNO_3} \underset{\text{Major}}{B} \xrightarrow{aq.H_2SO_4} \underset{\text{Major}}{C}$$

The major final product (C) is :

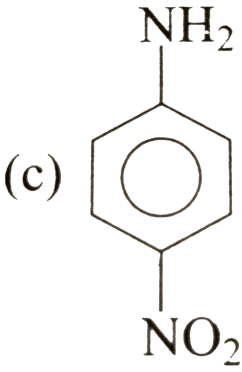
A.



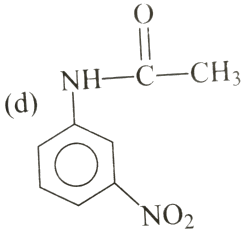
B.



C.



D.



Answer: C

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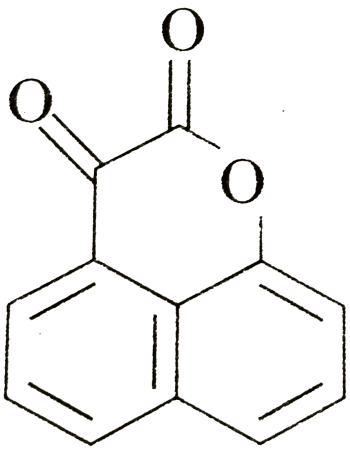
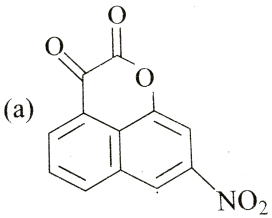
19.



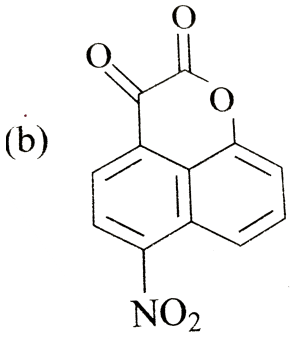
$\xrightarrow{NO_2BF_4}$ gives

overset(NO_(2)BF_(4))to ` gives:

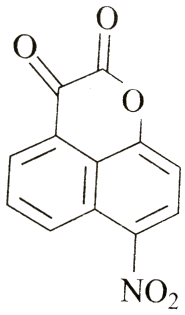
A.



B.

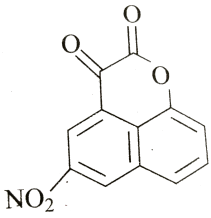


(c)



C.

(d)



D.

Answer: C

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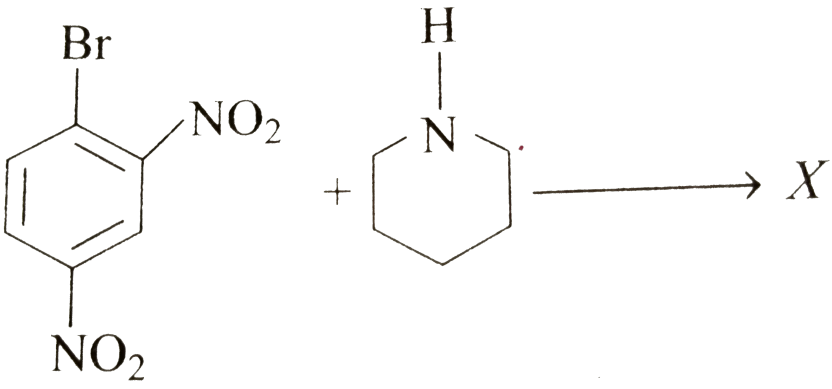
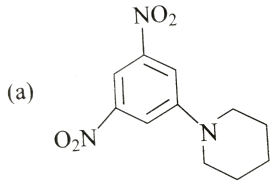
20.

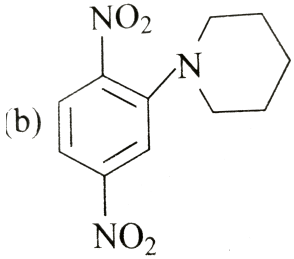


gives :

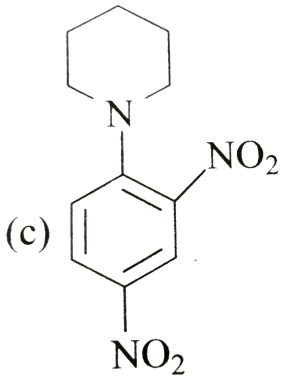
A.



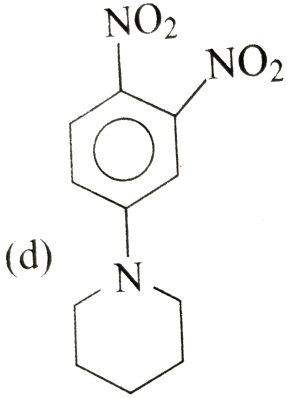
B.



C.



D.



Answer: C

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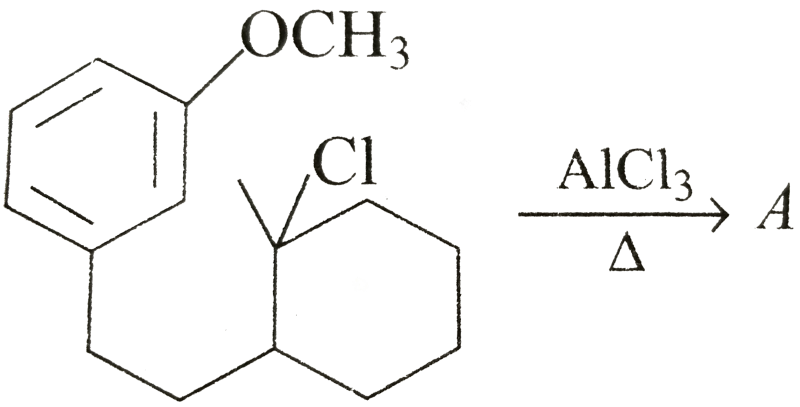
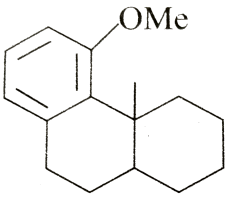
21.

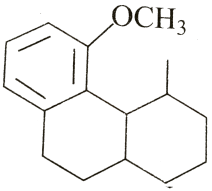


Identify A in the reaction :

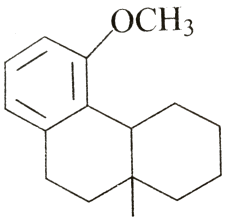
A. (a)

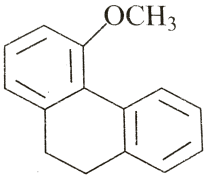


B. (b)



C. (c)



D. (d) 

Answer: A

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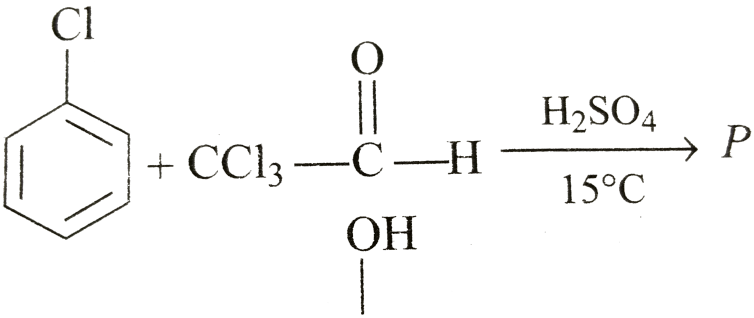
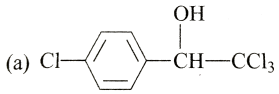
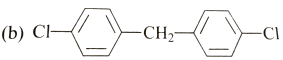
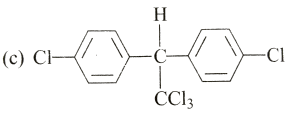
22. 

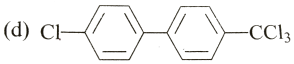
P, Identify

P in the reaction :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: C

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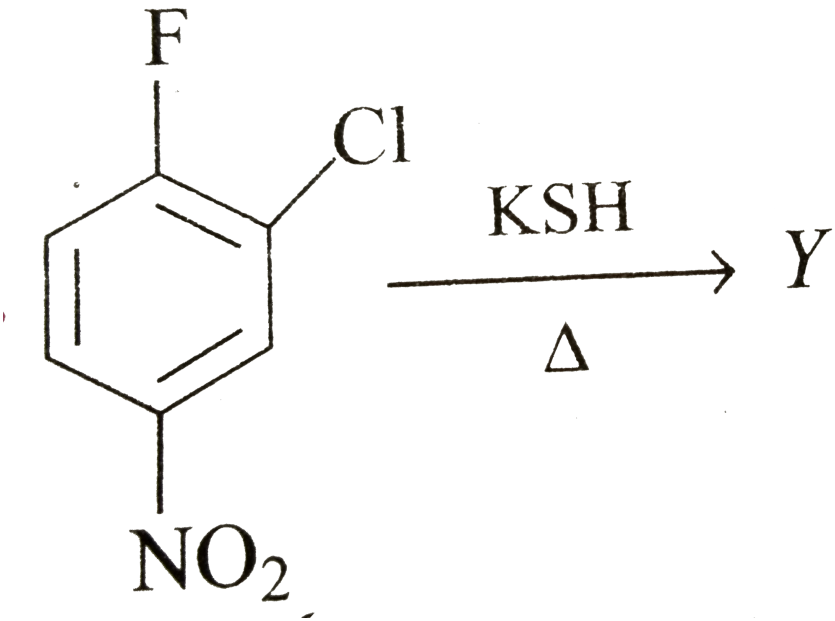
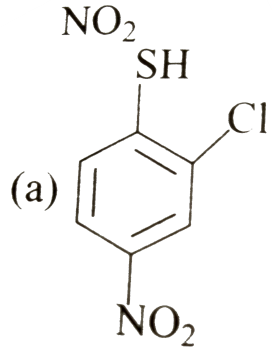
23. 

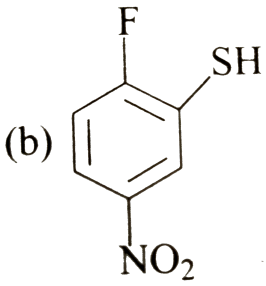
Y, Identify

Y is this reaction :

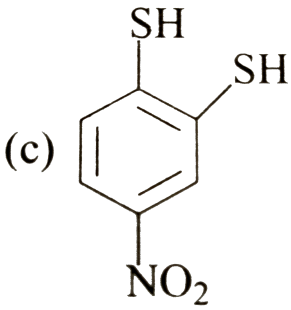
A.



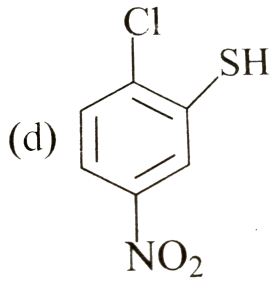
B.



C.



D.



Answer: A

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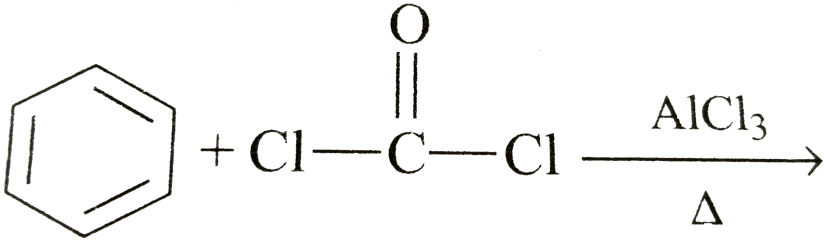
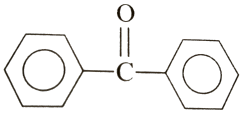
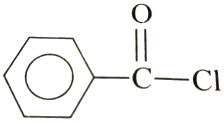
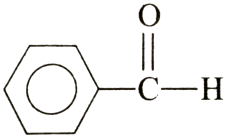
24. Identify correct product of the following reaction :



A. (a) 

B. (b) 

C. (c) 

D. none of these

Answer: A

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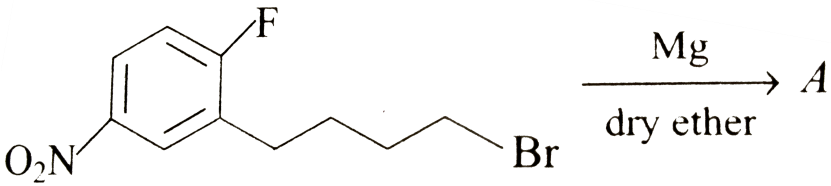
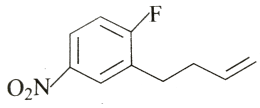
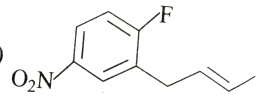
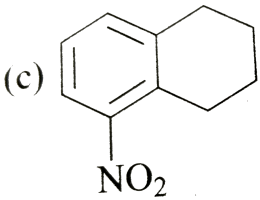
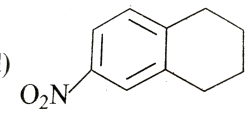
25. 

$\xrightarrow[\text{dry ether}]{\text{Mg}} A$, Identify A :

A. 

B. 

C. 

D. 

Answer: D

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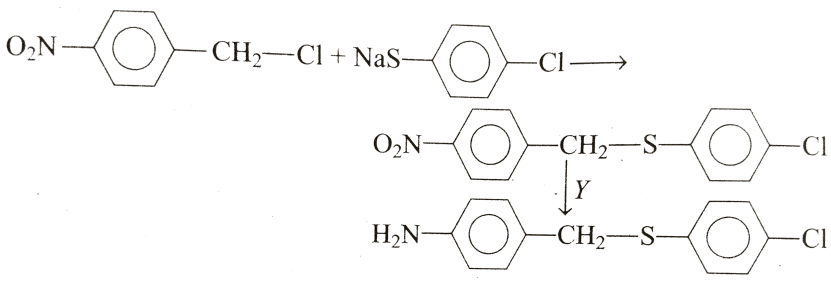
Level 3 (Q.51 To Q.75)

1.



Find out missing reagent Y :

A. $Sn + HCl$

B. $Li + HCl$

C. $C + \mathbb{C}l_4$

D. $Na + Ether$

Answer: A

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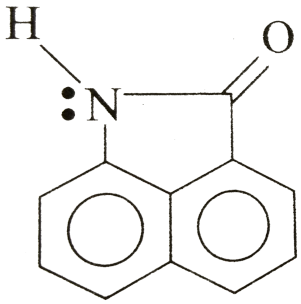
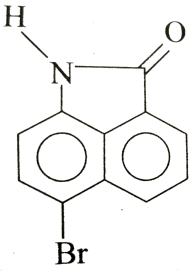
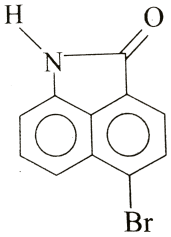
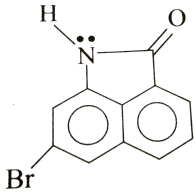
2.  $\xrightarrow{Br_2 + Fe}$ Z ; Identify Z

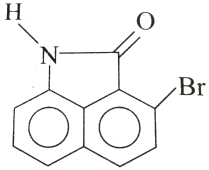
$\xrightarrow{Br_2 + Fe}$ Z,

Identify Z:

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A

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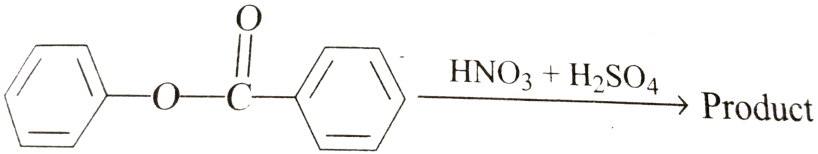
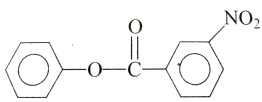
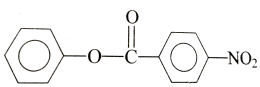
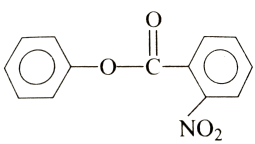
3. 

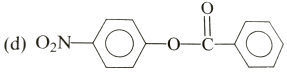
$\xrightarrow{HNO_3 + H_2SO_4}$ Product ,

product of this reaction will be :

A. (a) 

B. (b) 

C. (c) 

D. 

Answer: D

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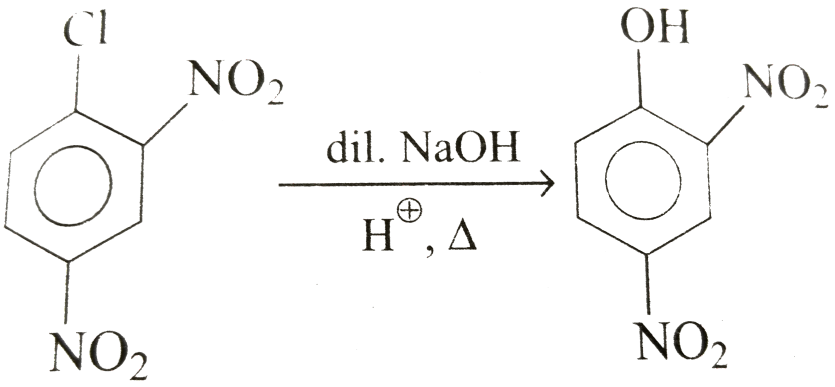
4. 

, this reaction proceed throught :

A. electrophilic addition

B. benzyne intermediate

C. nucleophilic aromatic

D. oixirane

Answer: C

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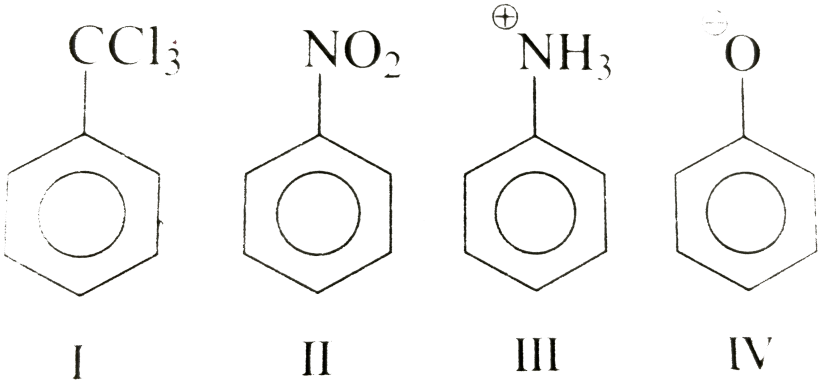
5. In which of the following cases nitration will be take place at m-position ?



A. I only

B. II, III and IV

C. I, III and IV

D. I,II and III

Answer: D

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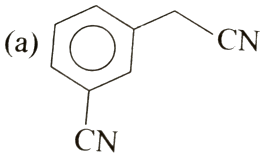
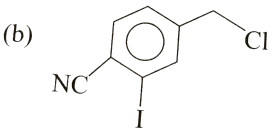
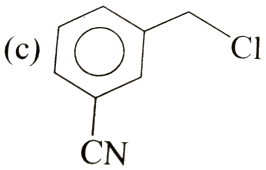
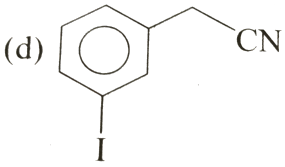
6. The major product formed in the following reaction

 is :

A. 

B. 

C. 

D. 

Answer: D

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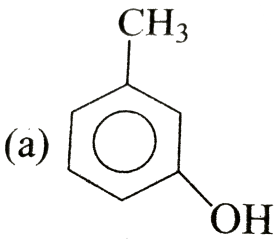
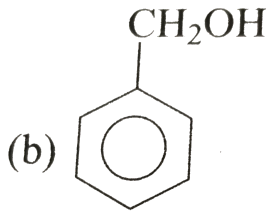
7. The structure of compound that gives a tribromo derivative on treatment with bromine water :

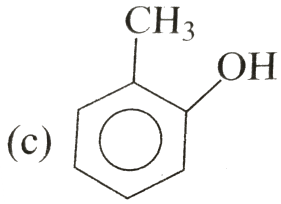
A.



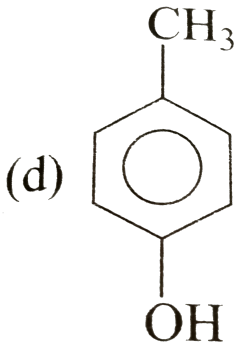
B.



C.



D.



Answer: A

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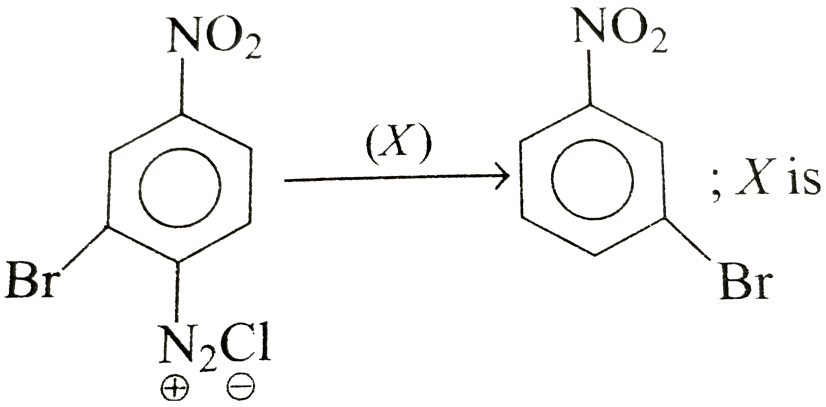
8. In the reaction



A. H_3PO_2

B. C_2Cl_2

C. $HgSO_4 / H_2SO_4$

D. $H^{\oplus} / H_2O$

Answer: A

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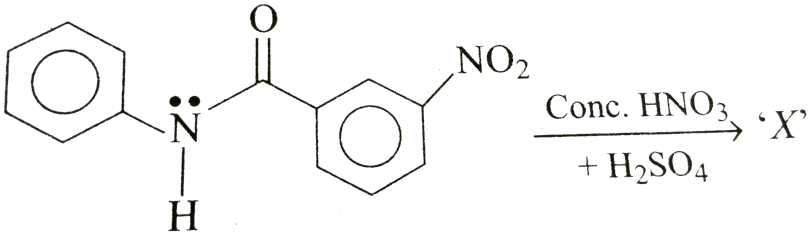
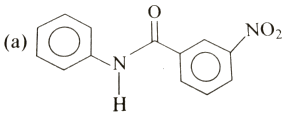
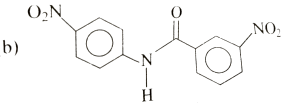
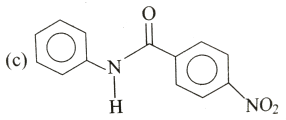
9. In the following reaction

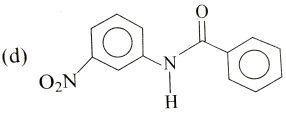


the structure of major product 'X' is :

A. 

B. 

C. 

D. 

Answer: B

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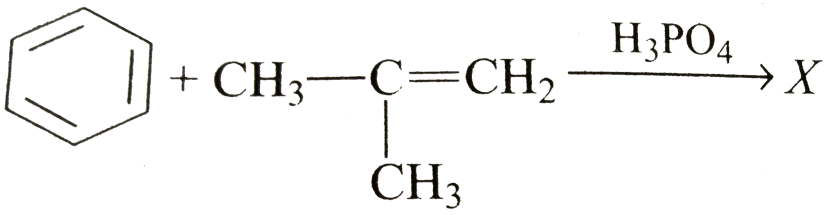
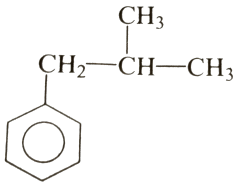
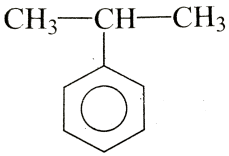


10. X`, The compound X is :

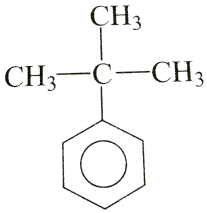
A. (a)



B. (b)



C. (c)



D. none of these

Answer: C

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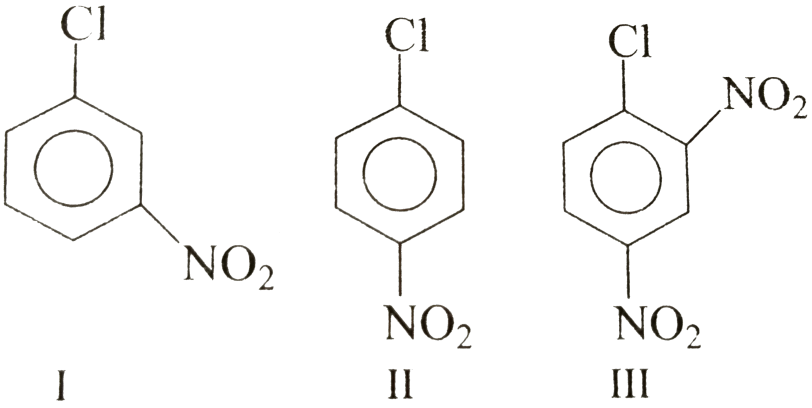
11. Reactivity order of the following towards Na O Et, Et OH :



I II III

A. $II > I > III$

B. $I > III > II$

C. $II > III > I$

D. $III > II > I$

Answer: D

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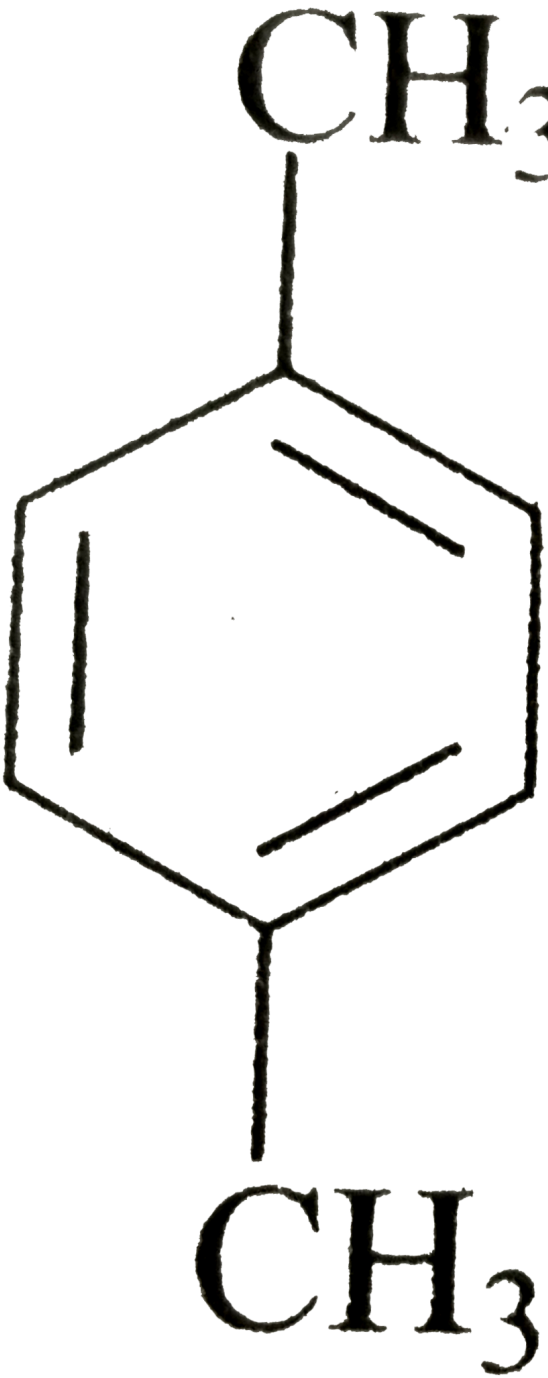
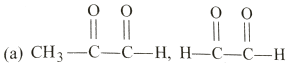
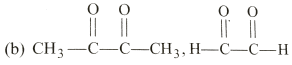
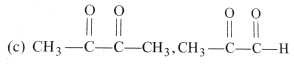
12. Ozonolysis of the following compound will produce,

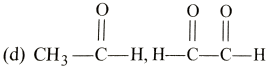


is

A. 

B. 

C. 

D. 

Answer: A

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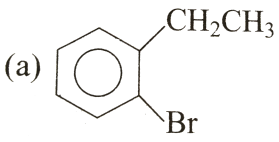
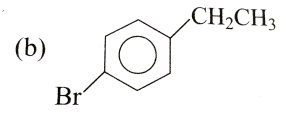
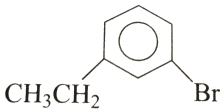
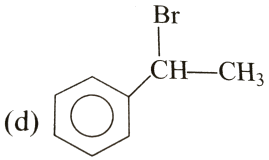
13. Which of the following will be obatined by the bromination of ethylbenzene is presence of light ?

A. 

B. 

(c) 

C.



D.

Answer: D

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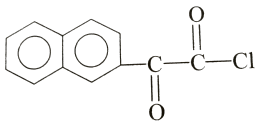
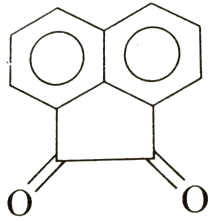
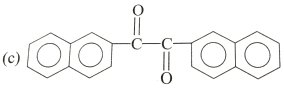
14. The major product fromed in the reaction :



(a) 

A.

B. (b) 

C. (c) 

D. none of these

Answer: B

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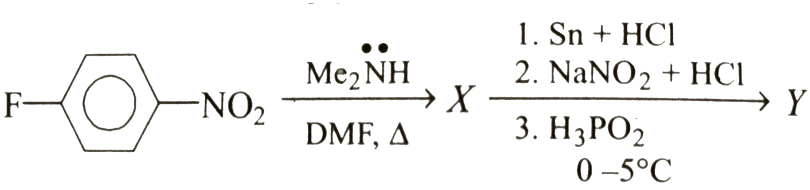
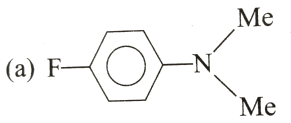
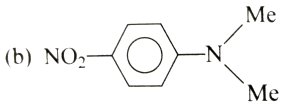
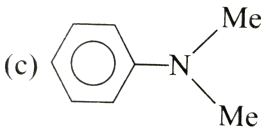
15. Consider the following sequence of reactions :



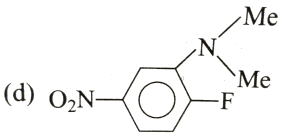
A. (a) 

B. (b) 

C.



D.



Answer: C

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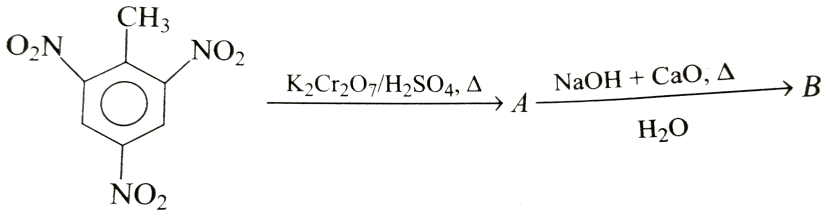
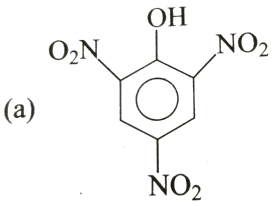
16.

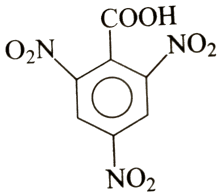


: identify B:

A.

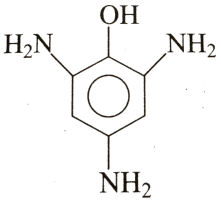


(b)



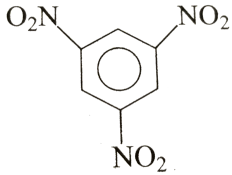
B.

(c)



C.

(d)



D.

Answer: D

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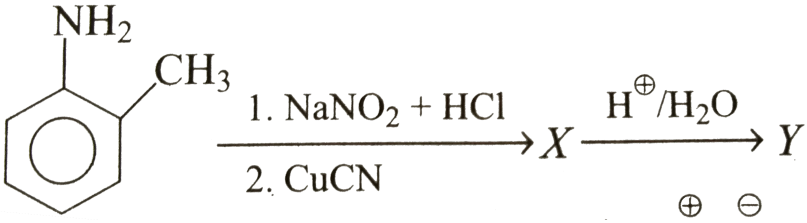
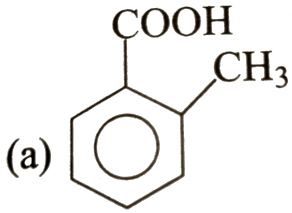
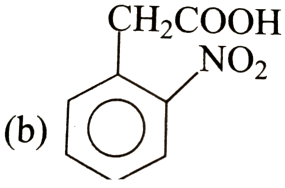
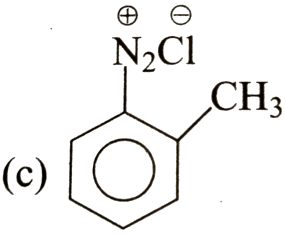
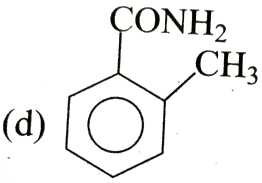
17. Consider the following sequence of reaction



A. 

B. 

C. 

D. 

Answer: A

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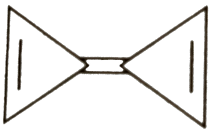
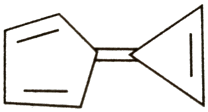
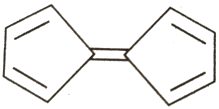
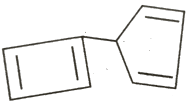
18. Which is the following molecules is expected to have the greatest resonance stablisation ?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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19. Arrage the following group in order of decreasing o-and p-directing strenght

$-NH_2, \ -Cl, \ -\underset{\cdot\cdot}{O}H, \ -R$

A. $-Cl > \underset{\cdot\cdot}{\overset{\cdot\cdot}{O}}H > \ -R > \ -NH_2$

B. $-\overset{\cdot\cdot}{N}H_2 > \ -R > \ -Cl > \ -\underset{\cdot\cdot}{\overset{\cdot\cdot}{O}}H$

C. $-\overset{\cdot\cdot}{N}H_2 > \ -OH > \ -Cl > \ -\underset{\cdot\cdot}{\overset{\cdot\cdot}{R}}$

D. $-\overset{\cdot\cdot}{N}H_2 > \ -OH > \ -R > \ -\underset{\cdot\cdot}{\overset{\cdot\cdot}{C}}l$

Answer: D

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20. Arrage the following group in order of decreasing electron attracting capacity :

A. $NO_2 > COOH > Cl > OH$

B. $Cl > OH > NO_2 > COOH$

C. $OH > Cl > NO_2 > COOH$

D. $NO_2 > COOH > OH > Cl$

Answer: A

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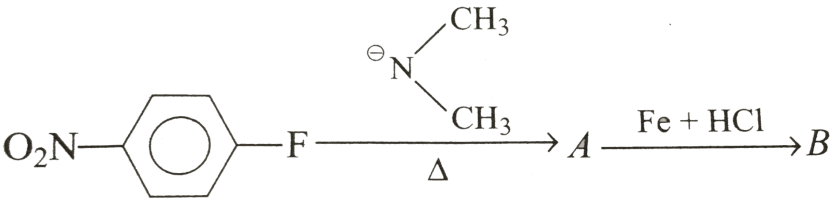
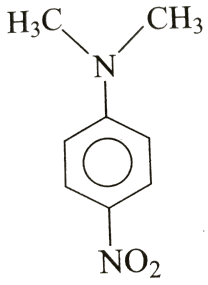
21.



Product B of reaction is :

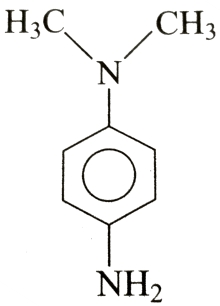
A.

(a)

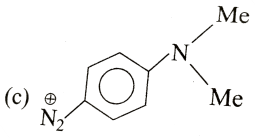


B.

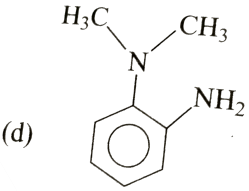
(b)



C.



D.



Answer: B

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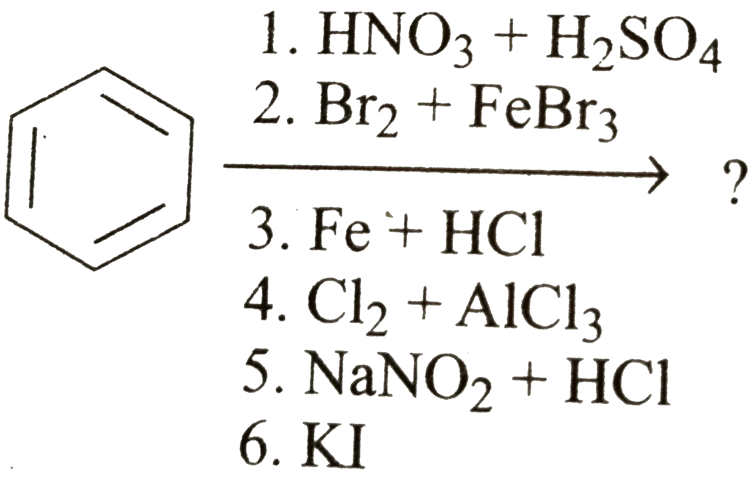
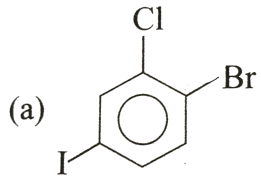
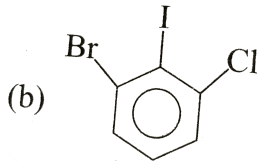
22. Idenitfy product obatined by following sequence of reactions :



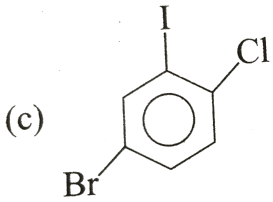
A.



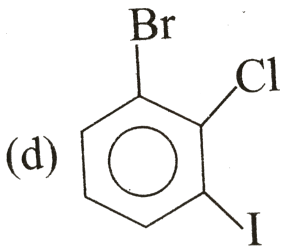
B.



C.



D.



Answer: A

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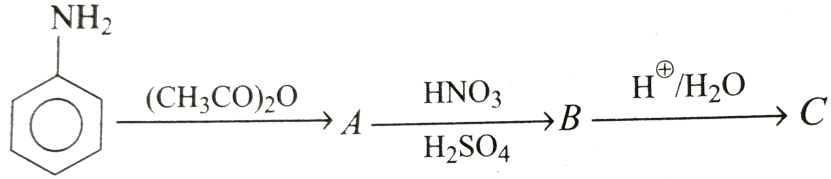
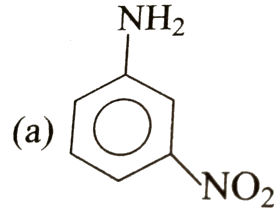
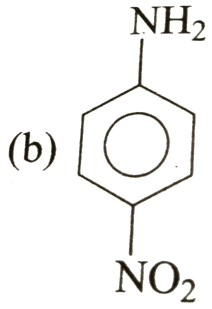
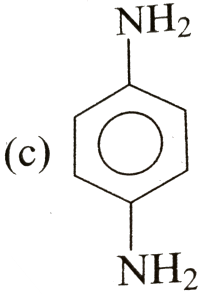
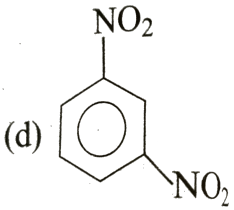
23. 

Identify C :

A. 

B. 

C. 

D. 

Answer: B

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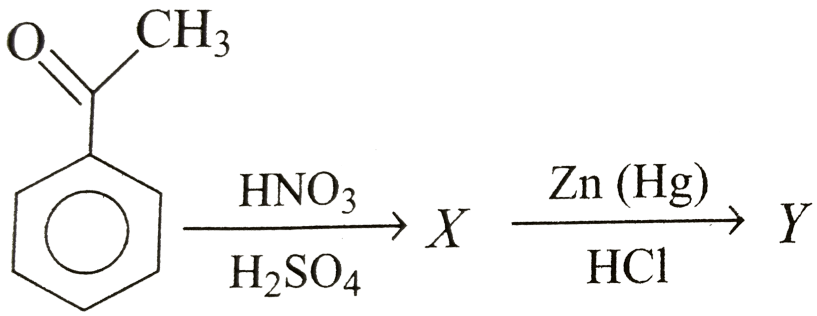
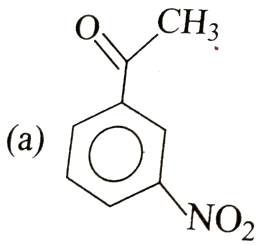
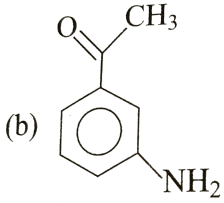
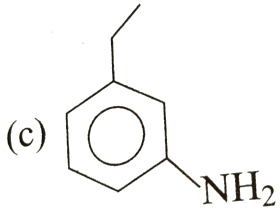
24. 

, Idetify 'Y':

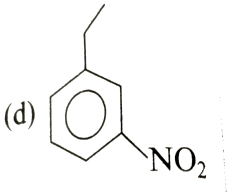
A. 

B. 

C.



D.



Answer: C

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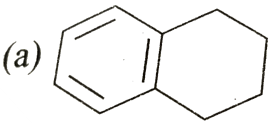
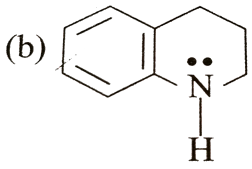
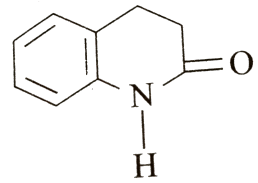
25. Which of the following compounds undergoes nitration at fastest rate ?

A.

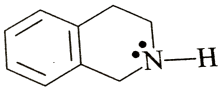


B.



(c) 

C.

(d) 

D.

Answer: B

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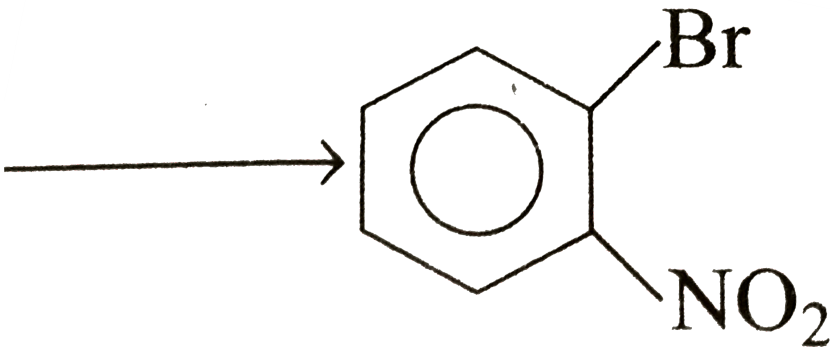
Level 3 (Q.76 To Q.100)

1. For this reaction  , the best

reactnats are :

A. $C_6H_5Br + HNO_3$ and H_2SO_4

B. $C_6H_5NO_2 + Br_2, FeBr_3$

C. $C_6H_5Br + H_2SO_4, \Delta$

D. $C_6H_5NO_2 + HBr$

Answer: A

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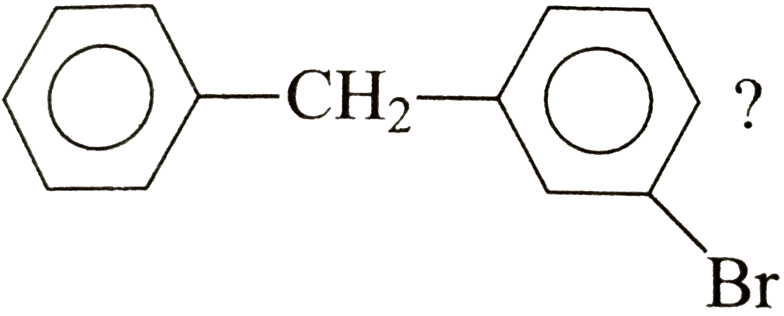
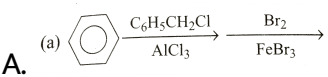
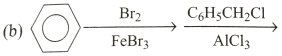
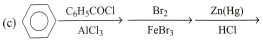
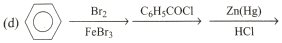
2. Which sequence of steps describes the best synthesis of compound



A. 

B. 

C. 

D. 

Answer: C

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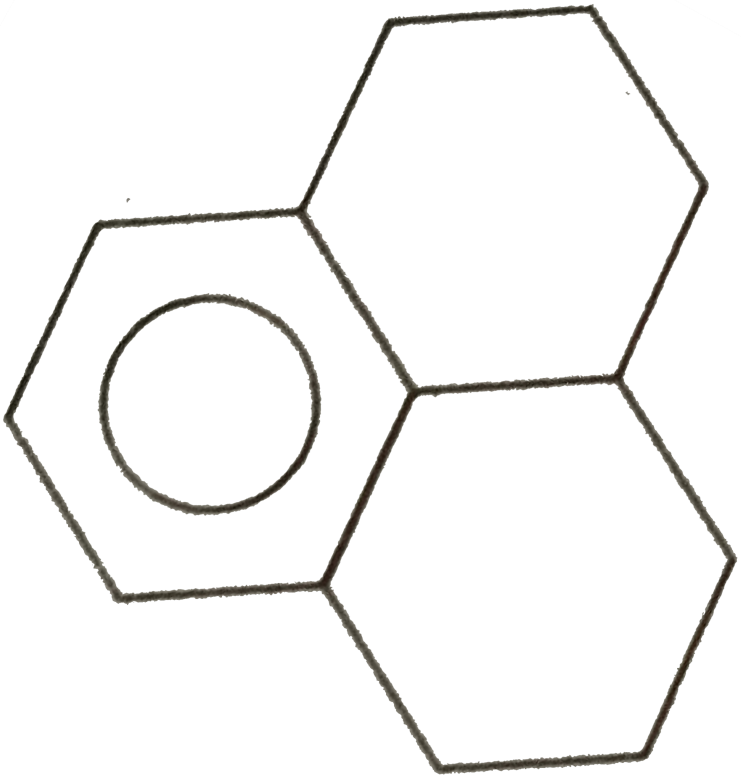
3. How many benzylic hydrogen are present in the hydrocabron show ?



A. 3

B. 5

C. 4

D. 6

Answer: B

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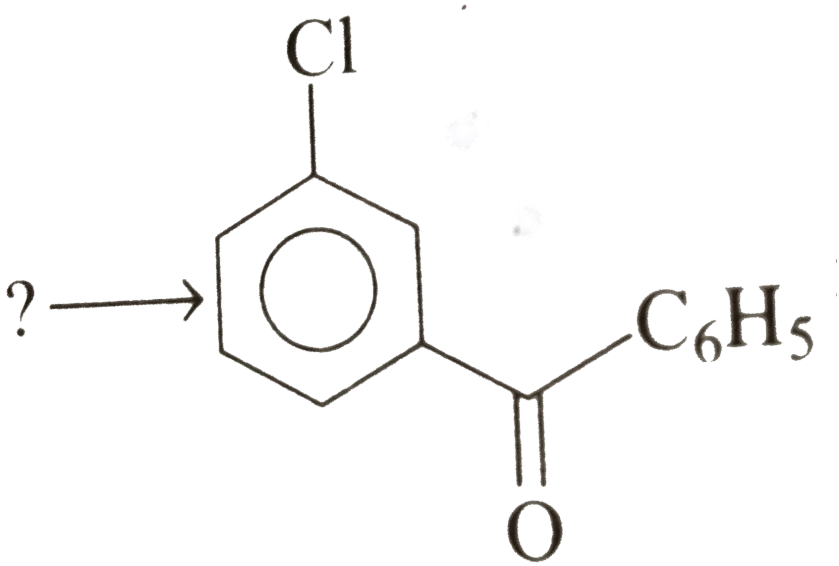
4. For this reaction ?



, the best reactnats are :

A. $C_6H_5Cl + C_6H_5 - \overset{O}{\overset{||}{C}} - Cl, AlCl_3$

B. $C_6H_5 - \overset{O}{\overset{||}{C}} - CH_3 + Cl_2. , FeCl_3$

C. $C_6H_5 - Cl - C_6H_5 + Cl_2, FeCl_3$ followed by oxidation

D. none the yield the desired product

Answer: B

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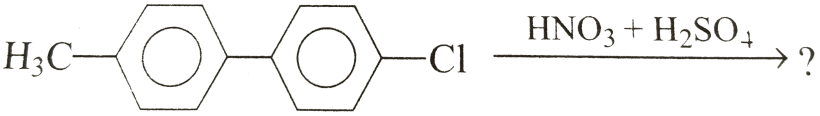
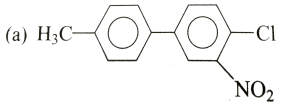
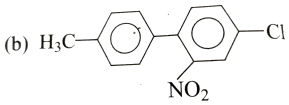
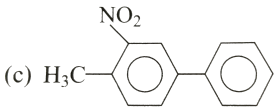
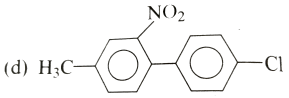
5. 

? Identify the major product

A. 

B. 

C. 

D. 

Answer: C

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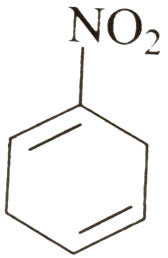
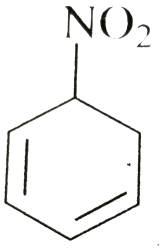
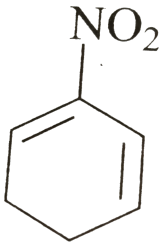
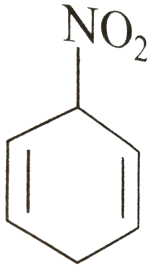
6. Birch reduction of nitrobenzne will produce :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: D

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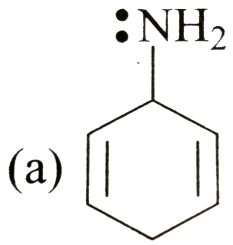
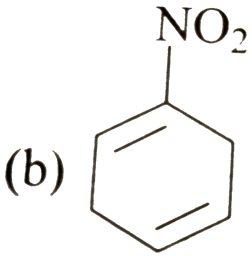
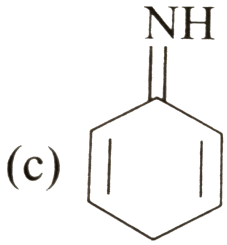
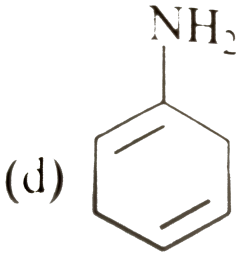
7. Birch reduction of aniline will produce :

A. 

B. 

C. 

D. 

Answer: D

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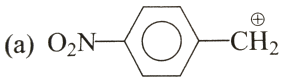
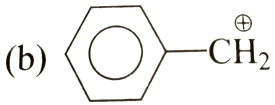
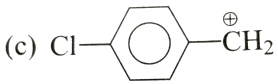
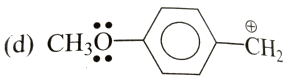
8. Most stable carbocation is :

A. 

B. 

C. 

D. 

Answer: D

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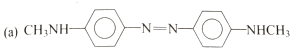
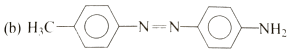
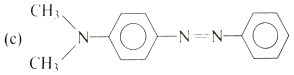
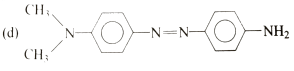
9. Aniline when diazotised in cold and then treated with dimethyl aniline gives a coloured product . Its structure would be :

A. 

B. 

C. 

D. 

Answer: C

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10. Rank the following compounds in the order of decreasing reactivity for bromination

$C_6H_5 - \overset{\oplus}{N}Me_3, C_6H_5 - CH_2 - \overset{\oplus}{N}Me_3, C_6H_5 - NMe_2, C_6H_5 - CH_3$

A. $3 > 4 > 2 > 1$

B. $1 > 3 > 4 > 2$

C. $3 > 4 > 1 > 2$

D. $4 > 3 > 1 > 2$

Answer: A

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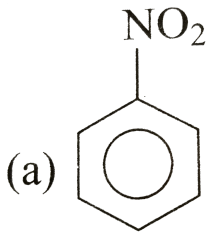
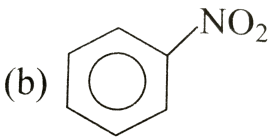
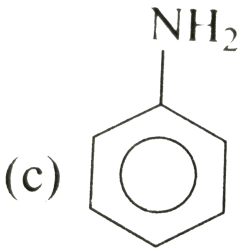
11. Which of the following compounds will not gives Friedel-Cafts reaction ?

A.



B.





C.

D. all of these

Answer: D

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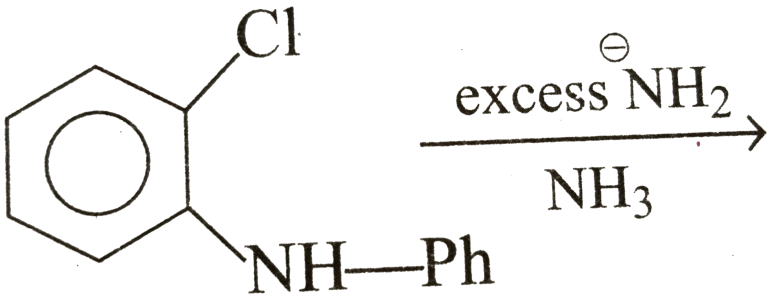
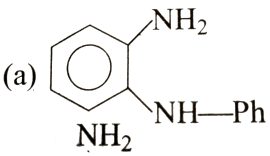
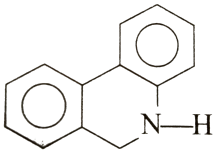
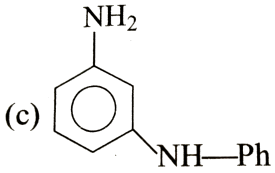
12. Find out correct product of the following reaction :



A. 

B. (b) 

C. (c) 

D. 

Answer: C

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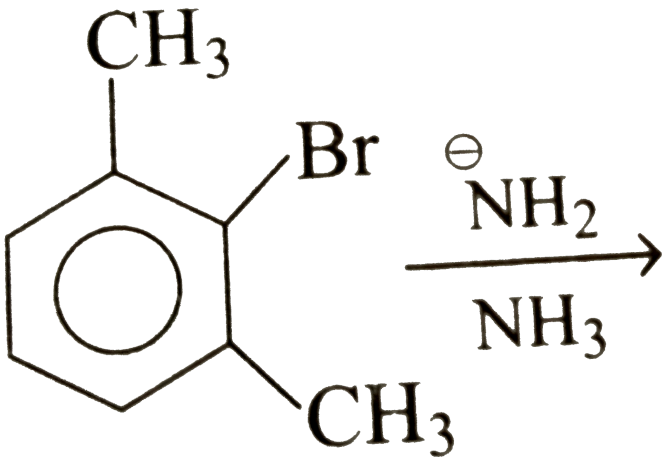
13. Find out correct statement for this reaction :



A. compounds shows elimination addition reaction

B. reaction is addition elimination

C. reaction is also know as cine substitution

D. no reaction

Answer: D

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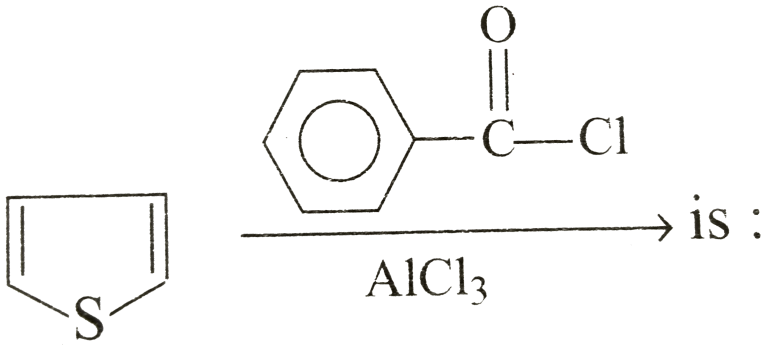
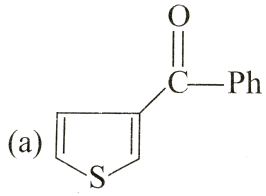
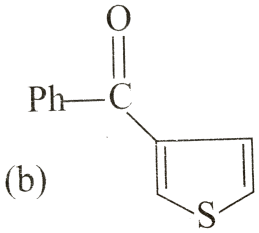
14. Major product form in the reaction



A.



B.



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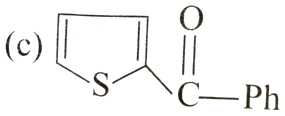
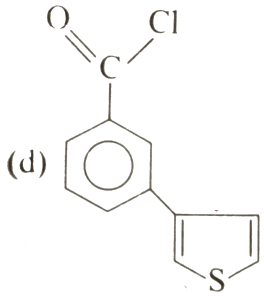


D. 

Answer: C

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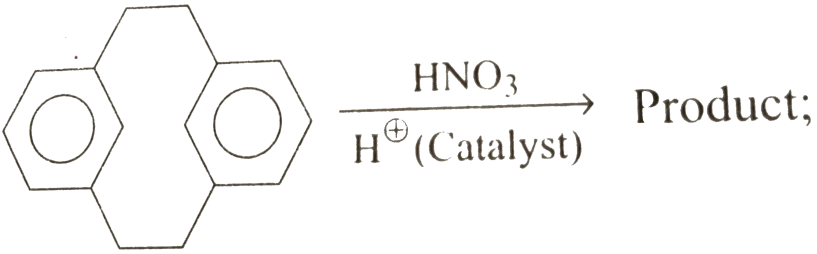
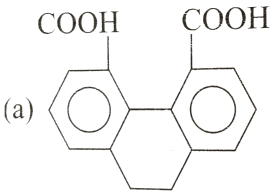
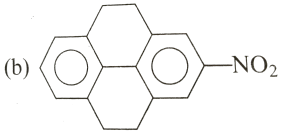
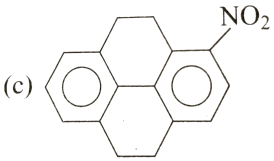
15. 

product of the reaction will be :

A. 

B. 

C. 

D. All are incorrect

Answer: B

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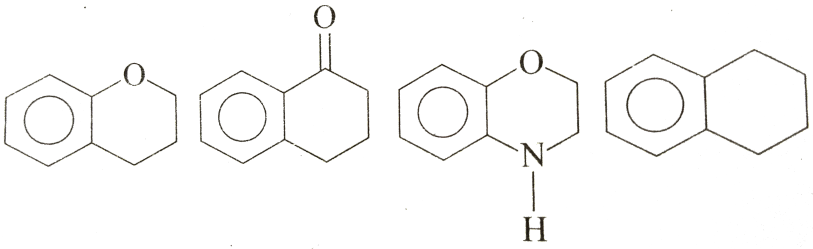
16. Rank the following compound in decreasing order of reaction reactivity in electrophilite aromatic substitution reaction :



A. $3 > 1 > 2 > 4$

B. $4 > 3 > 2 > 1$

C. $3 > 1 > 4 > 2$

D. $1 > 3 > 4 > 2$

Answer: C

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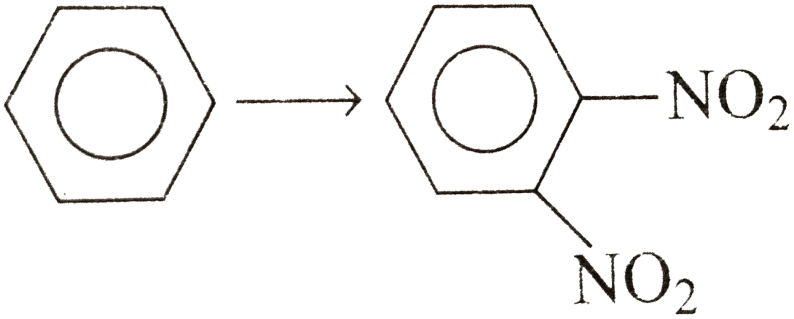
17. Given the best reactions sequence for the following transformation :



A. $\xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[H_2SO_4]{SO_2} \xrightarrow[HCl]{Fe} \xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[H_2O]{H^{\oplus}} \xrightarrow{CF_3CO_3H}$

B. $\xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[HCl]{Fe} \xrightarrow{CH_3COCl} \xrightarrow[H_2SO_4]{SO_3} \xrightarrow[H_2SO_4]{HNO_3} \xrightarrow{H^{\oplus}/H_2O} \xrightarrow{CF_3CO_3H}$

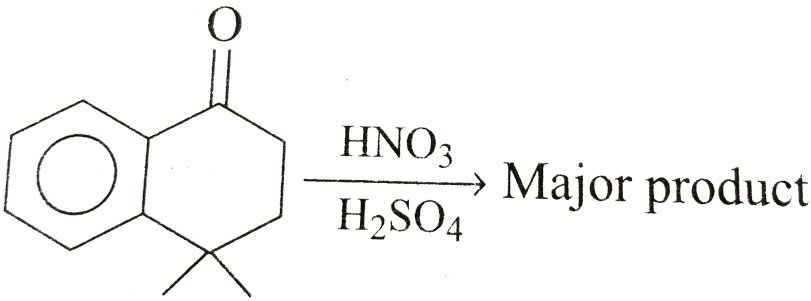
C. $\xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[HCl]{Fe} \xrightarrow{CH_3COC} \xrightarrow[H_2SO_4]{HNO_3} \xrightarrow{CF_3CO_3H}$

D. $\xrightarrow[H_2SO_4]{SO_3} \xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[HCl]{Fe} \xrightarrow{CH_3COCl} \xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[H_2O]{H^{\oplus}} \xrightarrow{CF_3CO_3H}$

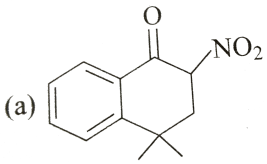
Answer: D

Watch Video Solution

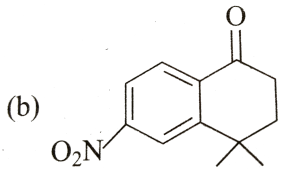
18. Given the major product of the following reaction



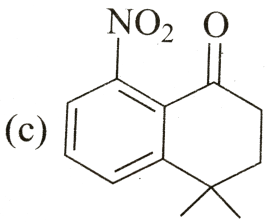
A.

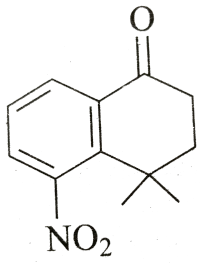


B.



C.



D. (d) 

Answer: D

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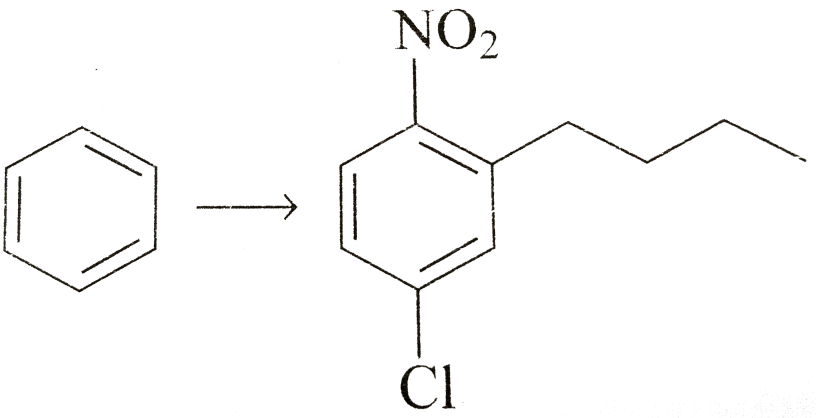
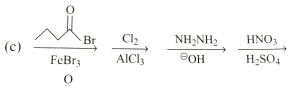
19. Choose the best sequence of reaction to complete the following reaction

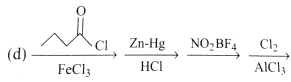
:



A. (a) $\xrightarrow[AlCl_3]{Cl_2}$  $\xrightarrow[FeBr_3]{Br}$ $\xrightarrow[H_2SO_4]{HNO_3}$

B. (b) $\xrightarrow{NO_2BF_4}$  $\xrightarrow[FeBr_3]{Br}$ $\xrightarrow[HCl]{Zn\text{-}Hg}$ $\xrightarrow[AlCl_3]{Cl_2}$ $\xrightarrow{CF_3CO_3H}$

C. 

D. 

Answer: C

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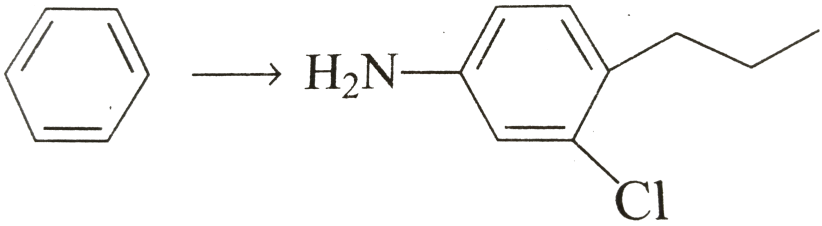
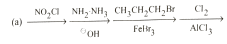
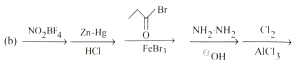
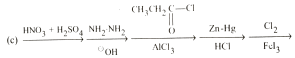
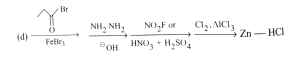
20. Choose the best reaction sequnce for the following converssion :



A. 

B. 

C. 

D. 

Answer: D

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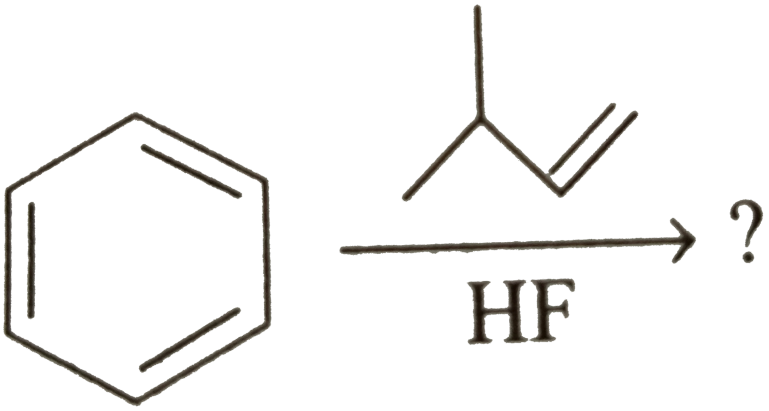
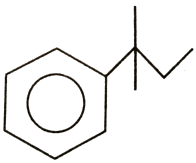
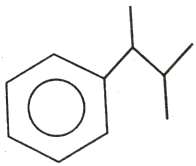
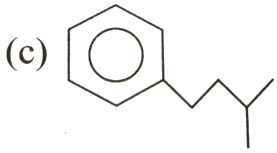
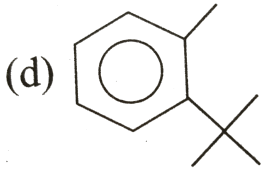
21. Given the major product of the following reaction :



A. (a) 

B. (b) 

C. 

D. 

Answer: A

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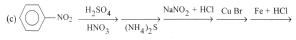
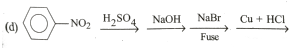
22. Which is the best way to prepare m-bromonailine ?

A. Aniline $\xrightarrow{H_2So_4}$ $\xrightarrow{Br_2}$ $\xrightarrow{\overset{\oplus}{H}/H_2O}$

B. 

C. 

D. 

Answer: C

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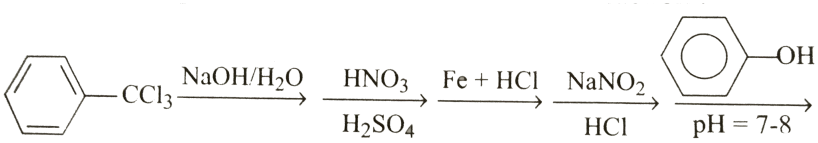
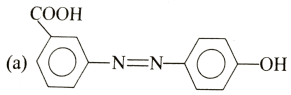
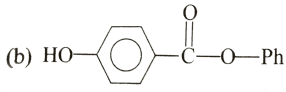
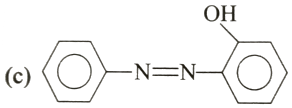
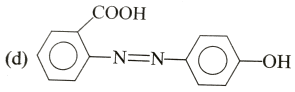
23. Select the final product of following sequence of reaction



A. 

B. 

C. 

D. 

Answer: A

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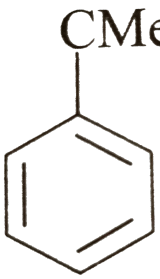
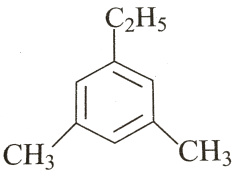
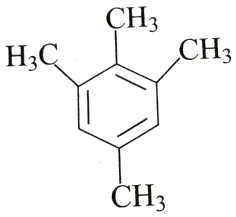
24. $A(C_{10}H_{14}) + Cl_2, \Delta \rightarrow C_{10}H_{13}Cl$(one isomaer)

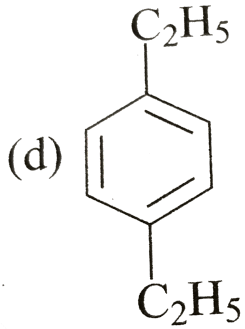
$A + Cl_2 / FeCl_3 \rightarrow C_{10}H_{13}Cl$ (two isomers)

Possible structure of A is :

A. (a) 

B. (b) 

C. (c) 

D. 

Answer: D

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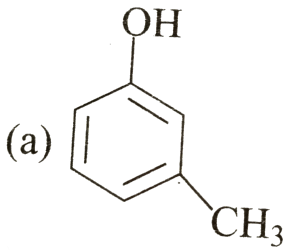
25. A compound 'A' (C_7H_8O) is insoluble in water, dilute HCl and aqueous $NaHCO_3$ but soluble in dilute NaOH . When A is treated with $Br_2 - H_2O$, it is converted into a compound of formula $C_7H_5Obr_3$. Compound A is :

A. 

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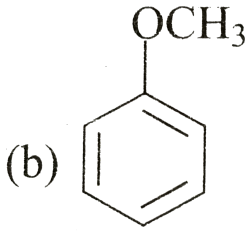
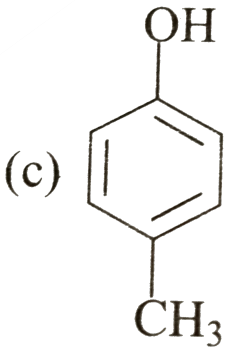
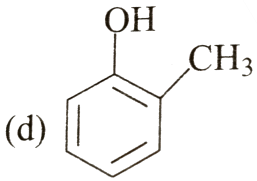


C.



D.



Answer: A

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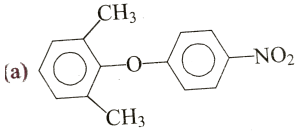
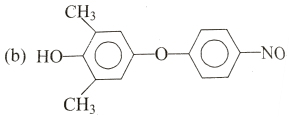
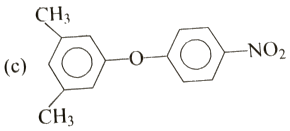
Level 3 (Q.101 To Q.125)

1. The major product of reaction,



A. 

B. 

C. 

D. none of these

Answer: A

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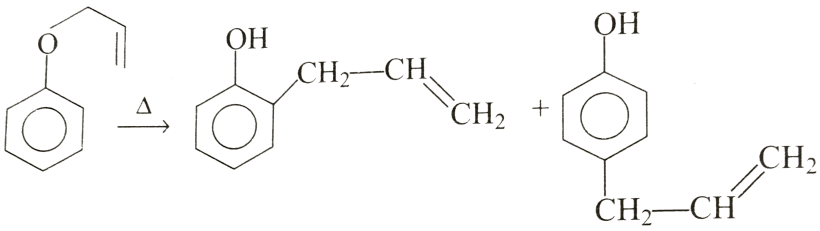
2.



Converstion of A into mixture of B C by action of heat is an example of :

A. Clasien rearrangent

B. Cope elimination

C. Frise rearrangement

D. Benzidic rearrangment

Answer: A

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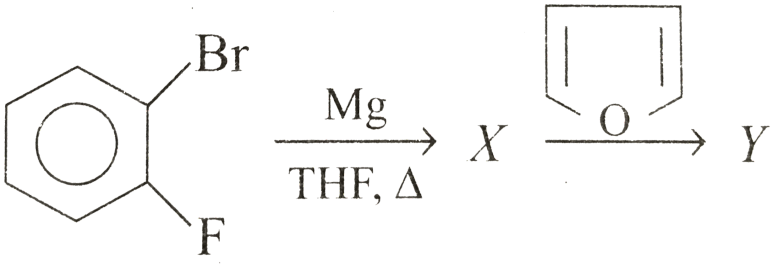
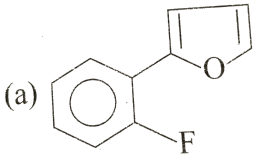
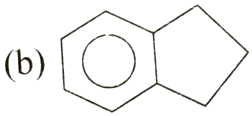
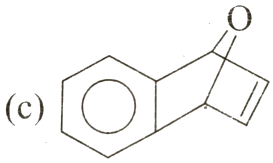
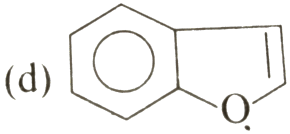
3. Consider the following sequence of reactions :



A. 

B. 

C. 

D. 

Answer: C

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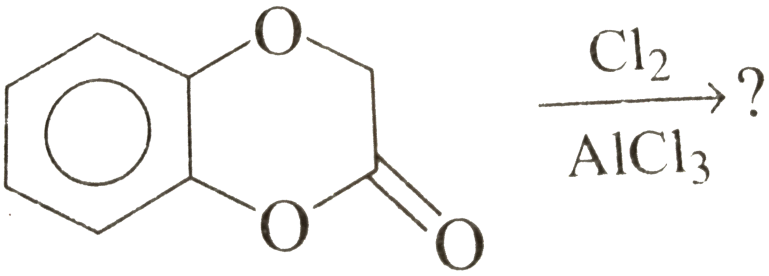
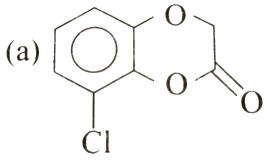
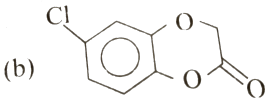
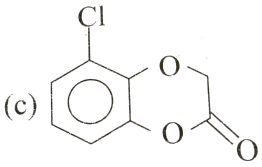
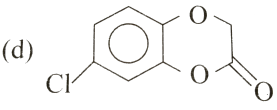
4. Predict major product in the following reaction



A. 

B. 

C. 

D. 

Answer: D

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5. What function does HNO_3 serve in the reaction of benzene with I_2 to produce iodobenzene ?

A. The HNO_3 convrert the $\overset{\oplus}{I}$ to I_2

B. HnO_3 serve as catalyst

C. HNO_3 convert I_2 to HI

D. HNO_3 convert I_2 to $\overset{\oplus}{I}$

Answer: D

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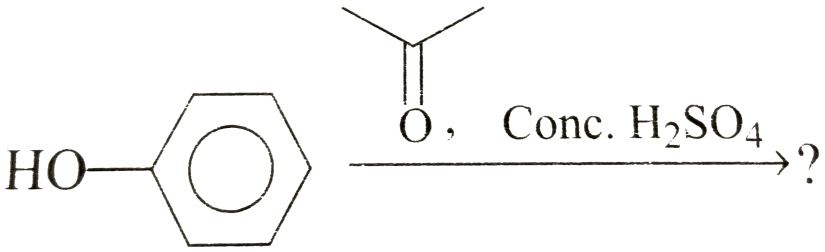
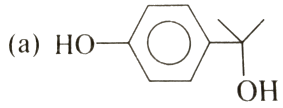
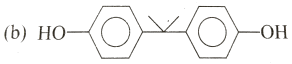
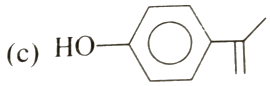
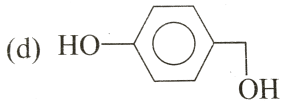
6. Find out currect produced of following reaction



A. 

B. 

C. 

D. 

Answer: B

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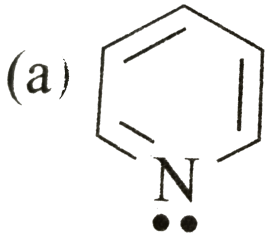
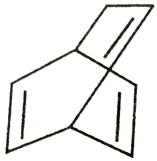
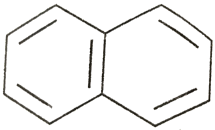
7. Which of the following compounds would not be considered aromatic in its behaviour ?

A. 

B. (b) 

C. 

D. (d) 

Answer: B

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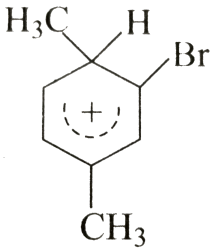
8. Which of the following structure most closely respresent as intermedite in the electrophilic brominatin of para -xylene ?

A. (a) 

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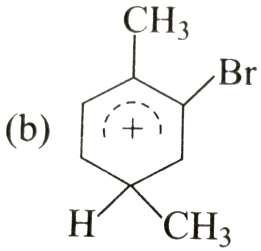

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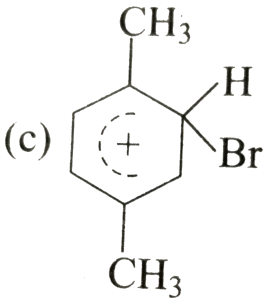
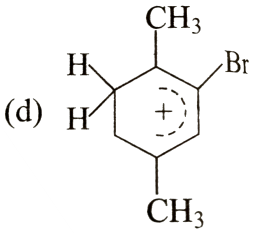


D.



Answer: C

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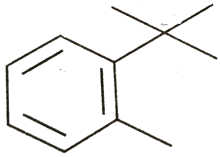
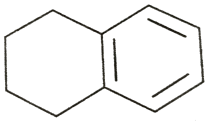
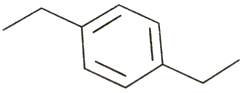
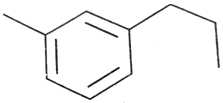
9. Which of the follwonig compounds from ortho- benzenedicarboxiylic acid when oxidized by hot aqueous $KMnO_4$?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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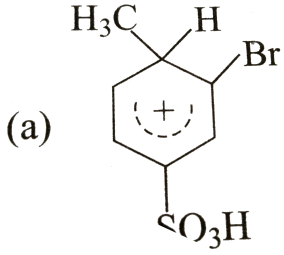
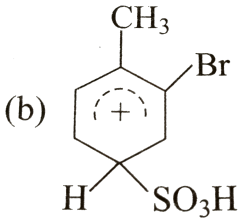
10. Electrophilic bromination of p- toluene sulphonic acid, followed by heat with 50% H_2SO_4 produces orhto-bromotoluenc . Which of the following intermediate lends to this product ?

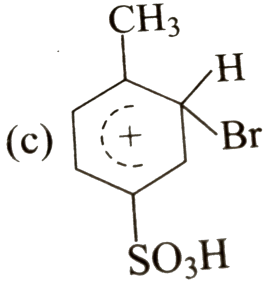
A.



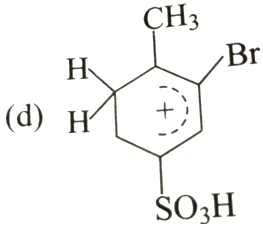
B.



C.



D.



Answer: C

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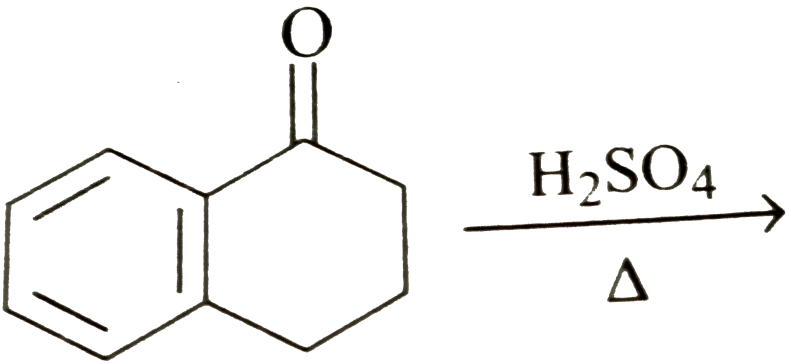
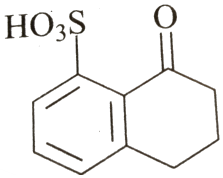
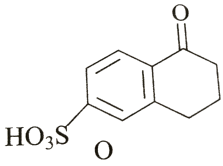
11. Which of the following is the major produced from the sulphonation of α - tetralone ?



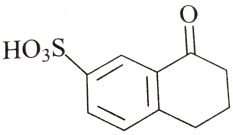
A. (a)

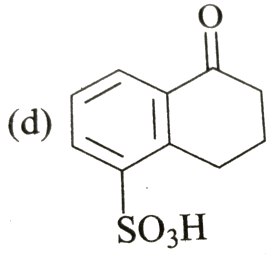


B. (b)



C. (c)



D. (d) 

Answer: C

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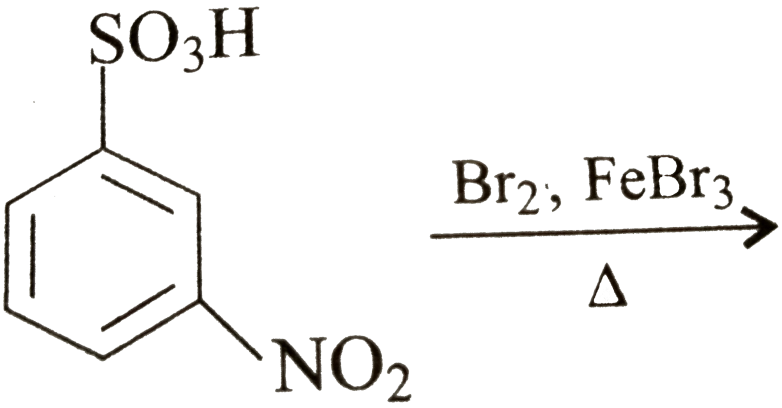
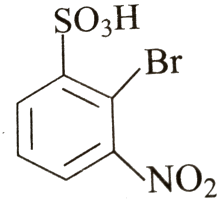
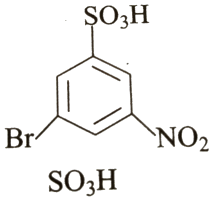
12. Which of the following is the major produced from bromaniation of metal-nitrobezence sulphonic acis ?



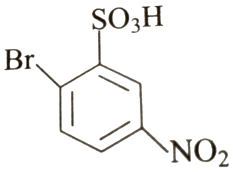
A. (a)



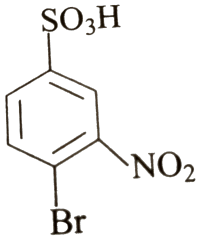
B. (b)



C. (c)



D. (d)



Answer: B

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13. When Friedei-Carfts alkylastion of benzene is carried out with 1 equivalent of tert -butyl chloride, a long amount of para-di-tert-butyl benzene is formed along with monosubstitution product.

Why does not all the bezene react to give tert - butyl benzene

(the momo- substitution product)?

A. The tert- bustly substituent activate the benzene ring to further substitution

B. The reaction is bimlecular, so two tert-bustly choride molecule combine with one bezene molecular

C. The tert-butyl substituent is large and favours reaction at para - position .

D. The disbstituted product is favoured in favoured in eqilibrium with mono-substitutedc ring.

Answer: A

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14. When para-bromotole is treated with $NaNH_2$ in ether the bromine is lost and mixture of para and meta $CH_3C_6H_4NH_2$ product is obtained. What is kind of intermediate would account for this ?

A. A charge delocalised anion formed by nucleophilic addition of $NH_2^{\ominus}$ to the benzene ring .

B. A charge delocalised anion formed by abstraction of methyl proton by the base $\overset{\ominus}{N}H_2$.

C. An aryl cation fromed by loss of bromide ion .

D. A benzene species formed by elimination of HBr.

Answer: D

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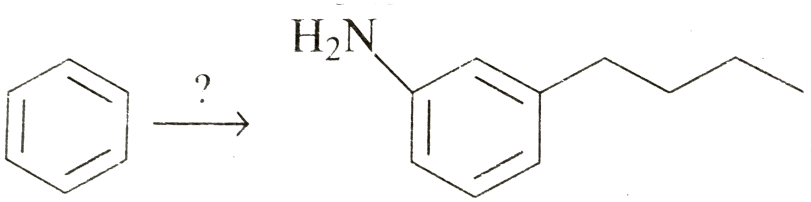
15. How might one best accomplish the following synthesis ?



A. (i) $C_4H_9 + AlCl_3, (ii) HNO_3$ and $heat, (iii) excessofH\_(2)$ and $Ptcatalyst$

B. (i) HNO_3 and $heat, (ii) C_4H_9Cl + AlCl_3, (iii) excessofH\_(2)$ and $Ptcatalyst$

C. (i) $C_3H_7COCl + AlCl_3, (ii) HNO_3$ and $heat, (iii) excessofH\_(2)$ and $Ptcatalyst$

D. (i) HNO_3 and $heat, (ii) C_3H_7COCl + AlCl_3, (iii) excessofH\_(2)$ and $Ptcatalyst$

Answer: C

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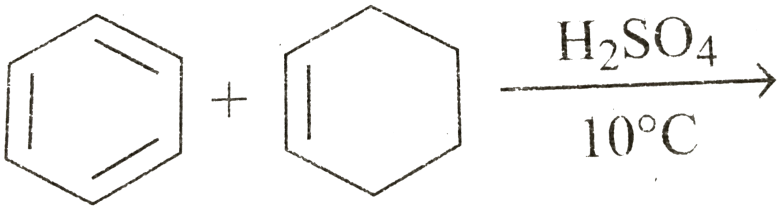
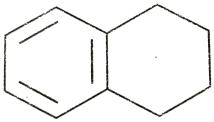
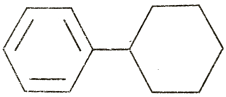
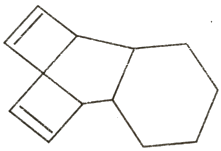
16. Which of the following is the likely outcome from this reaction ?



A. (a) 

B. (b) 

C. (c) 

D. $(C_{10}H_{10})_n$ polymer

Answer: B

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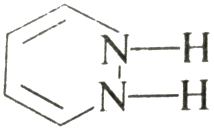
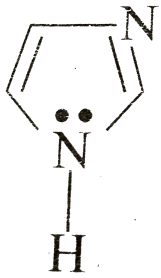
17. Which of the following herterocyclic compound would have armatic character .

A. (a) 

B. 

C. (c) 

D. (d) 

Answer: D

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18. Which of the following produre would be the best for perparation of a phenyl benzyl ether $(C_6H_5OCH_2C_6H_5)$?

A. $C_6H_5Cl + C_6H_5CH_2\overset{\ominus}{O}$

B. $C_6H_5\overset{\ominus}{O} + C_6H_5CH_2 - Cl$

C. $2C_6H_5Cl + Na_2O$

D. $2C_6H_5MgBr + HCHO$

Answer: D

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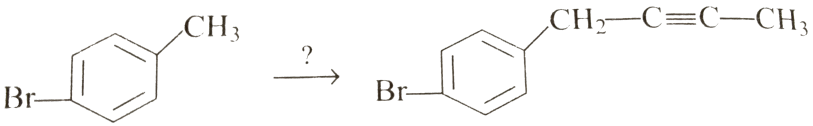
19. Which of the following procedures would be best for achieving for following reaction ?



A. (i)KHO and $heat$, $(ii)CH_3 - C \equiv C - Br$

B. (i) $KMnO_4$ and $heat, (ii) CH_3c \equiv \overset{\ominus}{,} (iii) \text{excess} H_2O$

C. (i) $MBS\text{in}\mathbb{C}l_4$ and $heat (ii) CH_3 - C \equiv \overset{\ominus}{}$

D. (i) $Mg \text{in ether}, (ii) CH_3 - C \equiv \overset{\ominus}{,} (iii) \text{excess} H_3PO_4$

Answer: C

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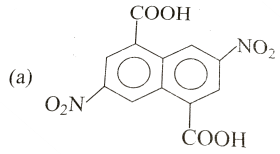
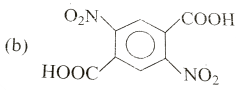
20. Which of the following carboxylic acid could be resloved reaction with an enantiomerically pure chiral amine ?

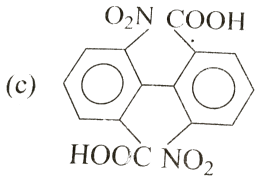
A.

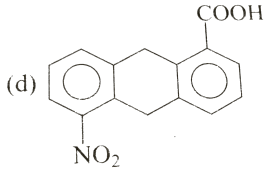


B.



C.



D. 

Answer: C

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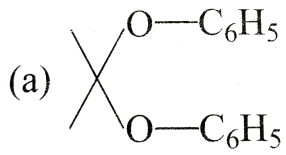
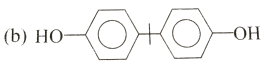
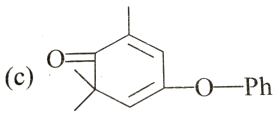
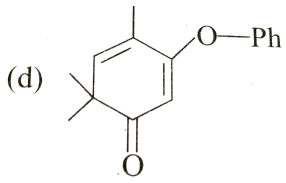
21. Phenol reacts with acetons in the presence of conc. H_2SO_4 to from a $C_{15}H_{16}O_2$ product , Which of the following compound is this product ?

A. 

B. 

C. 

D. 

Answer: B

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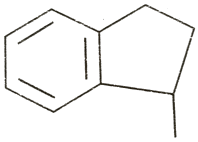
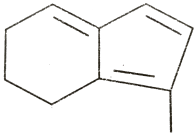
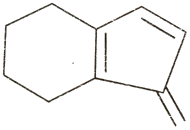
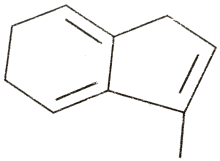
22. Which of the following isomeric hydrocarbon is most acidic ?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: D

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23. Devise a series of reaction to convert benzene into meta - chlorobromobenzene. Select rangent and condition from following table listing them in the order of use.

1. Conc. $H_2SO_4\Delta$	2. $Cl_2 + FeCl_3$ and heat	3. $NaNO_2$ + HCl 0°C	4. H_2, Pt catalyst	5. Mg in ether
6. PBr_3	7. H_3PO_4	8. HNO_3 (Conc.) + H_2SO_4 (Conc.)	9. Cu_2Br_2 + HBr	10. $(CH_3CO)_2O$ + Pyridine.

A. 1 them 2 them 6

B. 2 them 8 then 4 then 3 them 9

C. 8 then 4 then 10 then 2 then 2 then 3 then 9

D. 8 then 2 then 4 then 3 then 9

Answer: D

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24. Iodination of benzene is not easily carried out . How can one perpare para-ioda benzoic acid from p-nitrotoluene?

(a) (i) $Br_2 + FeBr_3$	(ii)	Mg in ether, CO_2	(iii)	$3H_2$ and Pt Catalyst	(iv)	HNO_2 0°C	(v)	KI solution
(b) (i) NBS in CCl_4 and Heat	(ii)	NaI in acetone	(iii)	$3H_2$ and Pt catalyst	(iv)	HNO_2	(v)	H_3PO_2
(c) (i) NBS in CCl_4 and Heat	(ii)	HNO_2, 0°C	(iii)	CuBr + HBr	(iv)	$KMnO_4$, Δ	(v)	KI solution
(d) (i) $KMnO_4$ and Heat	(ii)	Sn + HCl	(iii)	HNO_2, 0°C	(iv)	KI solution		

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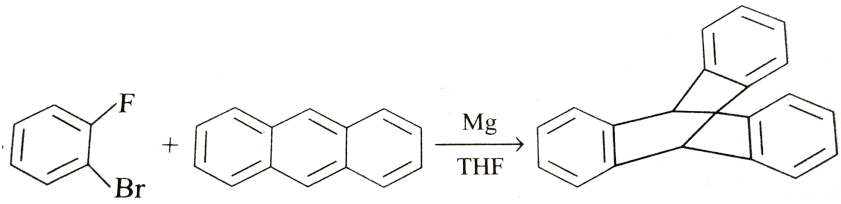
25. Complete the following reaction



A. Grignard reagent from dihalobenzen, adds to anthracne,followed nucleophilic displacedment of flourides anion to from the product .

B. Mg reduced anthreance to a reactive dianion that bonds to the dianion the dihalobenzne.

C. A Grignard reagent froms the dihalobenezne, metalates the anthecene this nucleophile adds to the reamainig fluorobenzene .

D. A Grignard reagent forms the dihalobenzene, decompose to benzyne, which then cycloadolas to anthrance .

Answer: D

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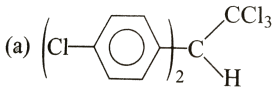
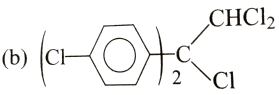
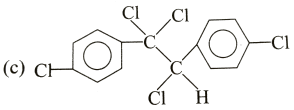
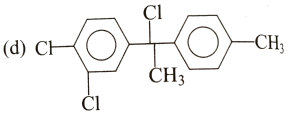
Level 3 (Q.126 To Q.150)

1. The insecticide DDT $(C_{14}H_9Cl_5)$ is perpared by heating chlorobezene with chloral $(\mathbb{C}l_3CHO)$ in the presence of conc. H_2SO_4. Which of the following compounds is DDT ?

A. 

B. 

C. 

D. 

Answer: A

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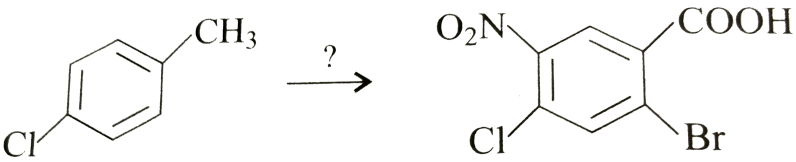
2. Which of the following prcedure would be best for achieving the following reaction ?



A.

$(i)Br_2 + FeBr_3$ $(ii)KMnO_4$ and $Heat$ $(iii)HNO_3$ and

B.

$(i)KMnO_4$ and $Heat$ $(ii)Br_3 + FeBr_3$ $(iii)HNO_3$ and

C.

$(i)NBS\text{in}CCl_4$ and $Heat$ $(ii)KMnO_4$ $(iii)HNO_3$ and H_2S

D.

$(i)MBS\text{in}CCl_4$ and $Heat$ $(ii)NaNO_2$ $(iii)KMnO_4$ and H

Answer: A

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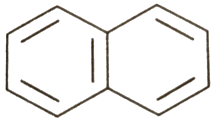
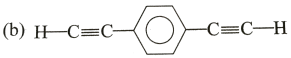
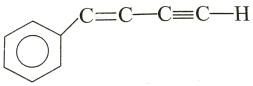
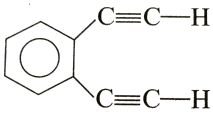
3. Compound A $(C_{10}H_{16})$ liberate 2 mole of CH_4 when treated with MeMgBr. On heating with $KMnO_4$ solution , A produces bezene dicarboxylic acid which on mononitration produces only one product and one no other isomer 'A' can be :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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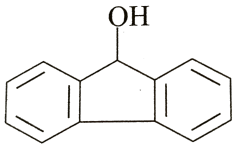
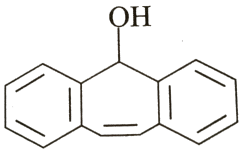
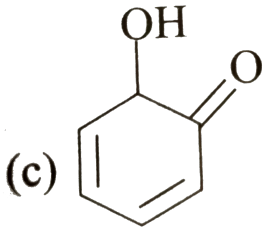
4. Which of the following alcholds would you expected to from carbocation most readily in H_2SO_4 ?

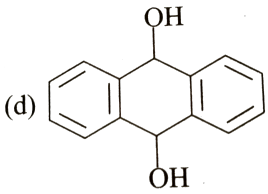
A. (a) 

B. (b) 

C.



D.



Answer: B

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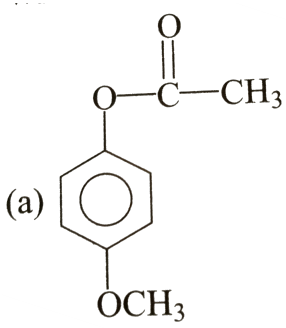
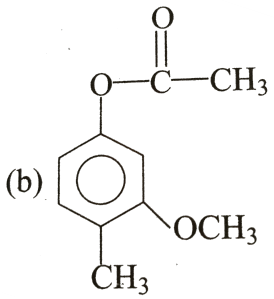
5. Which of the following compounds will not rerranege on heating with $AlCl_3$?

A.



B.



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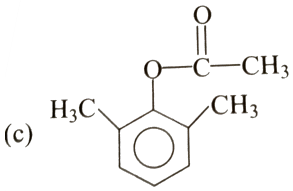
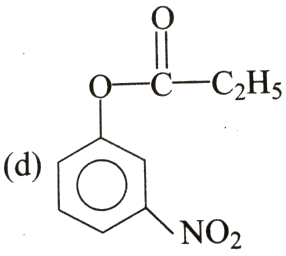


D.



Answer: D

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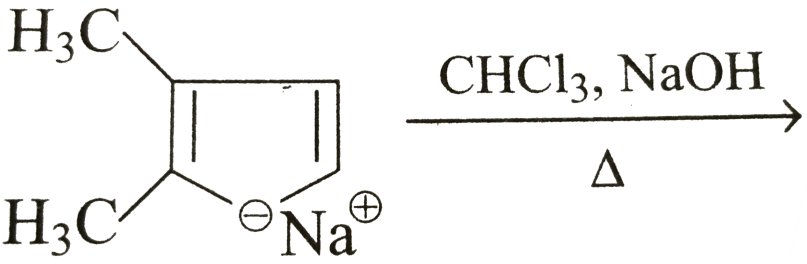
6. Which product is formed at the end of following reaction ?



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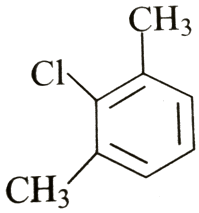
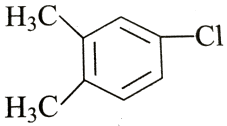
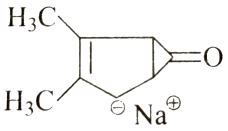


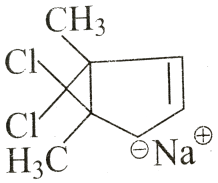
B. (b)



C. (c)



D. (d)



Answer: A

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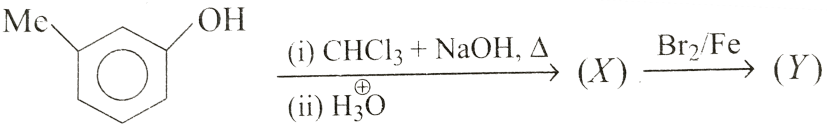
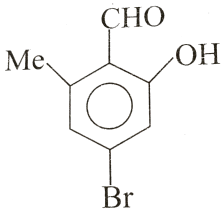
7. The product (Y) of the following sequence of reaction would is :



A. (a)



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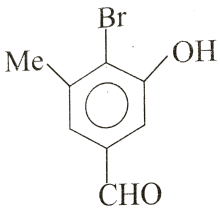
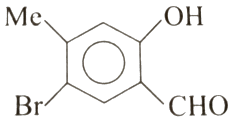
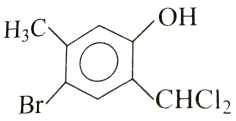


C. (c)



D. (d)



Answer: C

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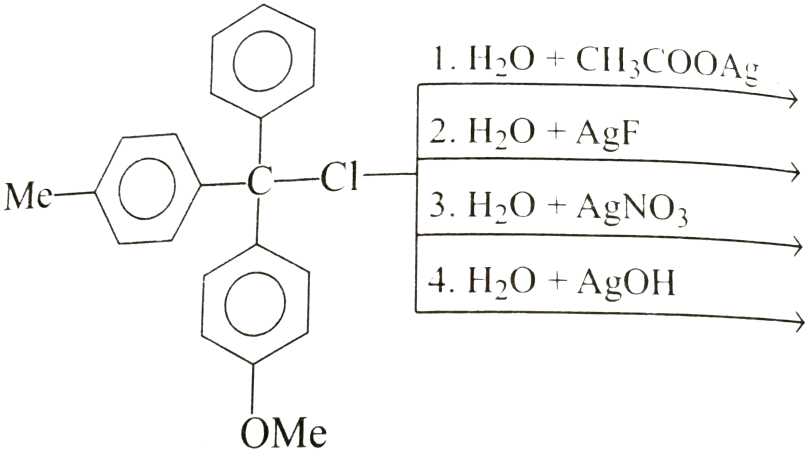
8. Consider the following reaction and select correct statement :



A. only one product will be fromed in each of these reaction

B. the rate of reaction remains the same in all the reactions.

C. there will be 100% racemisation in all reaction

D. the rate of reaction will be twice in 2nd reaction if conc . AgF is doubled

Answer: B

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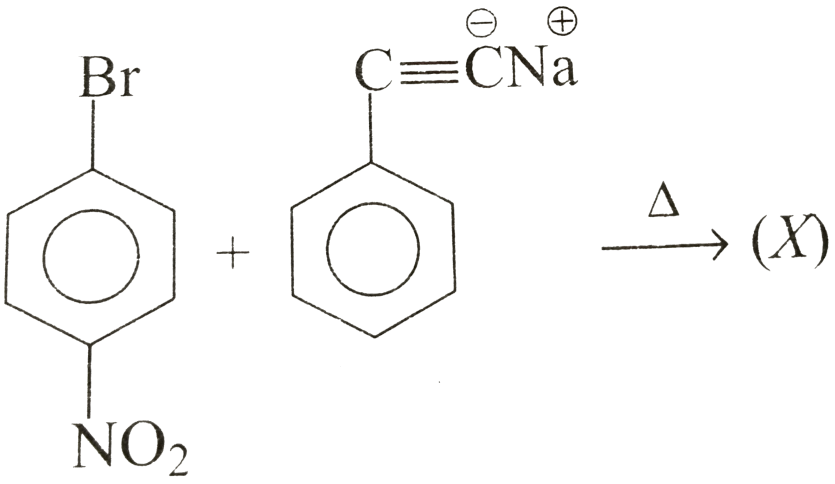
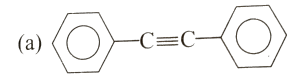
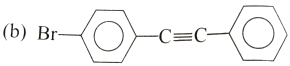
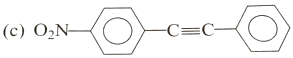
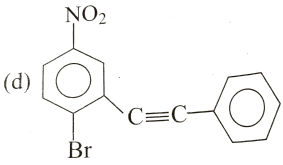
9. Complete the following reaction



A. 

B. 

C. 

D. 

Answer: C

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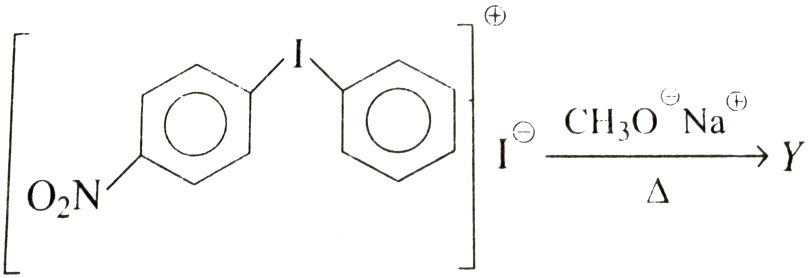
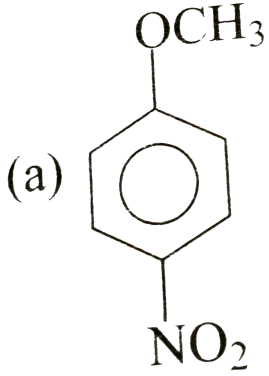
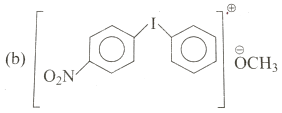
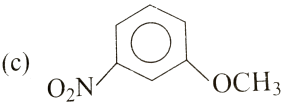
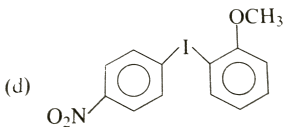


10. . Find out correct product 'Y'.

A. 

B. 

C. 

D. 

Answer: A

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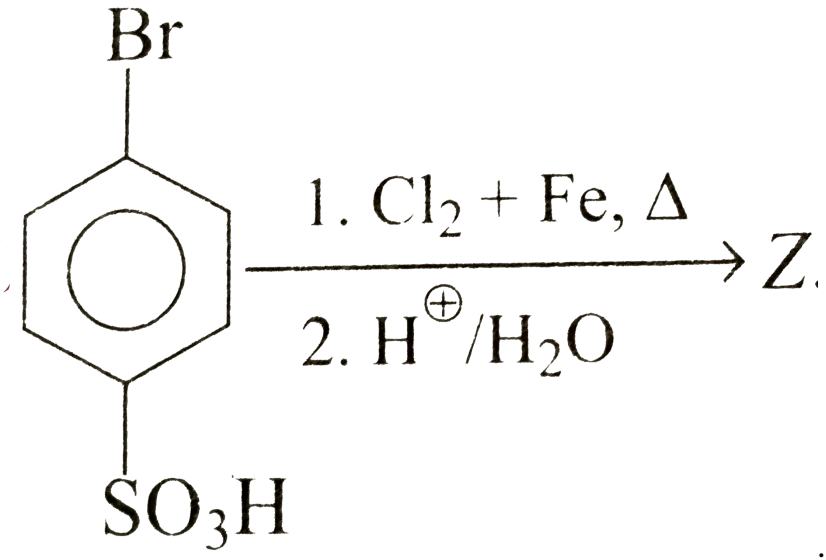
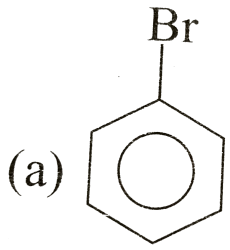
11. 

. Find out correct product 'Z'.

A. 

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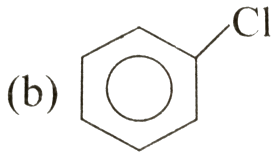

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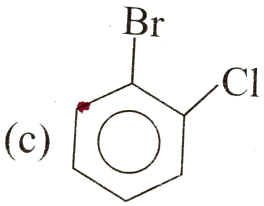
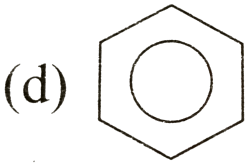


D.



Answer: C

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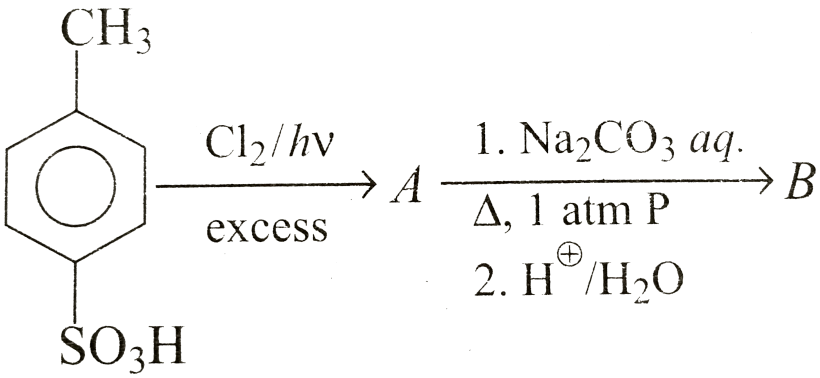
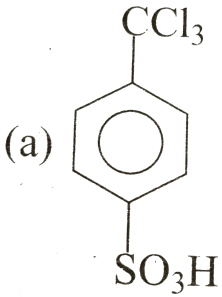
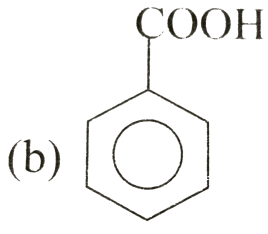
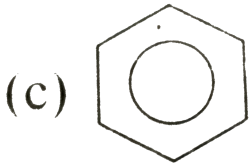
12.

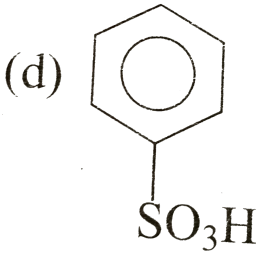


Identify B:

A. 

B. 

C. 

D. 

Answer: B

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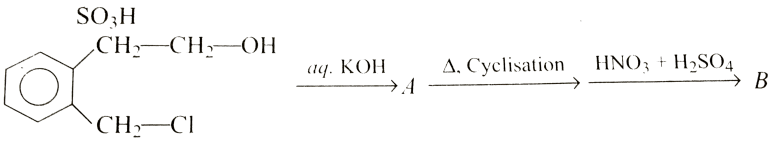
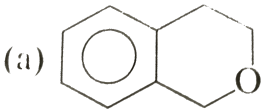
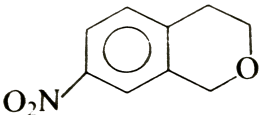
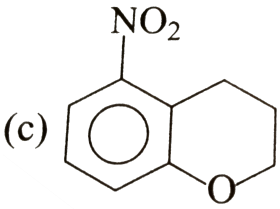
13. 

The product B is :

A. 

B. 

C. 

D. NONE OF THESE

Answer: B

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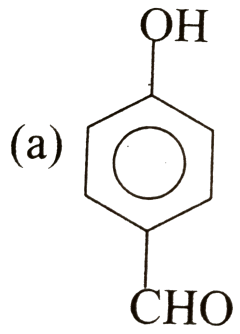
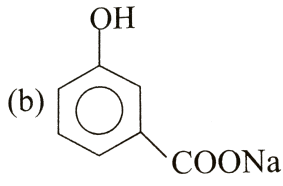
14. An organic compound A on treatment with $CHCl_3$ and KOH gives B and C, both of which, in turn, gives the same compound D when distilled with Zn dust. Oxidation of D yields E of the fromula $C_7H_6O_2$. The Na salt of E on heating with soda lime give F which can be also be obtained by distilling A with Zn dust Identify F.

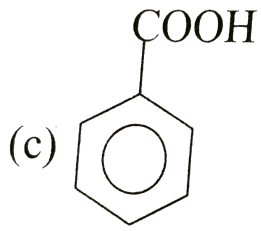
A.

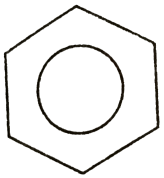


B.



C.



D. (d) 

Answer: D

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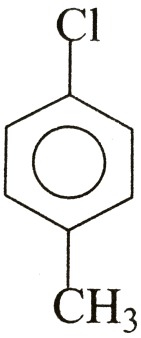
15. Compound A (C_7H_7Cl) react with aq. KOH at room temperature and give compound $D(C_7H_8O)$. Another isomer B gives only one mononitration product on treatment with $HNO_3 + H_2SO_4$ mixture . Isomer C gives comound $E(C_7H_5O_2Cl)$ on heating with $KMnO_4$ solution . E gives 3-chloro-4-nitrobezoic acid as major product . Identify compound D.

A. (a) 

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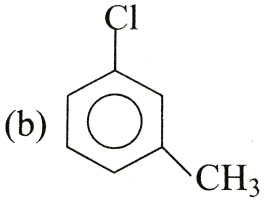

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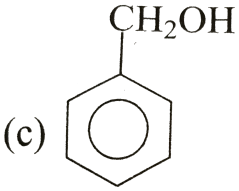
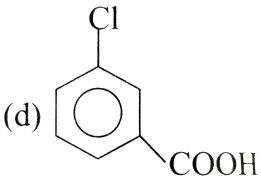


D.



Answer: C

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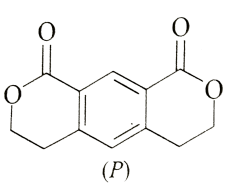
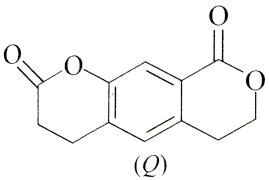
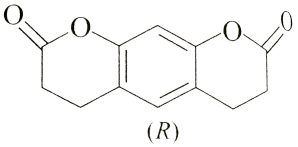
16. Arrage the following in decreasing order of reaction with $Cl_2 / AlCl_3$:







A. QgtRgtP

B. PgtQgtR

C. RgtQgtP

D. RgtPgtQ

Answer: C

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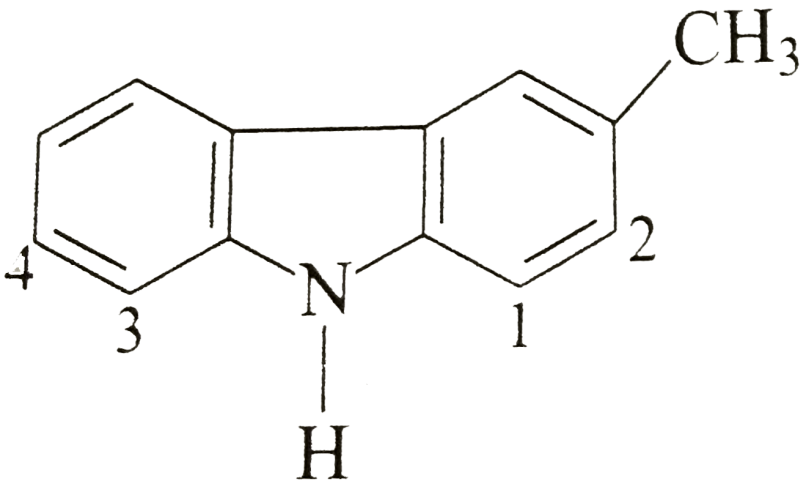

17.

Identify the positoin where, EAS reaction can take place :

A. 1

B. 2

C. 3

D. 4

Answer: A

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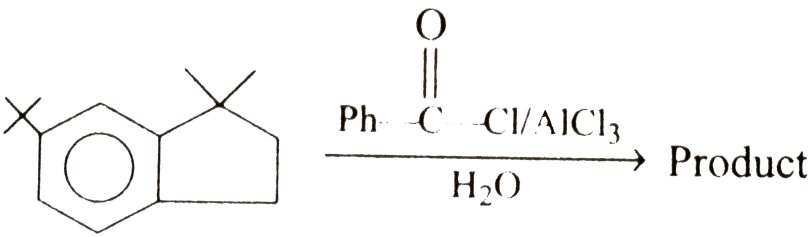
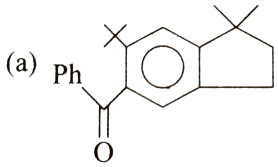
18. The major product of the reaction is :



A.



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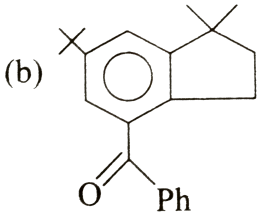
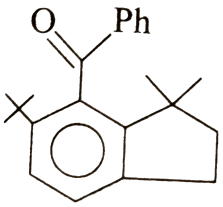


C. (c) 

D. none of thses

Answer: B

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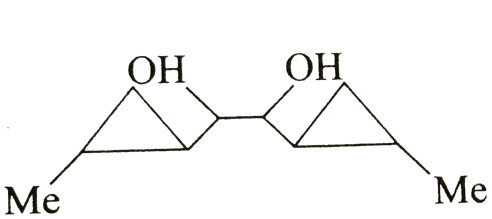
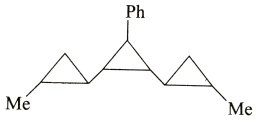
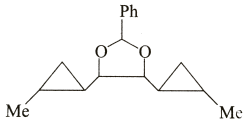
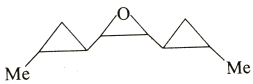
19. 

Product :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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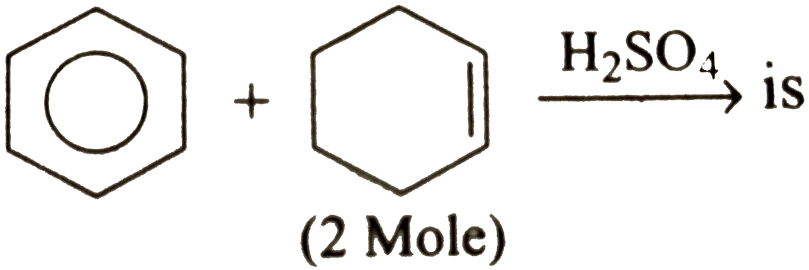
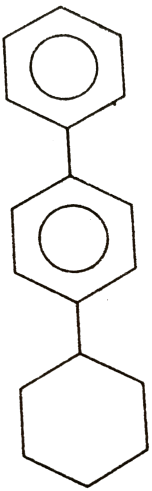
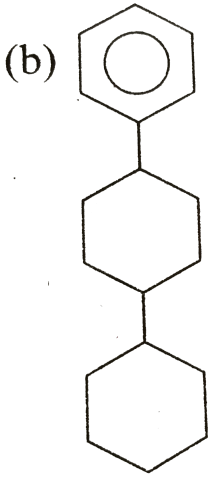
20. Major product of the reaction is :

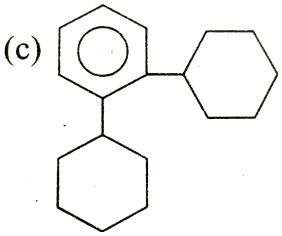


A. (a) 

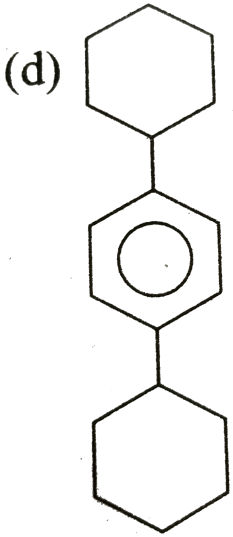
B.



C.



D.



Answer: D

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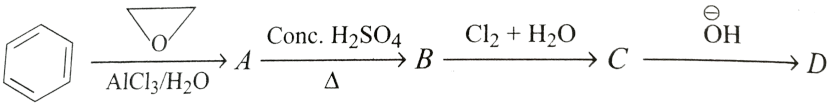
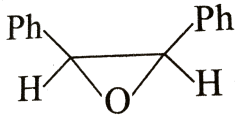
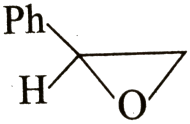
21. Complete the following reaction



A. (a)



B. (b)



C. (c) $Ph—\overset{\overset{O}{\|}}{C}—CH_3$

D. (d) $Ph—CH_2—\overset{\overset{O}{\|}}{C}—H$

Answer: D

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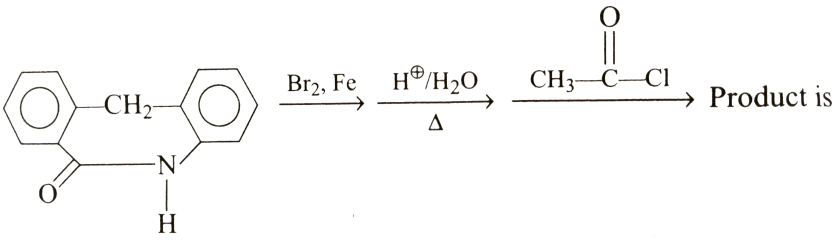
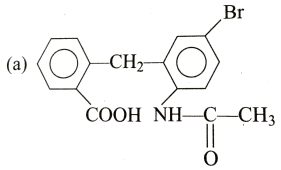
22. Complete the following reaction



A.



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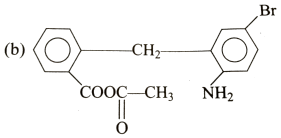

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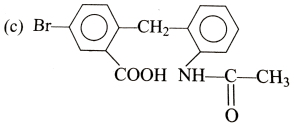
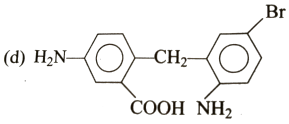


D.



Answer: A

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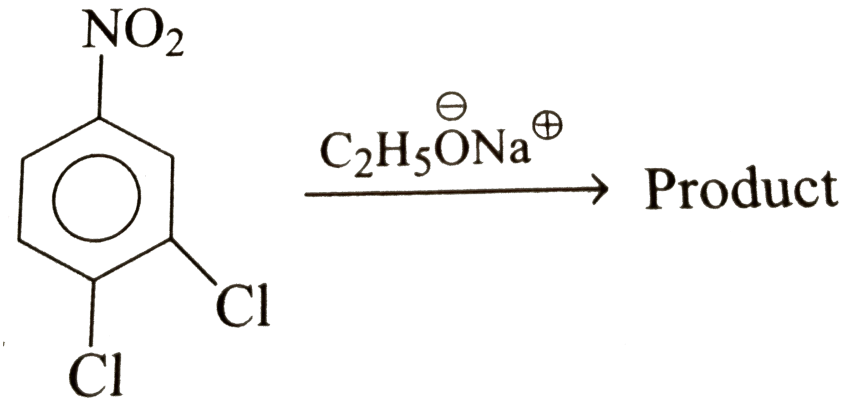
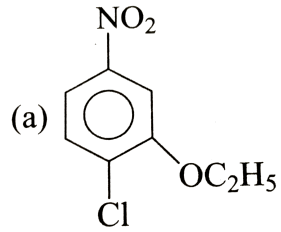
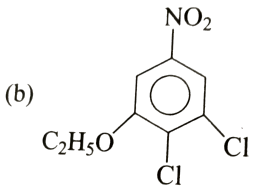
23. Complete the following reaction



A. 

B. 

C.

D.

Answer: C

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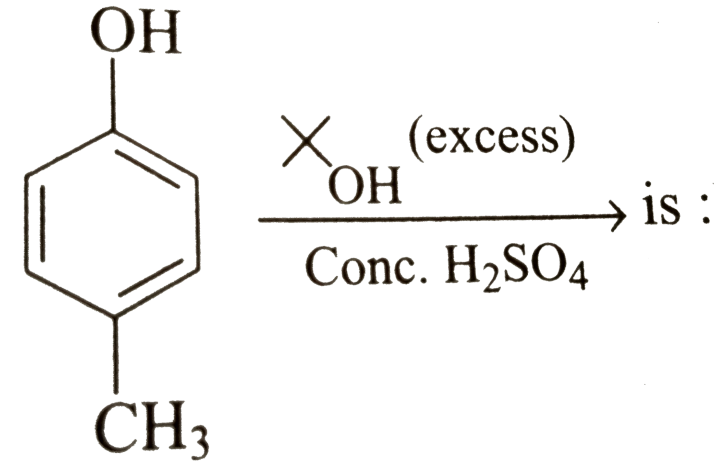
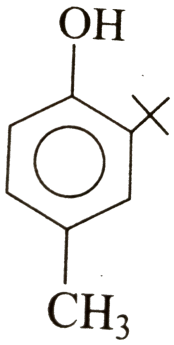
24. The product of the following reaction



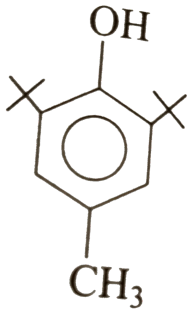
A.

(a)



B.

(b)



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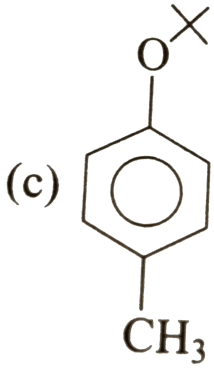
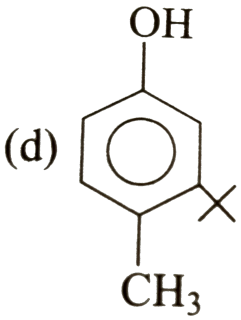


D.



Answer: B

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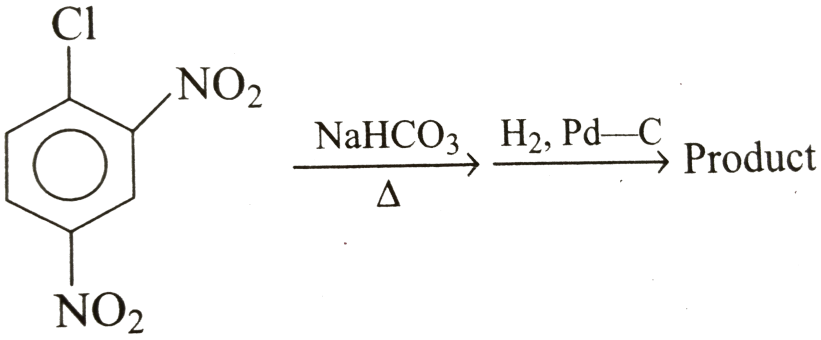
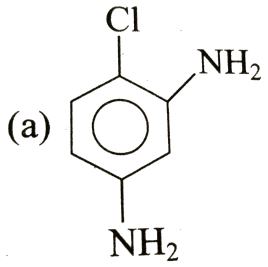
25. Complete the following reaction



A.



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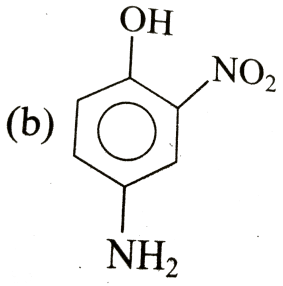
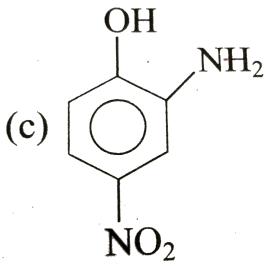
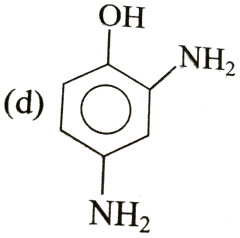


C.



(d) 

D.

Answer: D

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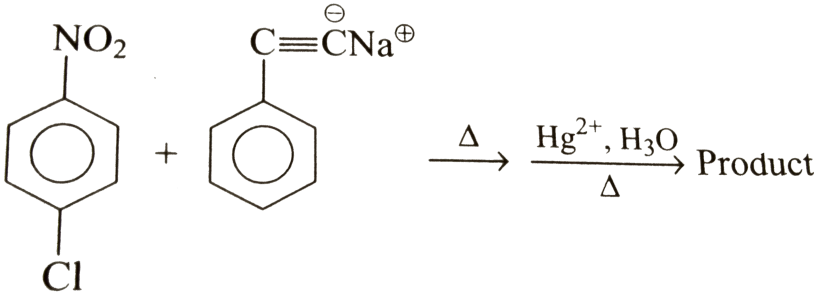
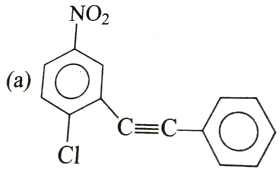
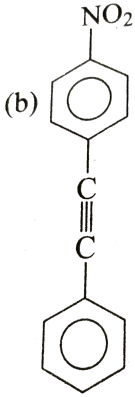
Level 3 (Q.151 To Q.160)

1. Complete the following reaction



A. 

B.



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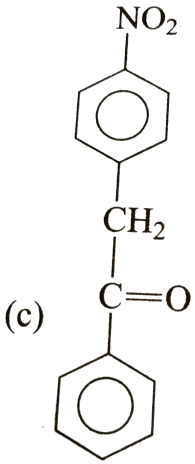
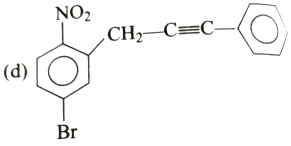


D.



Answer: C

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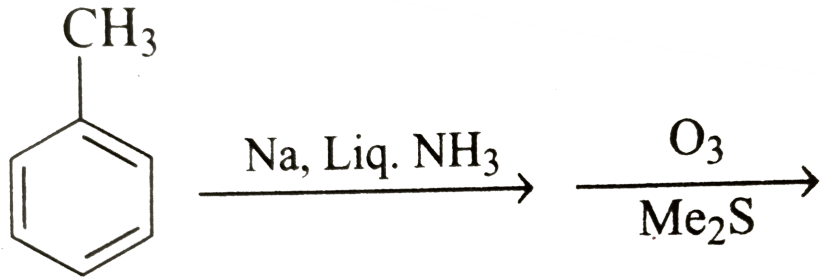
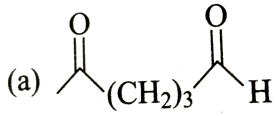
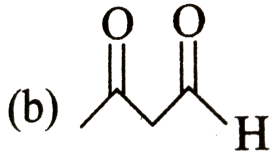
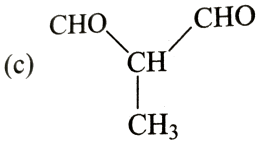
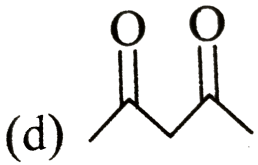
2. Complete the following reaction



A. 

B. 

C. 

D. 

Answer: B

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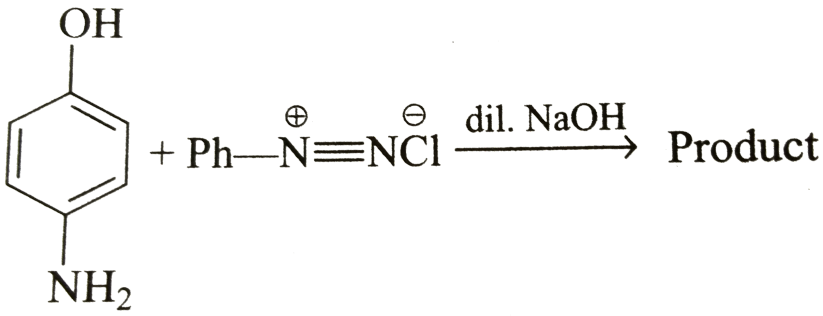
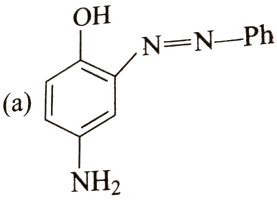
3. Complete the following reaction



A.



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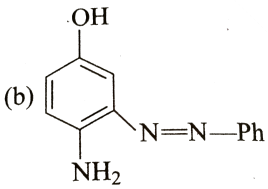

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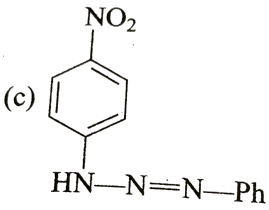
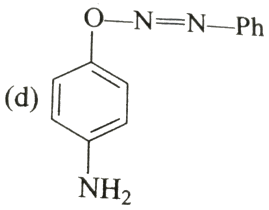


D.



Answer: A

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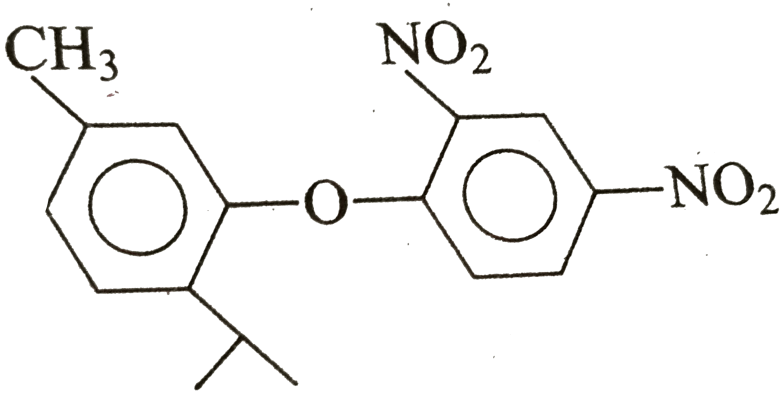
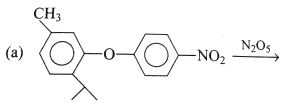
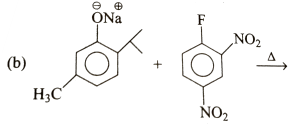
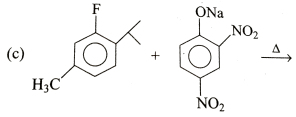
4. Which is the best synthesis of



A.



B. 

C. 

D. All are correct

Answer: B

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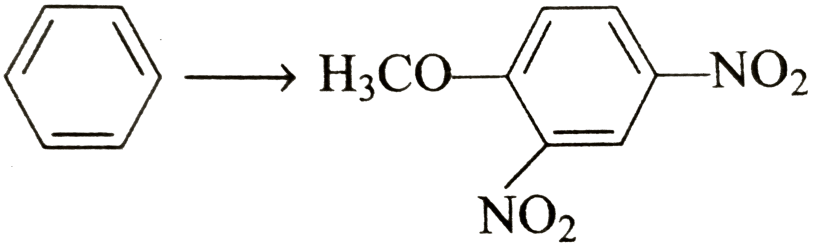
5. Which is best synthesis of



A. $\xrightarrow[FeBr_3]{Br_2} \xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[H_2So_4]{HNO_3} \xrightarrow[CH_3OH]{\overset{\oplus}{CH_3O}\overset{\ominus}{Na}}$

B. $\xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[FeBr_3]{Br_2} \xrightarrow[CH_3OH]{\overset{\ominus}{CH_3O}\overset{\oplus}{Na}}$

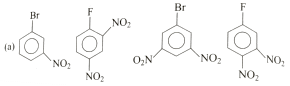
C. $\xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[FeBr_3]{Br_3} \xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[CH_3OH]{\overset{\ominus}{CH_3O}\overset{\oplus}{Na}}$

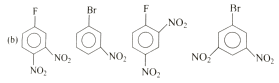
D. $\xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[FeBr_2]{Br_2} \xrightarrow[CH_3]{N\overset{\oplus}{a}OCH_3} \xrightarrow[H_2So_4]{HNO_3}$

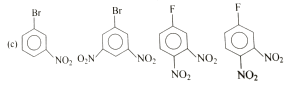
Answer: A

Watch Video Solution

6. Which of the following correctly ranks the halides in increasing order of reactivity towards $CH_3O^{\ominus}\,Na^{\oplus}$ in CH_3OH?

A. 

B. 

C. 

D. all are correct

Answer: C

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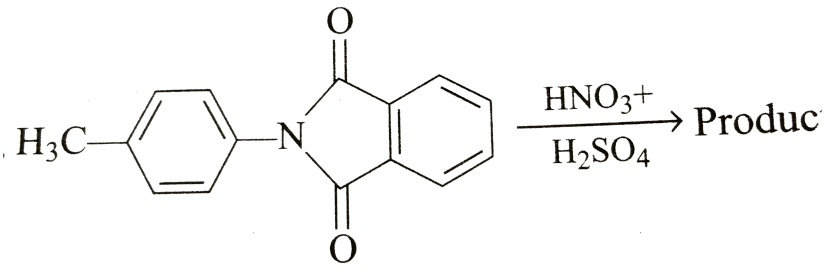
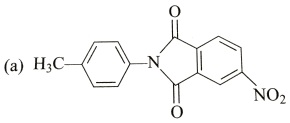
7. Complete the following reaction



A.



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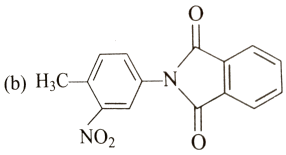
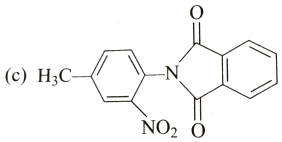


C.



D. no reaction

Answer: B

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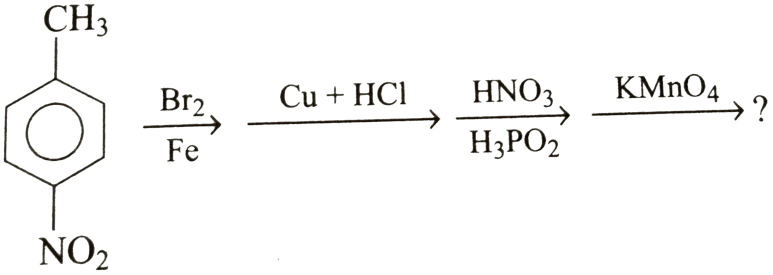
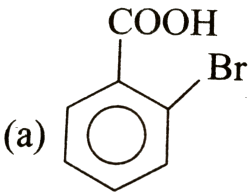
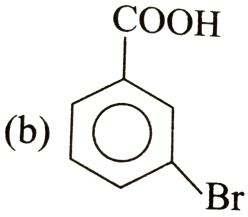
8. Find final product of the following reaction :



A.

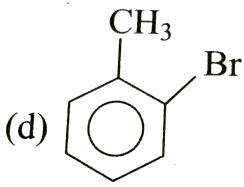


B.



C.

D.



Answer: A

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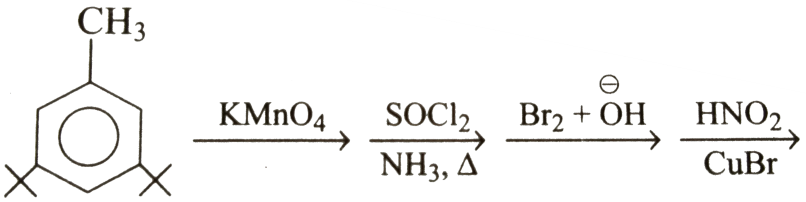
9. Find the final product of following sequence of reactions :



A. 

B. 

C. 

D. 

Answer: D

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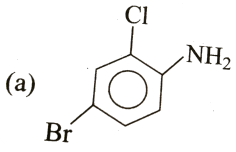
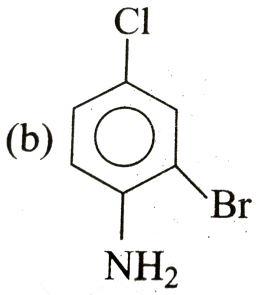
10. Find the final product of following sequence of reactions :



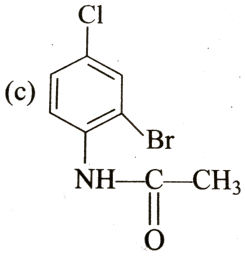
A.



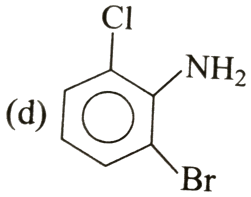
B.



C.



D.



Answer: B

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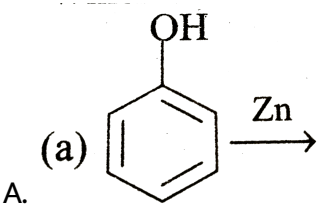
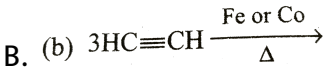
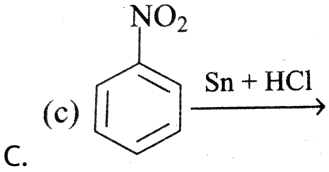
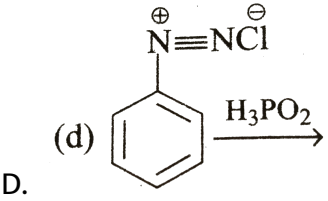
More Than One Correct (Q.1 To Q.25)

1. Which of the following reactions will produce benzene ?

A. 

B. 

C. 

D. 

Answer: A::B::C

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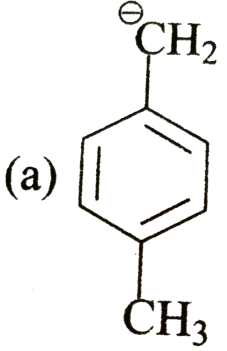
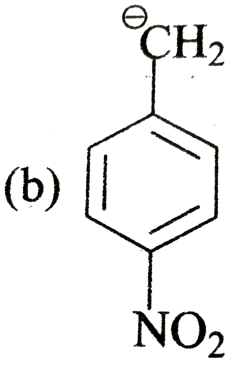
2. Which of the following anions are more stable than benzyl anion ?

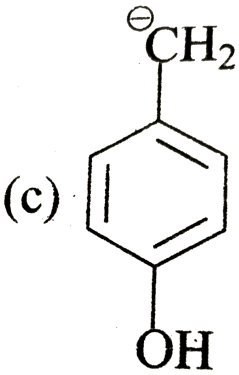
A.

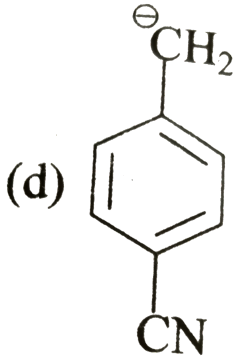


B.



C.





D.

Answer: B::D

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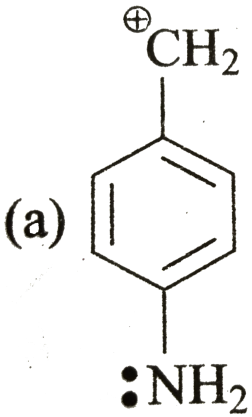
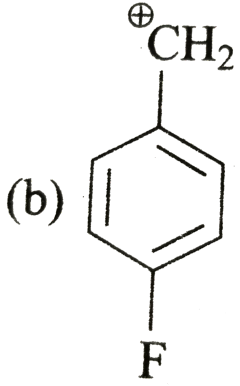
3. Which of the following cations are more stable than benzyl cation?

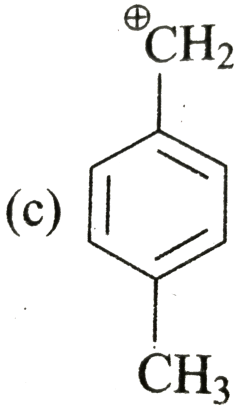


A.

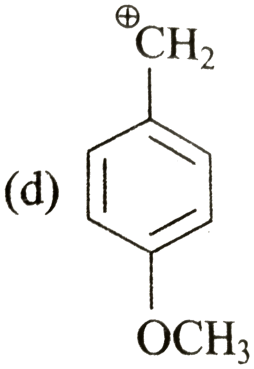
B.



C.



D.



Answer: A::C::D

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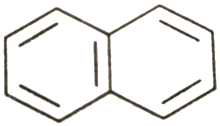
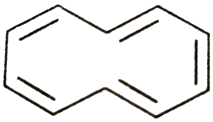
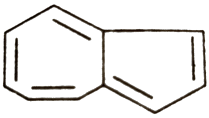
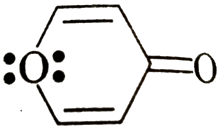
4. Choose the compounds below that are aromatic :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A::C::D

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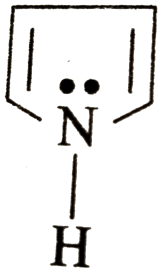
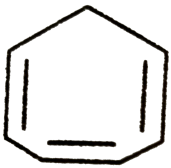
5. Choose the compounds below that are non-aromatic :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A::B::D

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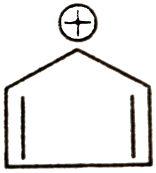
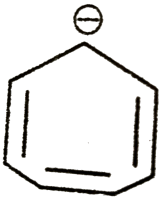
6. Choose the compounds below that are antiaromatic :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A::B::C

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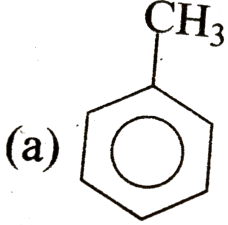
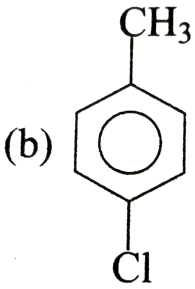
7. Which of the following will undergo Friedel-Crafts alkylation reaction ?

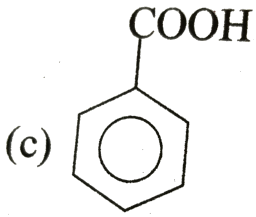
A.



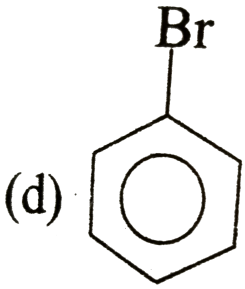
B.



C.



D.



Answer: A::B::C

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8. Which pairs are not required for a nucleophilic aromatic substitution reaction ?

A. An $-NO_2$ substituent and a strong electrophile.

B. A ring bearing a strong activating group and a strong acid.

C. A aryl halide with an- NO_2 and a strong nucelophile

D. An unsubstituted benzene ring and a strong eletrophile.

Answer: A::B::C

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9. Halogens are deactivating yet ortho,para directing in electrophilic aromatic substitution. Which statements do not explain this ?

A. A combination of inductive electron withdrawal and resonance electron release.

B. Inductive electrons withdrawal with no resoname effect.

C. A combination of inductive electron relase and resonance electron withrawal .

D. A combination of indiuction electrons release and resoname electrons release.

Answer: A::C::D

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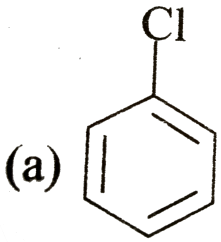
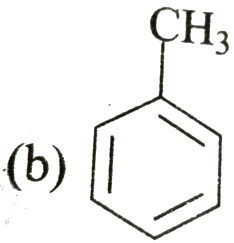
10. Which of the following are deactivating but orth, para

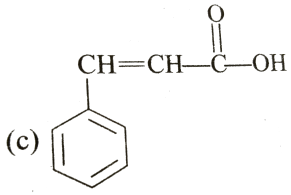
A.



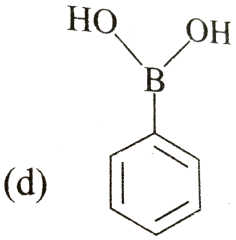
B.



C.



D.



Answer: A::C::D

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11. Choose the correct statements :

A. all activating group are ortho, para direacting

B. all deactivating group are meta directing .

C. directing nature of any group is decided by stability of sigma complex

D. halogens are deactivating but ortha, para directing .

Answer: A::C::D

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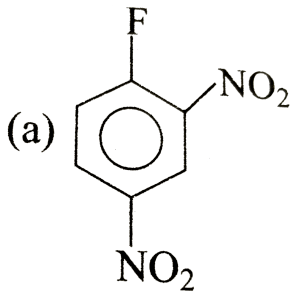
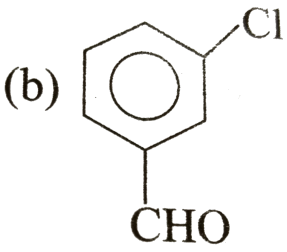
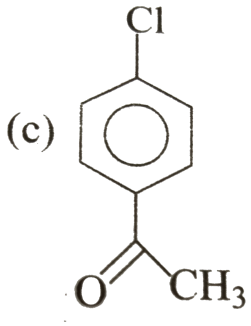
12. Identify the compounds that will undergo nucleophilic aromatic substitution reaction :

A.



B.



C. 

D. 

Answer: A::C::D

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13. Find out correct statement regarding nucleophilic aromatic substitution reaction :

A. there should strong electron withdarwing group at ortho and para position with respect to leaving group

B. nucleophilic atom should be of N, S,O etc.

C. rate of reaction is faster with fluoro derivative .

D. all are incorrect.

Answer: A::C::D

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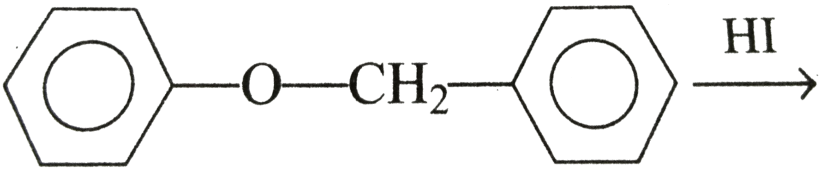
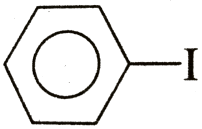
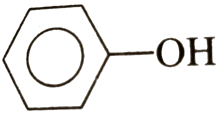
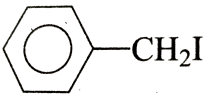
14. The reaction

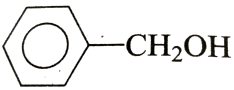


produces:

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B::D

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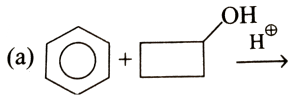
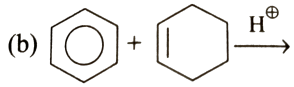
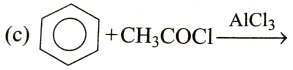
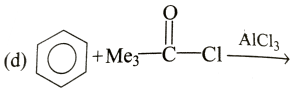
15. Which of the following reactions

A. 

B. 

C. 

D. 

Answer: A::C::D

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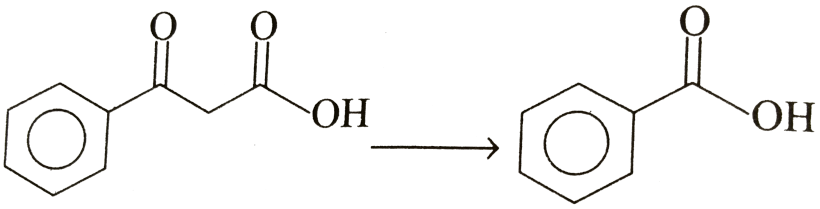
16. The following conversion reaction can be carried out by using reaction sequences :



A. $\xrightarrow{Zn-Hg/HCl} \xrightarrow{Br_2, hv} \xrightarrow{KCN} \xrightarrow{H^{\oplus}O, \Delta}$

B. $\xrightarrow{NaBH_4} \xrightarrow{Al_2O_3, \Delta} \xrightarrow{O_3/H_2O\,(\text{Oxidation})}$

C. $\xrightarrow{\Delta} \xrightarrow{I_2+NaOH} \xrightarrow{H^{\oplus}}$

D. $KMnO_4/O^{\ominus}H/\Delta$

Answer: B::C::D

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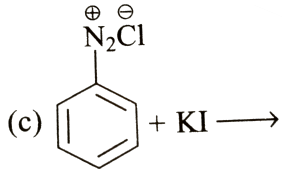
17. Iodobenzene can be obtained by :

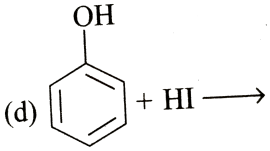
A. (a)  $+ I_2 \longrightarrow$

B. (b)  $+ I_2 \xrightarrow{HNO_3}$

C.



D.



Answer: B::C

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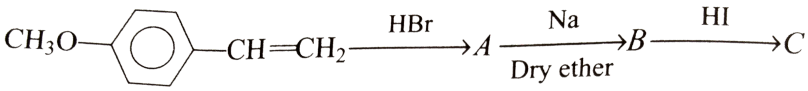
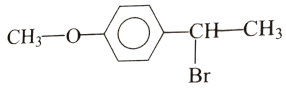
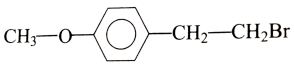
18. Complete the following reaction



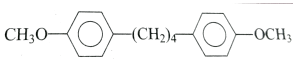
A.

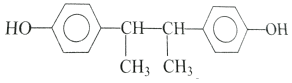


B.



C.



D. 

Answer: A::B

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19. Which of the following are deacitvating group ?

A. $CF_3 - \overset{\overset{O}{||}}{\underset{\underset{O}{||}}{S}} - O -$

B. $CF_3 - O - \underset{\underset{OCH_3}{||}}{\overset{\overset{O}{||}}{P}} - O -$

C. CF_3

D. $CH_3 - \overset{\overset{O}{||}}{C} - CH_2 - O -$

Answer: A::C::D

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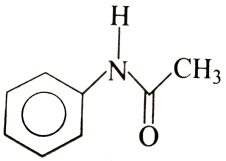
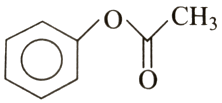
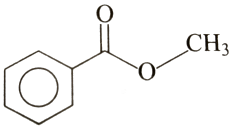
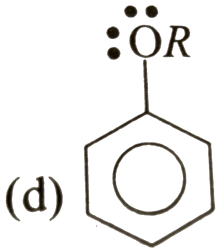
20. Which of the following are more reactive than diphenyl in electrophilic aromatic substitution reaction ?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A::B::D

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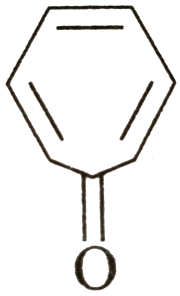
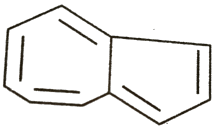
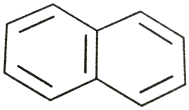
21. Diople moment of which compound is not zero ?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A::C

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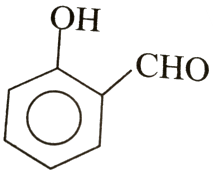
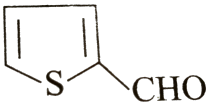
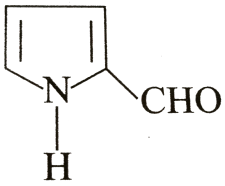
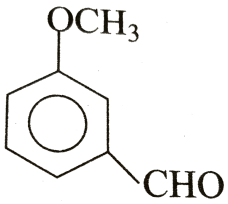
22. Which of the following can be perpared by Remimer- Tiemann reaction directly ?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A::B::C

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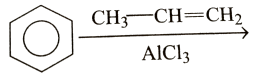
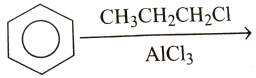
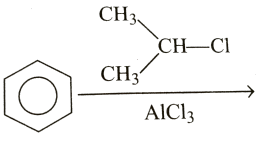
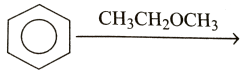
23. Isopropyl benzene can be obtained by :

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: A::B::C

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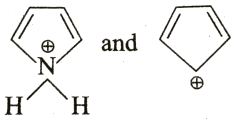
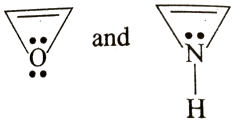
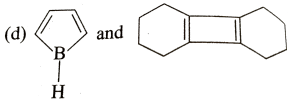
24. Which of the following are pairs of antiaromatic species ?

A. (a) 

B. (b) 

C. (c)  and 

D. 

Answer: B::C

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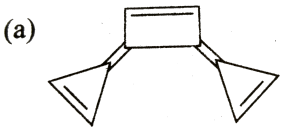
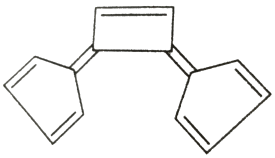
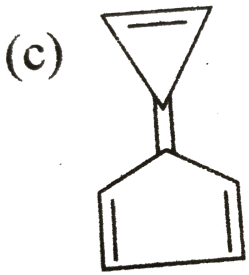
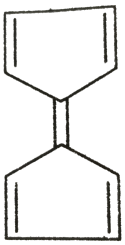
25. Which of the following compounds are aromatic ?

A. 

B. 

C. 

D. (d) 

Answer: A::B::C

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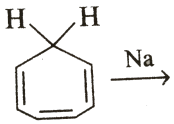
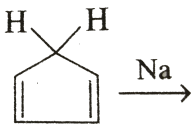
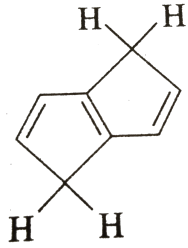
More Than One Correct (Q.26 To Q.35)

1. Which of the following reactions give aromatic ion ?

A. (a) 

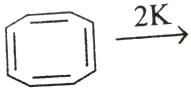
B. (b) 

(c)



C.

(d)



D.

Answer: B::C::D

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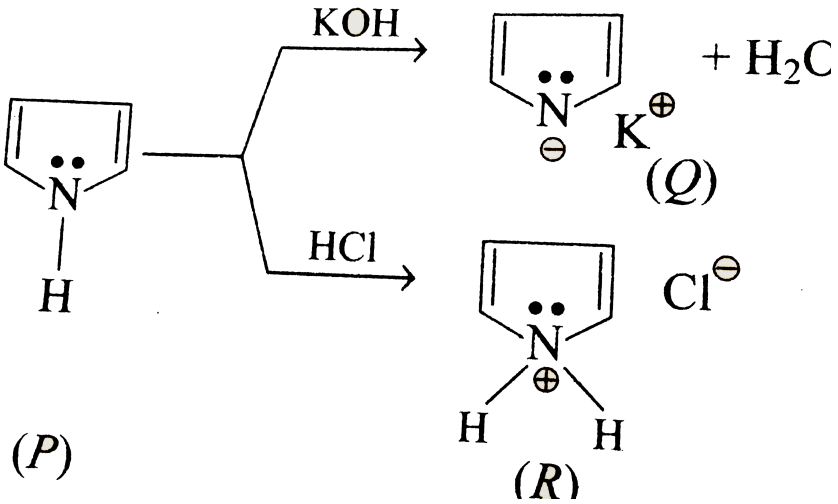
2. Which is ture about following reactions ?



A. P is aromatic

B. Q is aromatic

C. R is antiaromatic

D. R is non-aromatic

Answer: A::B::D

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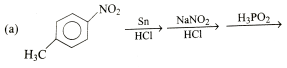
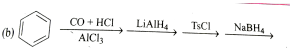
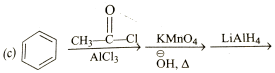
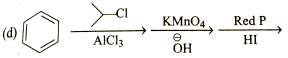
3. Which of the following are supposed to produce to produce toluene ?

A. 

B. 

C. 

D. 

Answer: A::C::D

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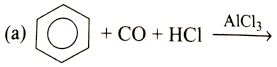
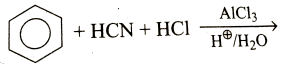
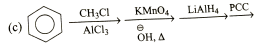
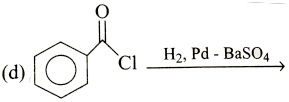
4. Which of the following reactions may give benzaldehyde?

A. 

B. 

C. 

D. 

Answer: A::B::C::D

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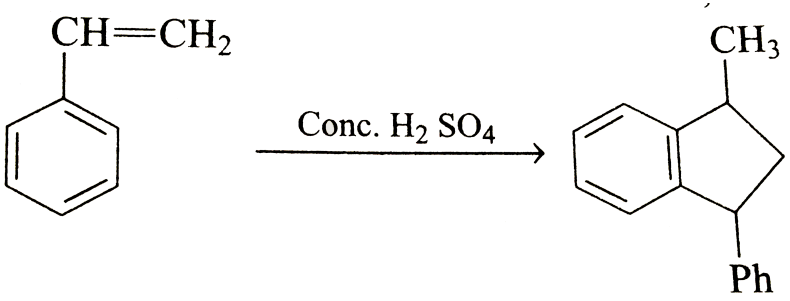
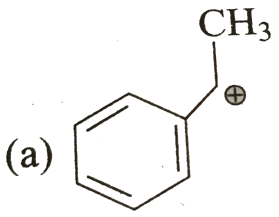
5. Styrene undergo following reactions in acidic medium



The various intermadite formed are :

A.



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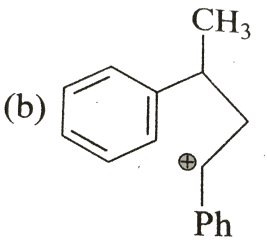
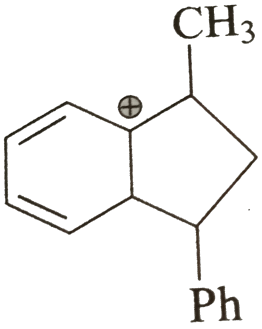
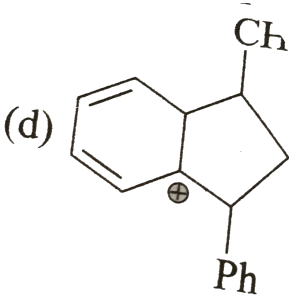


C.



D.



Answer: A::B::C

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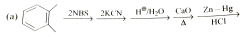
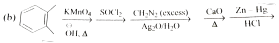
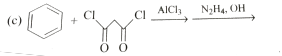
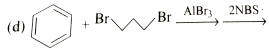
6. Which of the following reaction will be give identical producets ?

A. 

B. 

C. 

D. 

Answer: A::B::C

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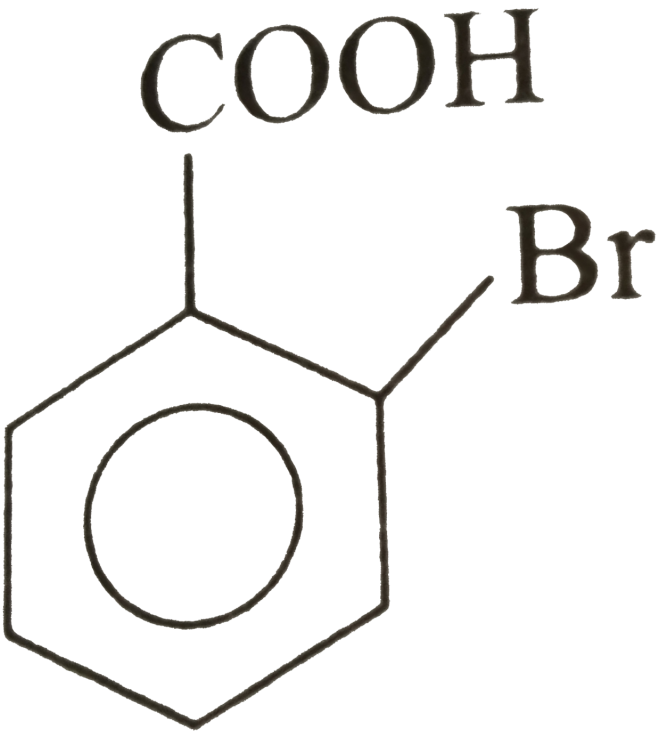
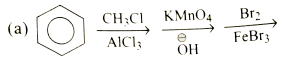
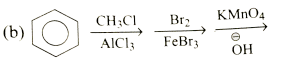
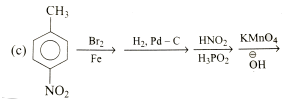
7. Which of the following sequence of reactions can gives



A. 

B. 

C. 

D. $PhMgBr \xrightarrow[H^{\oplus} / H_2O]{CO_2} \xrightarrow[AlBr_3]{Br_3}$

Answer: B::C

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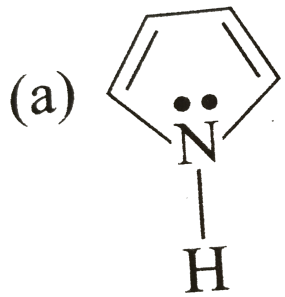
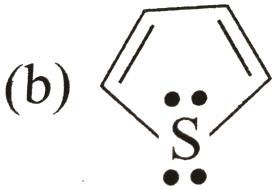
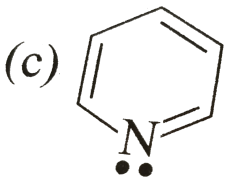
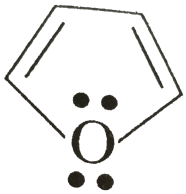
8. Which of the following compounds gives faster EAS reaction than benzene ?

A. 

B. 

C. 

(d) 

D.

Answer: A::B::D

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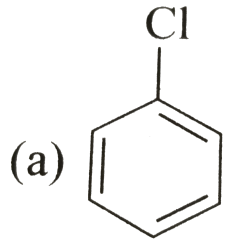
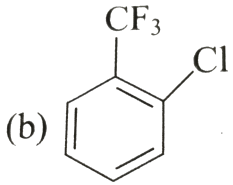
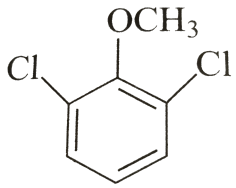
9. Which of the compounds gives cine substitution products on reaction



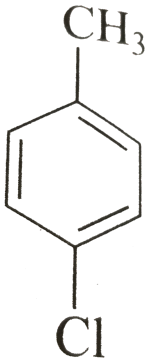
A.



B.

(c) 

C.

(d) 

D.

Answer: A::B::D

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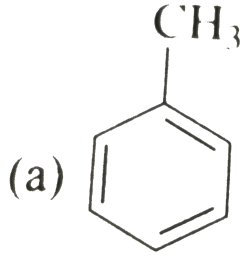
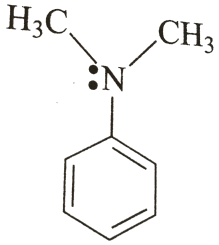
10. Which of the following compounds can give can given coulping reaction with benzene diazonium salt ?

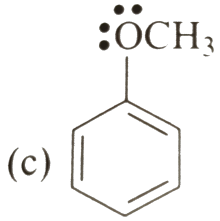
A.



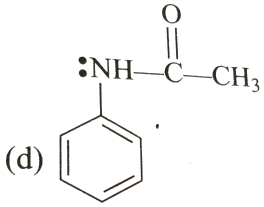
B.



C.



D.



Answer: b, c

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Linked Comprehension Type

1. For any compound to be aromatic, compound should follow a given set of rule known as Huckel's rule

According to Huckel's rule of aromaticy :

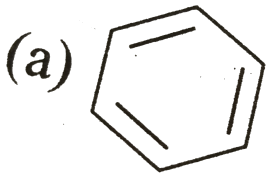
(a) compound should be cyclic

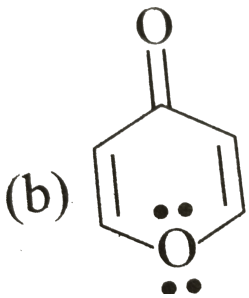
(b) compounds shoulds be planar and conjugated .

(c) compound should have $(4n + 2)\pi e^-$

where `n=0, 1, 2, 3.... integer number .

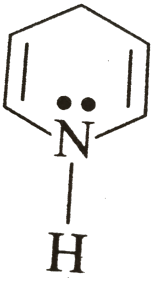
Which of the following is not an aromatic compound ?

A. 

B. 

(c) 

C.

(d) 

D.

Answer: D

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2. For any compound to be aromatic, compound should follow a given set of rule known as Huckel's rule

According to Huckel's rule of aromaticy :

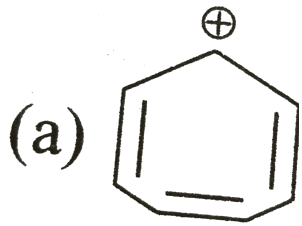
(a) compound should be cyclic

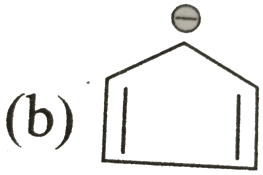
(b) compounds shoulds be planar and conjugated .

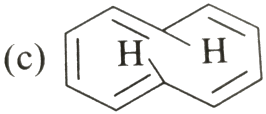
(c) compound should have $(4n+2)\pi e^-$

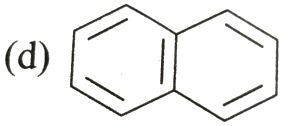
where `n=0, 1, 2, 3.... integer number .

Among the following which is a non-planer compound ?

A. 

B. 

C. 

D. 

Answer: C

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3. For any compound to be aromatic, compound should follow a given set of rule known as Huckel's rule

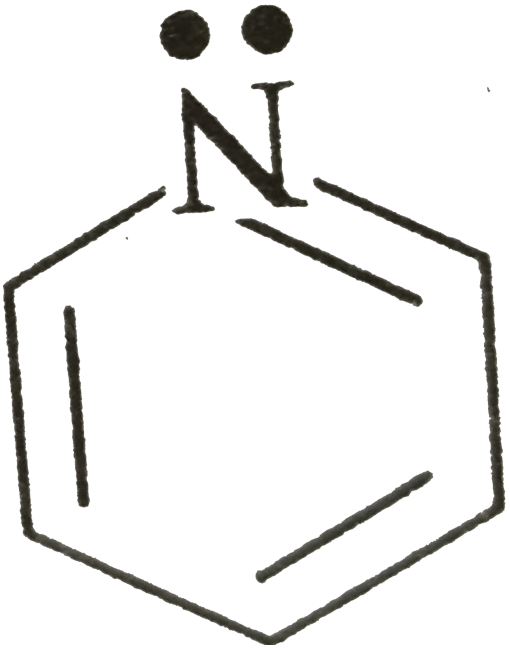
According to Huckel's rule of aromaticy :

(a) compound should be cyclic

(b) compounds shoulds be planar and conjugated .

(c) compound should have $(4n+2)\pi e^{-}$

where $n = 0, 1, 2, 3....$ $\int e \geq r\nu mber. Ident$ if $y\nu mber of \partial ocalised$pi`-electron in pyridine : ltBRgt



A. 8

B. 6

C. 4

D. 10

Answer: B

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4. For any compound to be aromatic, compound should follow a given set of rule known as Huckel's rule

According to Huckel's rule of aromaticy :

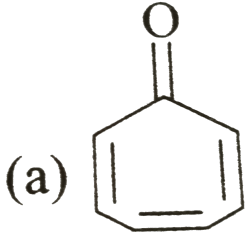
(a) compound should be cyclic

(b) compounds shoulds be planar and conjugated .

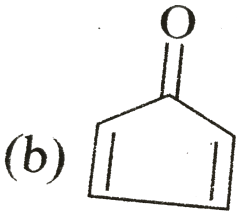
(c) compound should have $(4n+2)\pi e^-$

where `n=0, 1, 2, 3.... "integer number" .

"Identify the compound which have maximum dipole moment" :



A.



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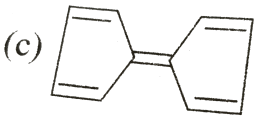

C.

D. none of thses

Answer: A

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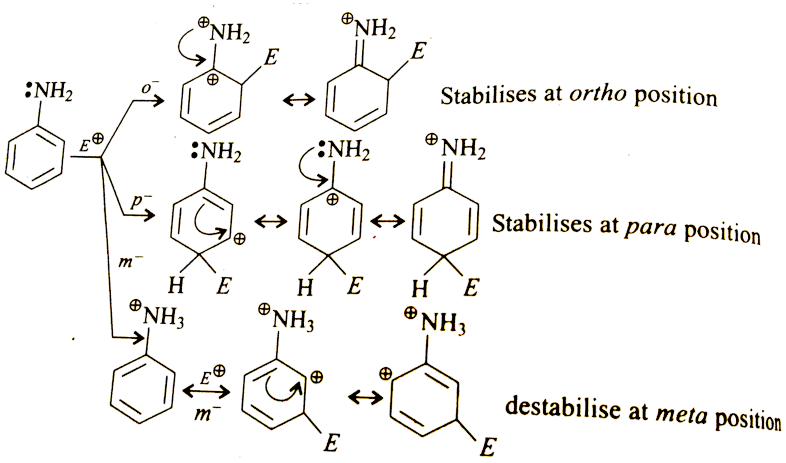
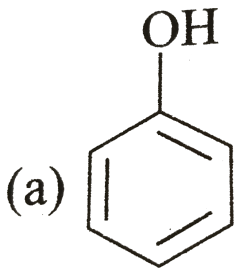
5. Directing nature of substuted aromatic compound is decided by stability of σ-complex is stablise at o- and p- position by attack of electrophile then group is o- and p- directing but if σ-complex is stabilise at m- position then

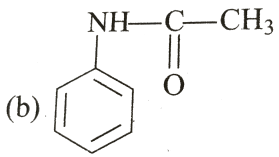
gruop will be meta directing.



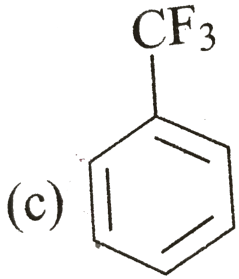
On the basis of above explanation find out correct answer of following questions.

Which of the following is m-directing ?

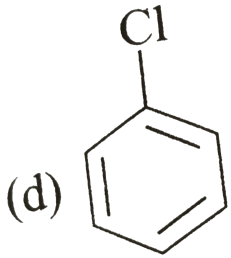
A. 

B. 

C.



D.



Answer: C

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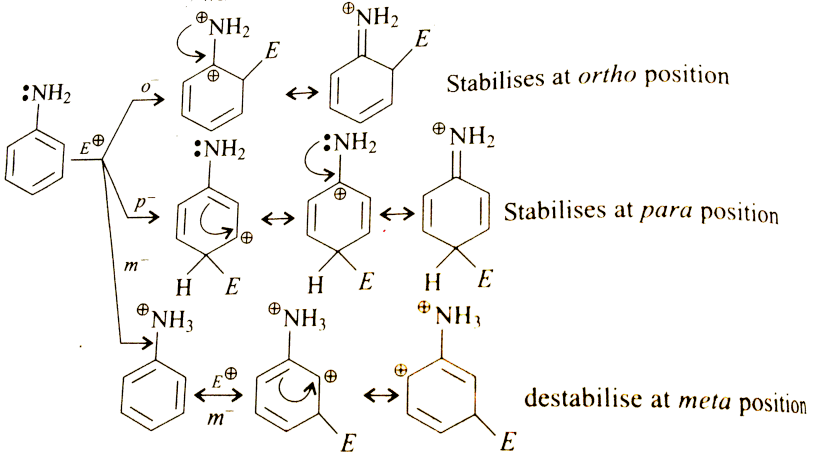
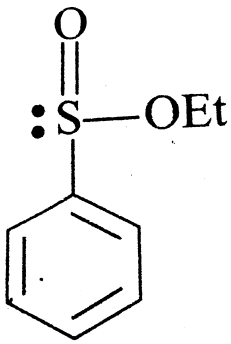
6. Directing nature of substuted aromatic compound is decided by stability of σ-complex is stablise at o- and p- position by attack of electrophile then group is o- and p- directing but if σ-complex is stabilise at m- position then gruop will be meta directing.



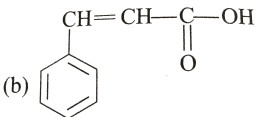
On the basis of above explanation find out correct answer of following questions.

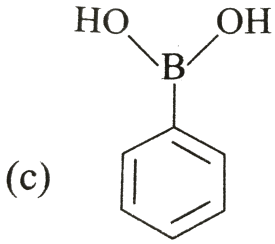
Which of the following is not o- and p- directing ?

A.



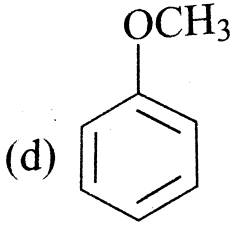
B.





(c)

C.



(d)

D.

Answer: C

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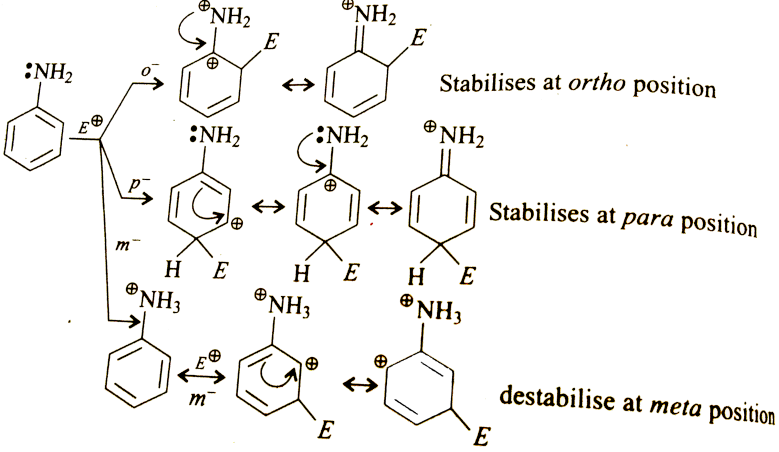
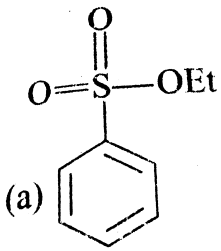
7. Directing nature of substuted aromatic compound is decided by stability of σ-complex is stablise at o- and p- position by attack of electrophile then group is o- and p- directing but if σ-complex is stabilise at m- position then gruop will be meta directing.



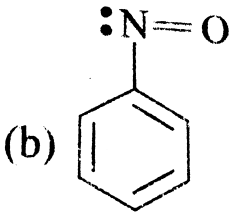
On the basis of above explanation find out correct answer of following questions.

Which of the following is o- and p-directing

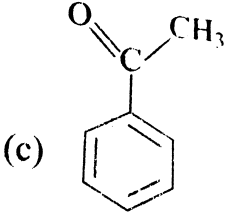
A.



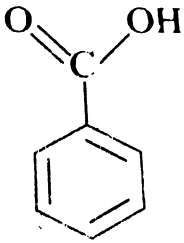
B.



C.



D.



Answer: B

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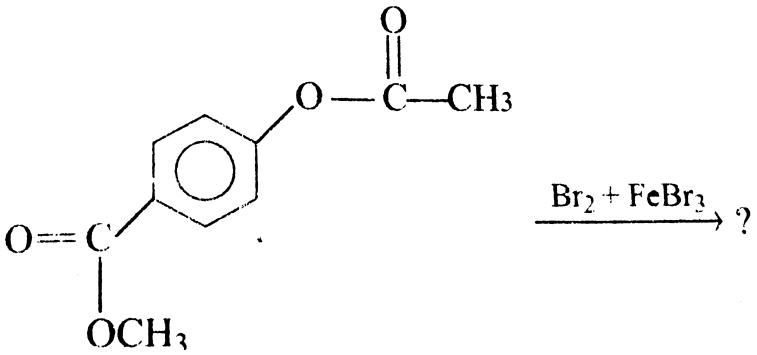
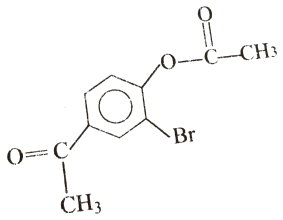
8. If aromatic ring is substitued by more than groups then electrophilic aromatic substitution reaction take place according to more activating group. Type of group which donate electron in aromatic ring known as activating group

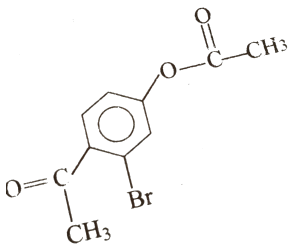


Find out correct product of reaction .

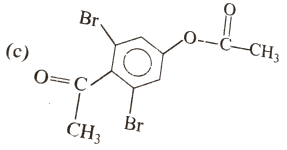
A.



B.



C.



D. no reaction

Answer: A

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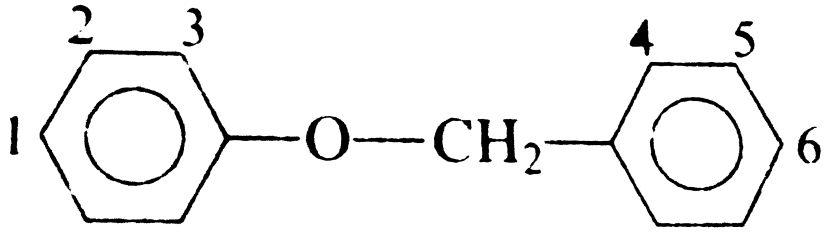
9. If aromatic ring is substitued by more than groups then electrophilic aromatic substitution reaction take place according to more activating group. Type of group which donate electron in aromatic ring known as activating group

Major product formation take placed at which position in this reaction :



A. 3

B. 1

C. 6

D. 4

Answer: B

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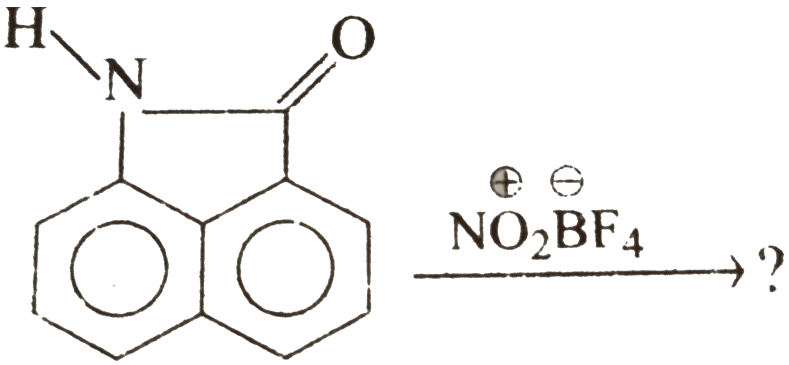
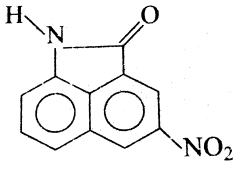
10. If aromatic ring is substitued by more than groups then electrophilic aromatic substitution reaction take place according to more activating group. Type of group which donate electron in aromatic ring known as activating group

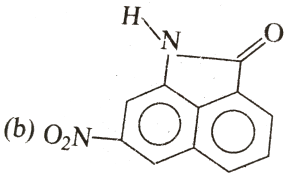
Find out major product of following reaction :

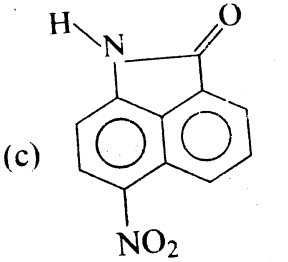


A. (a)

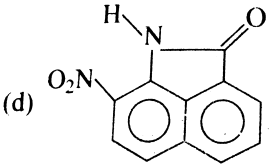


B. (b)





C.



D.

Answer: C

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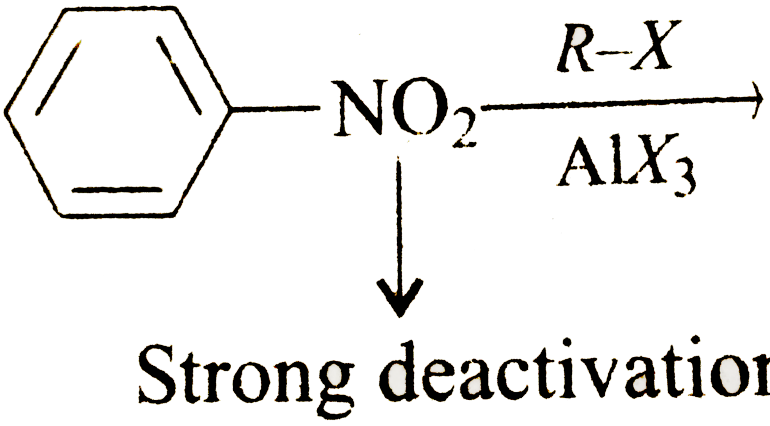
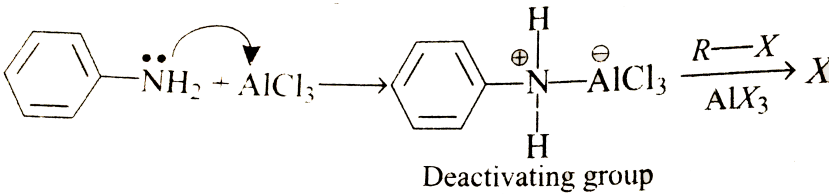
11. A benzene ring deactived by strong and moderate electrons withdrawing group that is, any meta directing group, is not electron rich enough to undergoes Friedel-Carfts reactions.

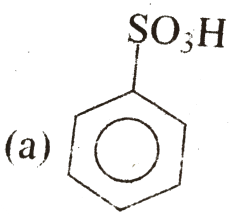


Friedel- Crafts reaction also do not occur with NH_2 group as it react with $AlCl_3$ and produce deactivating group .

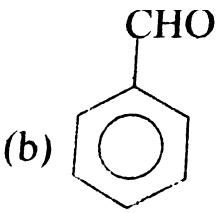


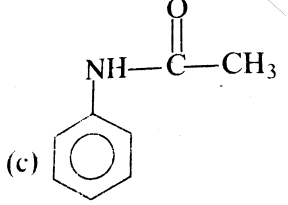
Which of the following compounds undergo Friedel-Crafts alkylation reaction ?

A.

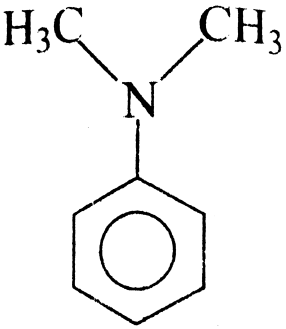


B.





C.



D.

Answer: C

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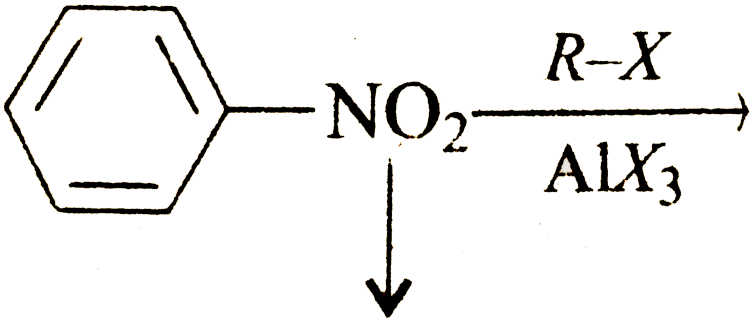
12. A benzene ring deactived by strong and moderate electrons withdrawing group that is, any meta directing group, is not electron rich enough to undergoes Friedel-Carfts reactions.



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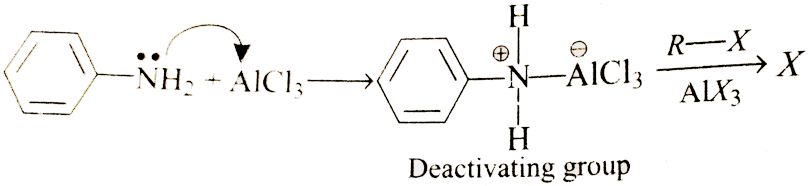
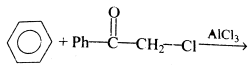
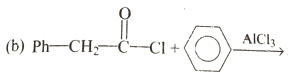
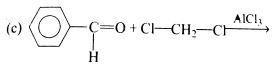


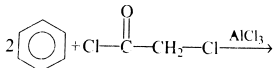
which of the following cannot be startind material for thic compounds

$Ph - \underset{\underset{O}{||}}{C} - CH_2 - Ph$?

A. 

B. 

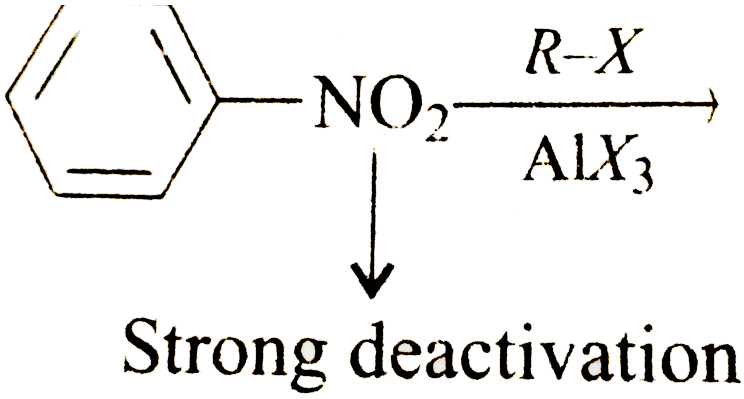
C. 

D. 

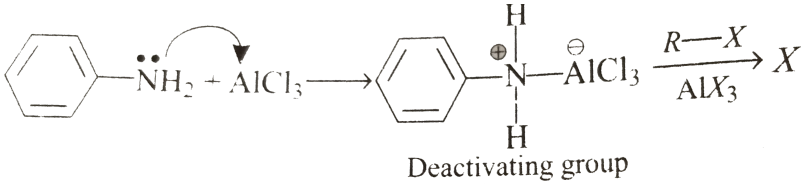
Answer: C

View Text Solution

13. A benzene ring deactived by strong and moderate electrons withdrawing group that is, any meta directing group, is not electron rich enough to undergoes Friedel-Carfts reactions.

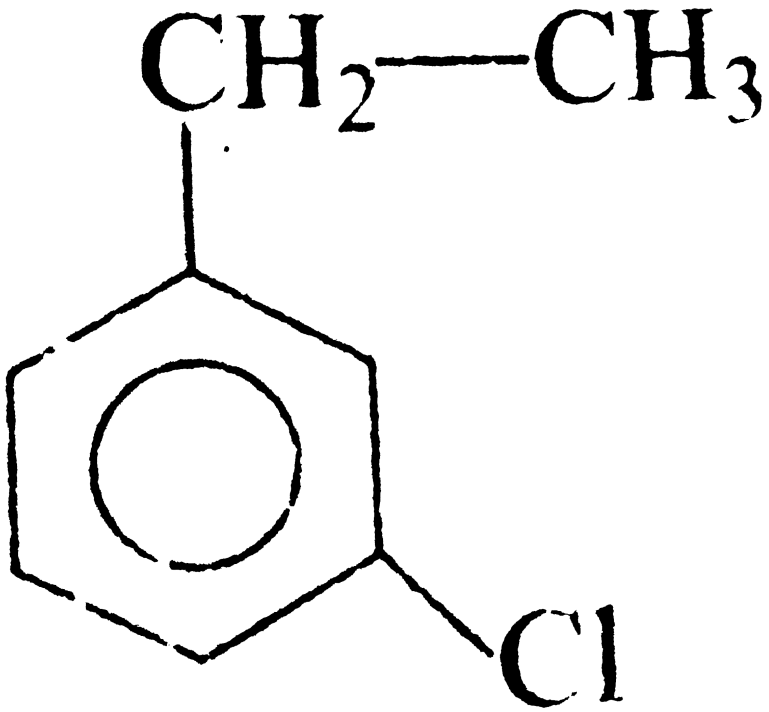


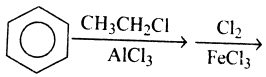
Friedel- Crafts reaction also do not occur with NH_2 group as it react with $AlCl_3$ and produce deactivating group .

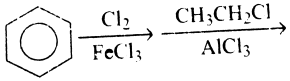


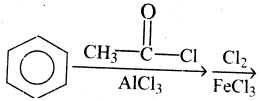
Which of the following sequence of reaction is correct for the synthesis of

product



A. (a) 

B. 

C. (c) 

D. All are incorrect

Answer: C

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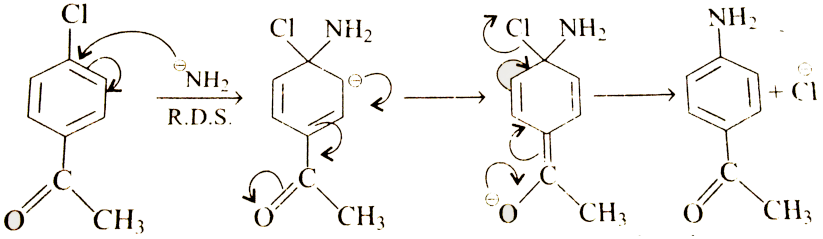
14. For a typical nucleophilic aromatic subsitution reaction to take place.

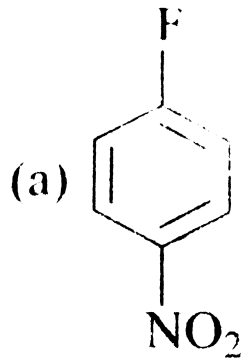
(1) Nucleophilic atom should be of oxygen, nitrogen or sulphur.

(2) Leaving group should be halide .

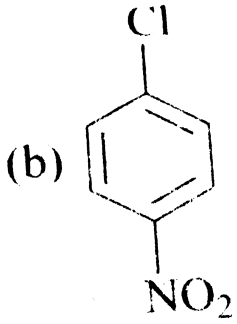
(3) There should be strong electron withdarwing at ortho and para position to leaving group.



Fastest nucleophilic aromatic substitution reaction take place in :



A.



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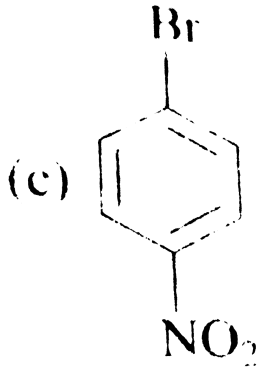
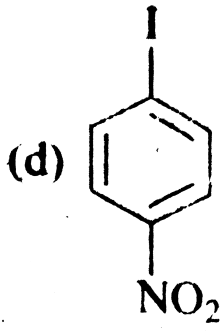


C.



D.

Answer: A

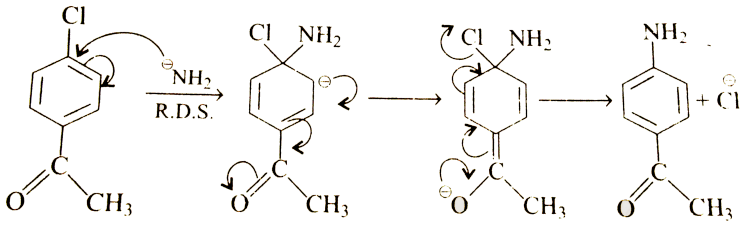
Watch Video Solution

15. For a typical nucleophilic aromatic subsitution reaction to take place.

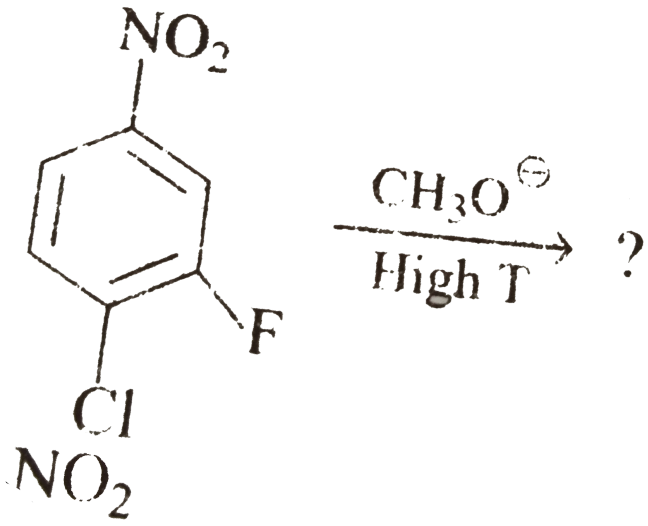
(1) Nucleophilic atom should be of oxygen, nitrogen or sulphur.

(2) Leaving group should be halide .

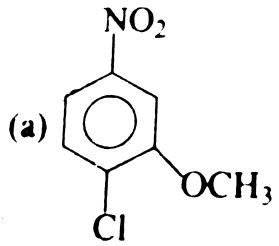
(3) There should be strong electron withdarwing at ortho and para position to leaving group.



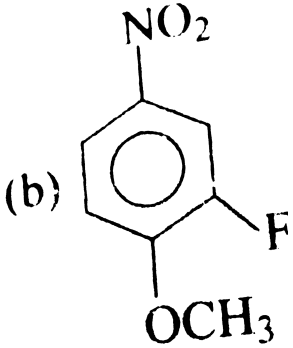
Find out correct product of following reaction :



A.



B.



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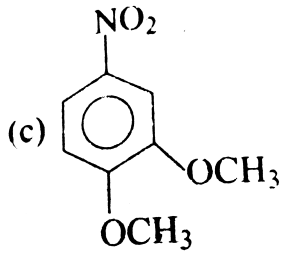
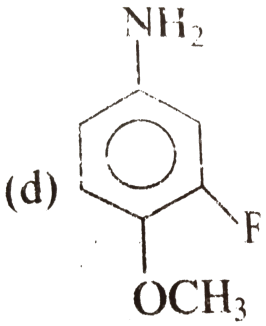


D.



Answer: B

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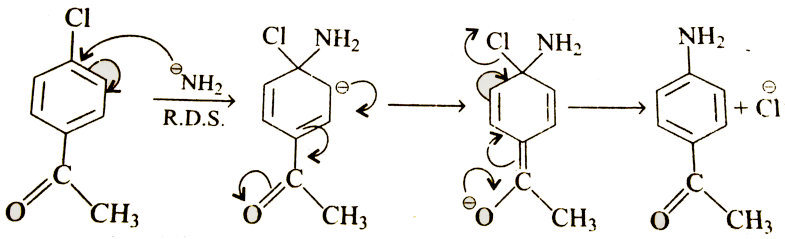
16. For a typical nucleophilic aromatic subsitution reaction to take place.

(1) Nucleophilic atom should be of oxygen, nitrogen or sulphur.

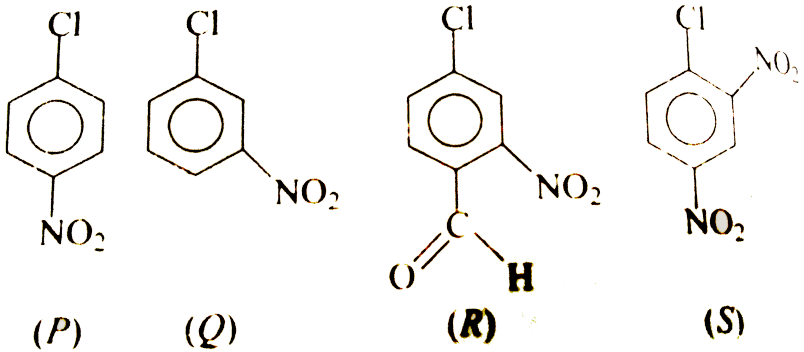
(2) Leaving group should be halide .

(3) There should be strong electron withdarwing at ortho and para position

to leaving group.



Compare rate of nucleophilic aromatic substitution reaction in following reactants:



A. $S > Q > P > R$

B. $R > S > P > Q$

C. $S > R > P > Q$

D. $P > S > R > Q$

Answer: C

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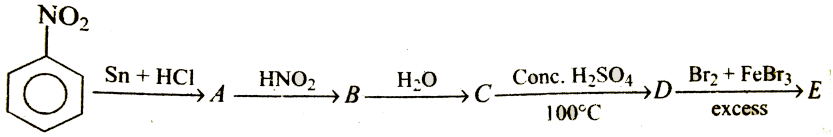
17. Examine given sequence of reaction carefully :



$$\xrightarrow{Sn+HCl} A \xrightarrow{HNO_2} B \xrightarrow{H_2O} C \xrightarrow[100^\circ]{Conc.H_2SO_4} D \xrightarrow[\text{excess}]{Br_2+FeBr_3} E$$

Converstion of B to C is which type of reaction ?

A. electrophilic aromatic substitution reaction

B. nucleophilic aromatic substition reaction

C. free radiual substitution

D. nucleophilic acyl substitution reaction

Answer: B

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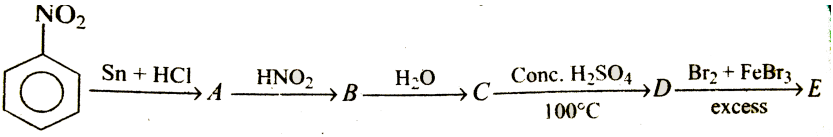
18. Examine given sequence of reaction carefully :



$\xrightarrow{Sn+HCl} A \xrightarrow{HNO_2} B \xrightarrow{H_2O} C \xrightarrow[100^\circ]{Conc.\,H_2SO_4} D \xrightarrow[\text{excess}]{Br_2+FeBr_3} E$

Formation of A from nitrobenzene cannot be achieved from :

A. $Zn + HCl$

B. $Fe + HCl$

C. $NaBH_4$

D. $LiAlH_4$

Answer: C

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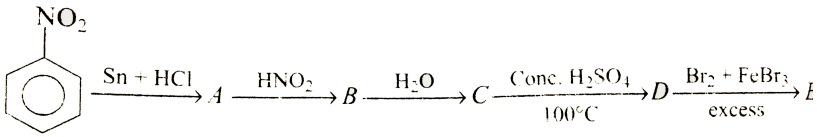
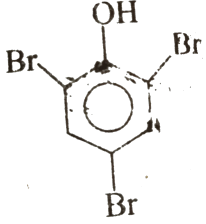
19. Examine given sequence of reaction carefully :



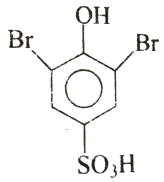
$\xrightarrow{Sn+HCl} A \xrightarrow{HNO_2} B \xrightarrow{H_2O} C \xrightarrow[100^\circ]{Conc.\,H_2SO_4} D \xrightarrow[\text{excess}]{Br_2+FeBr_3} E$

Identify product E of the reaction :

A. (a)



B. (b)



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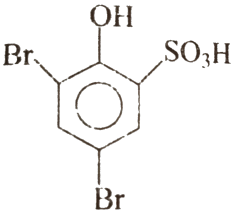
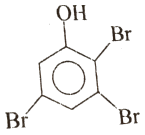


D. (d)



Answer: A

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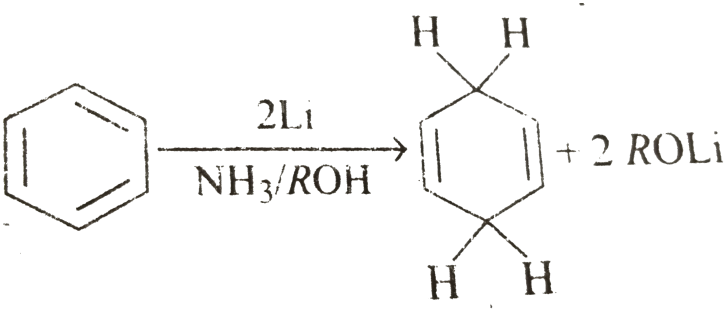
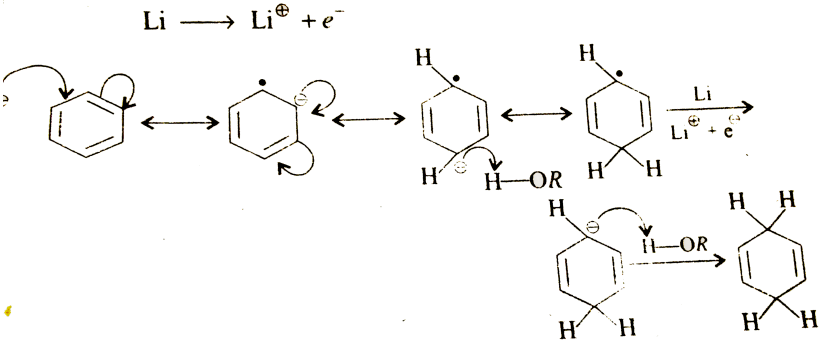
20. There is a way to reduce benzene derivatives to the corresponding 4-cyclohexdiene known as Birch reduction . It involves treatment of aromatic

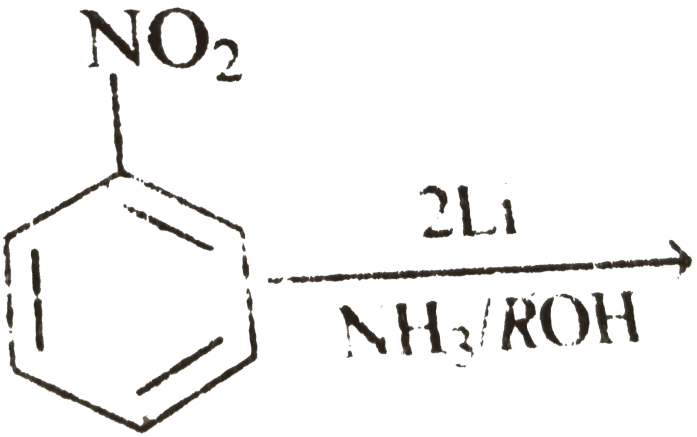
substrate with two mole of active metal as Li or Na in liquid ammonia/alchol mixture.



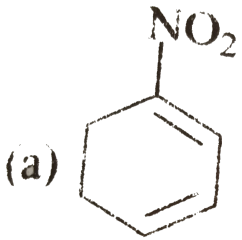
Mechanism :



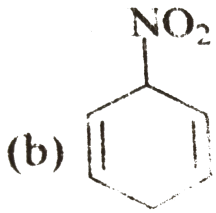
Predict the product of this reaction :



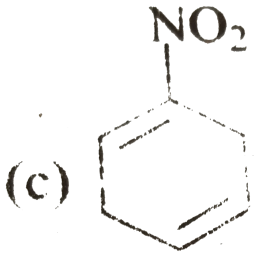
A.



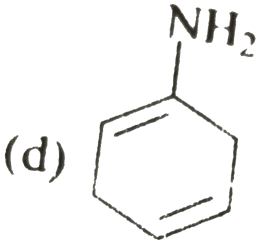
B.



C.



D.



Answer: B

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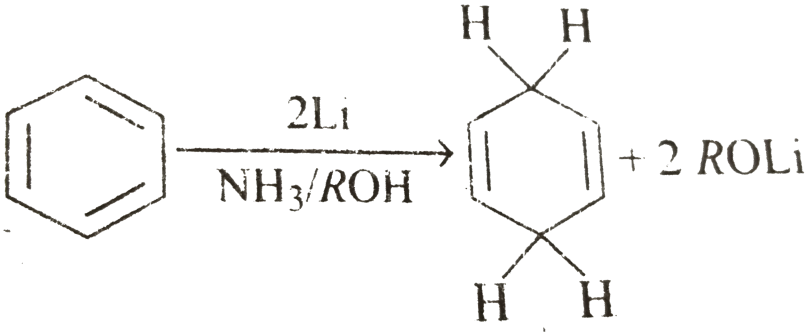
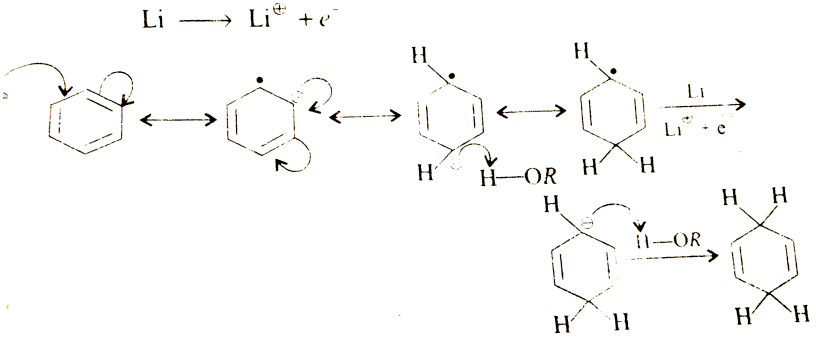
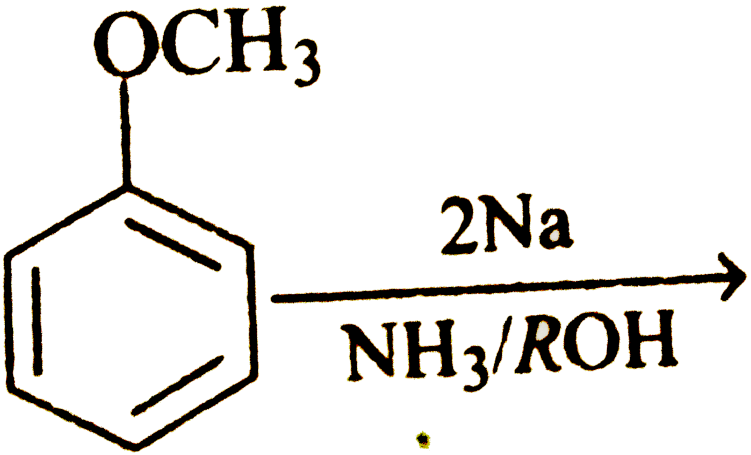
21. There is a way to reduce benzene derivatives to the corresponding 4-cyclohexdiene known as Birch reduction . It involves treatment of aromatic substrate with two mole of active metal as Li or Na in liquid ammonia/alchol mixture.

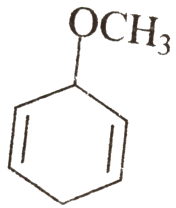


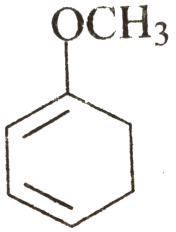
Mechanism :

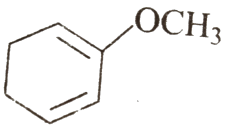


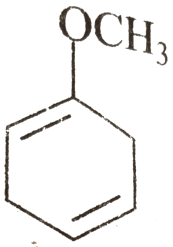
Find out correct product of the given reaction :



A. (a) 

B. (b) 

C. (c) 

(d) 

D.

Answer: D

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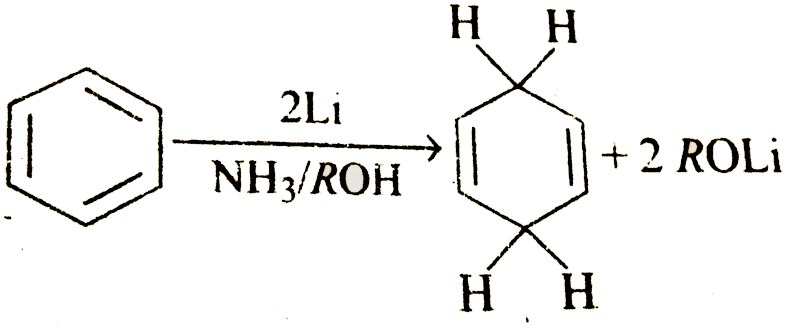
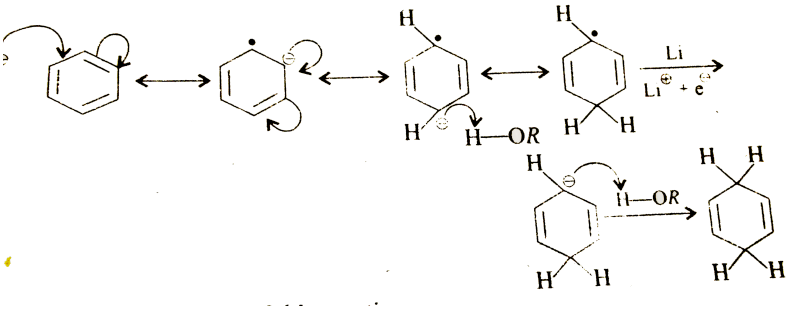
22. There is a way to reduce benzene derivatives to the corresponding 4-cyclohexdiene known as Birch reduction . It involves treatment of aromatic substrate with two mole of active metal as Li or Na in liquid ammonia/alchol mixture.



Mechanism :



Why alcohol, rather than ammonia, the proton source during the Birch reduction ?

A. Alcohal is more acide than ammonia

B. Ammonia and alcohol both have neraly some acidic strenght

C. Ammonia is more acidic than alcohlo.

D. All are incorrect

Answer: A

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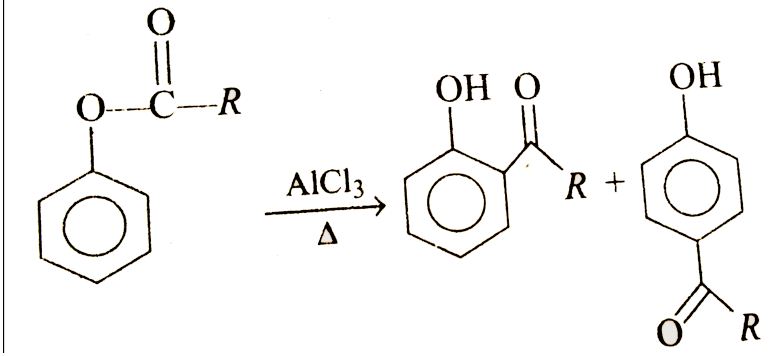
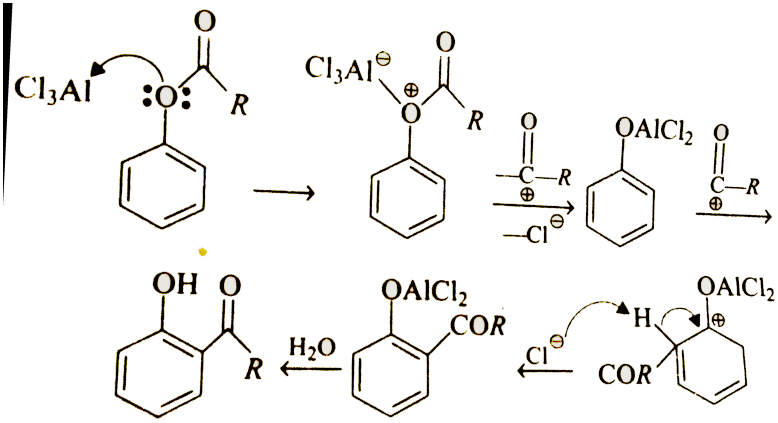
23. Phenolic esters heating with $AlCl_3$ (Lewis acid) gives ortho and para acyl phenol . This is known as Fries rearrangement .

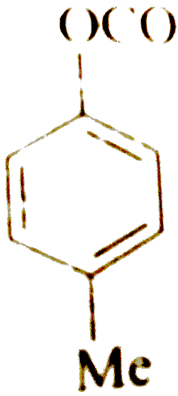


In general, low temperature favours the para product and high tempearture favaous orhto product .

Mechanism :



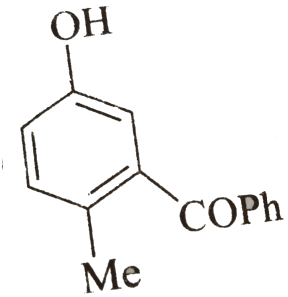
If one of the ortho position is subtituted by any group then para is the major product



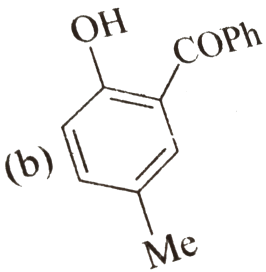
$\xrightarrow{AlCl_3}$ Major product :



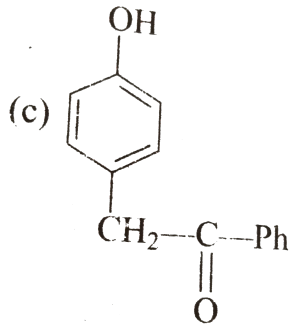
$\xrightarrow{AlCl_3}$ Major product :



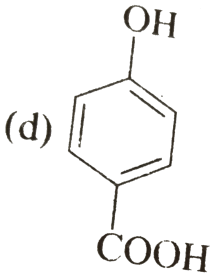
A.



B.

(c) 

C.

(d) 

D.

Answer: B

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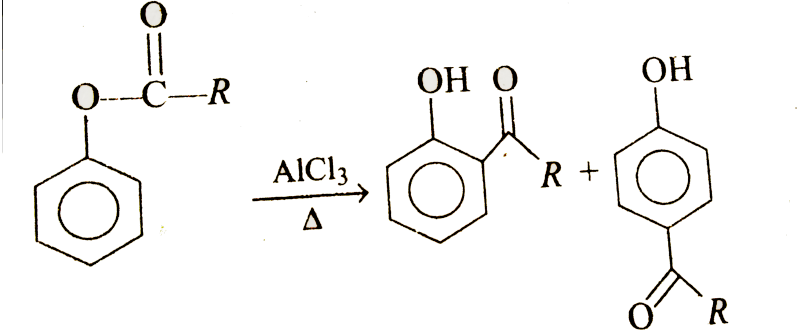
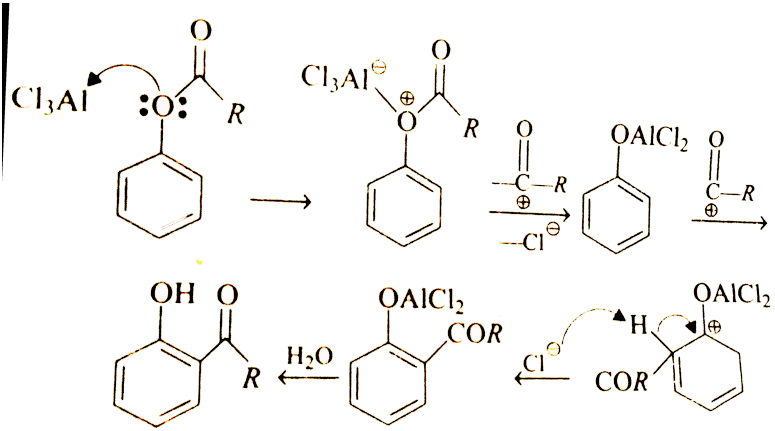
24. Phenolic esters heating with $AlCl_3$ (Lewis acid) gives ortho and para acyl phenol . This is known as Fries rearrangement .

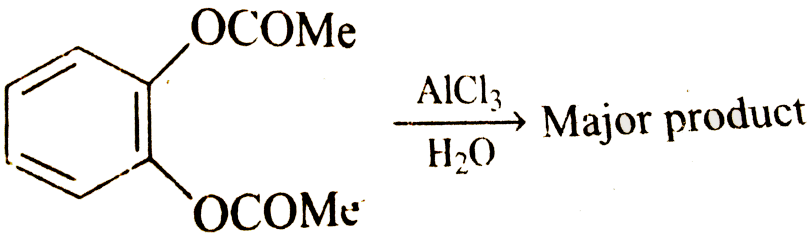


In general, low temperature favours the para product and high tempearture favaous orhto product .

Mechanism :

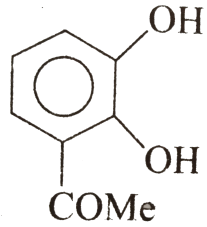


If one of the ortho position is subtituted by any group then para is the major product

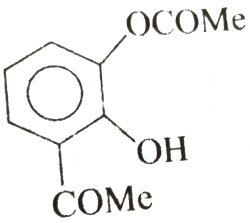


$\xrightarrow[H_2O]{AlCl_3}$ Major product :

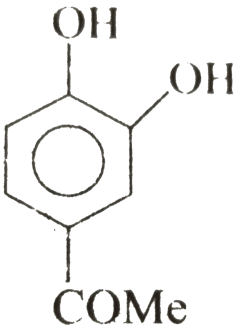
(a)



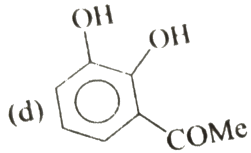
A.



B.



C.



D.

Answer: C

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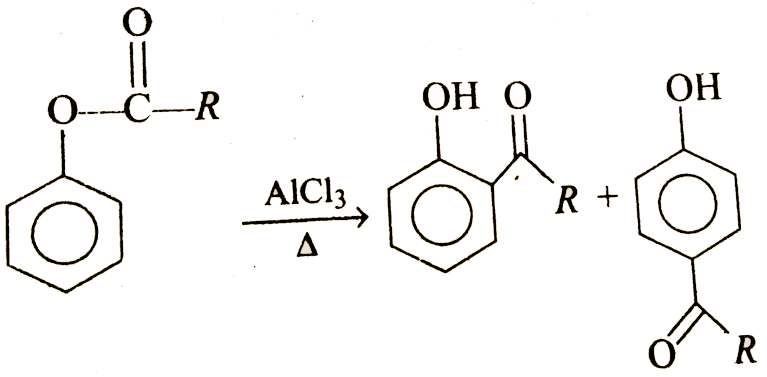
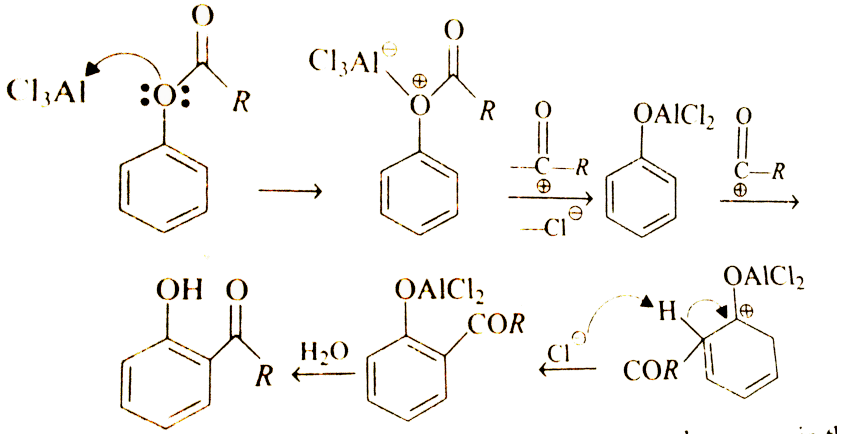
25. Phenolic esters heating with $AlCl_3$ (Lewis acid) gives ortho and para acyl phenol . This is known as Fries rearrangement .

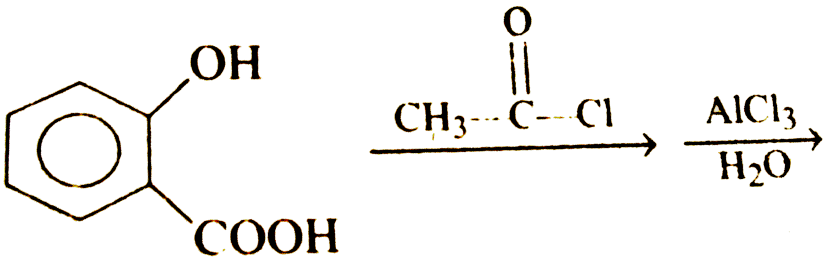


In general, low temperature favours the para product and high tempearture favaous orhto product .

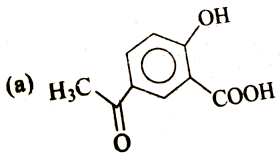
Mechanism :



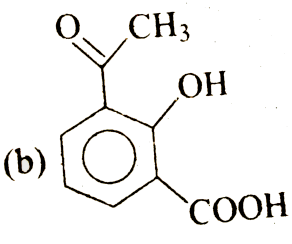
If one of the ortho position is subtituted by any group then para is the major product

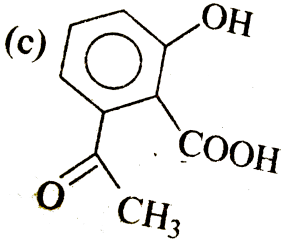


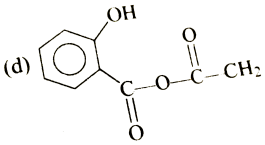
A.



B.



C. 

D. 

Answer: A

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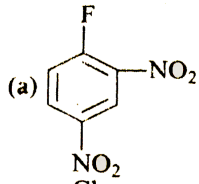
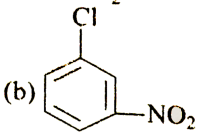
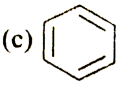
Match The Column

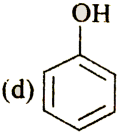
1. Match the following columns

1. Column (I)

(a)  $+ CH_3O^{\ominus}$

(b)  $+ KNH_2$ in liq. NH_3

(c)  $+ N_2O_5$

(d)  $+ CHCl_3 + KOH$

Column (II)

P. Electrophilic aromatic substitution

Q. Reimer Tiemann reaction

R. Nucleophilic aromatic substitution

S. Cine substitution reaction

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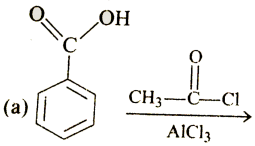
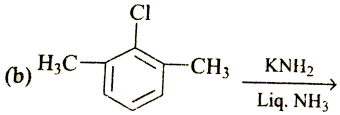
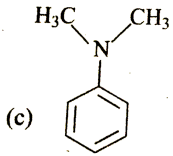
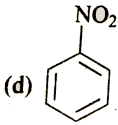
2. Match the following columns

Column (I)	Column (II)
(a) 	*P*. *o*, *p*-directing compound
(b) 	*Q*. Activated compound
(c) 	*R*. No reaction
(d) 	*S*. Deactivated compound

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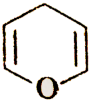
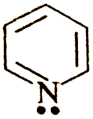
3. Match the following columns

Column (I)

(a) 

(b) 

(c) 

(d) 

Column (II)

P. Aromatic

Q. Non-aromatic

R. Tub shape structure

S. Electrophilic aromatic substitution reaction

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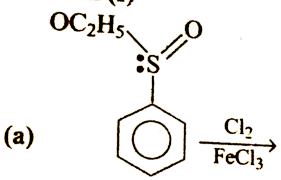
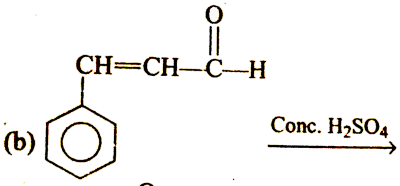
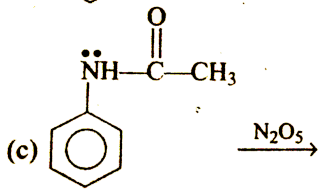
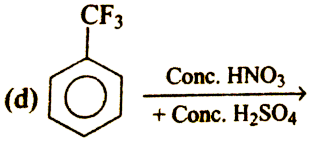
4. Match the following columns

Column (I)	Column (II)
(a) 	*P. Ortho* and *para* substitution.
(b) 	*Q. Meta* substitution.
(c) 	*R.* Substitution is faster than benzene.
(d) 	*S.* Substitution is slower than benzene

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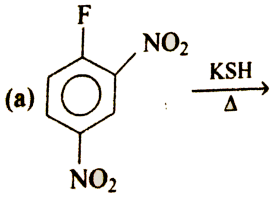
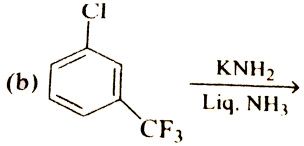
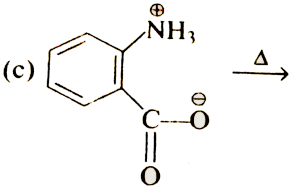
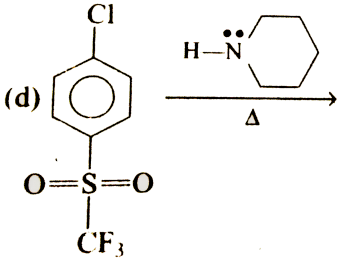
Column (I)	Column (II)
5. (a) 	*P*. Nucleophilic aromatic substitution
(b) 	*Q*. Addition elimination reaction.
(c) 	*R*. Elimination addition reaction.
(d) 	*S*. Benzyne intermediate.

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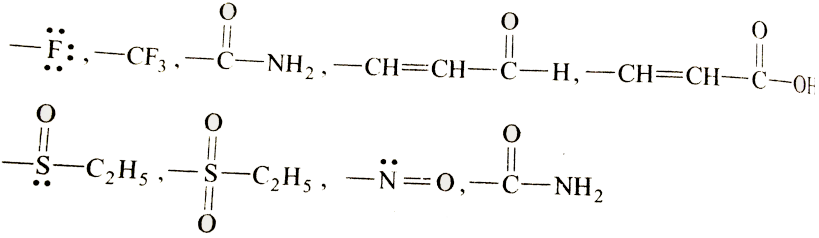
Integer Answer Type Problems

1. Identify number of substituents those are dectivating but ortho and para direacting



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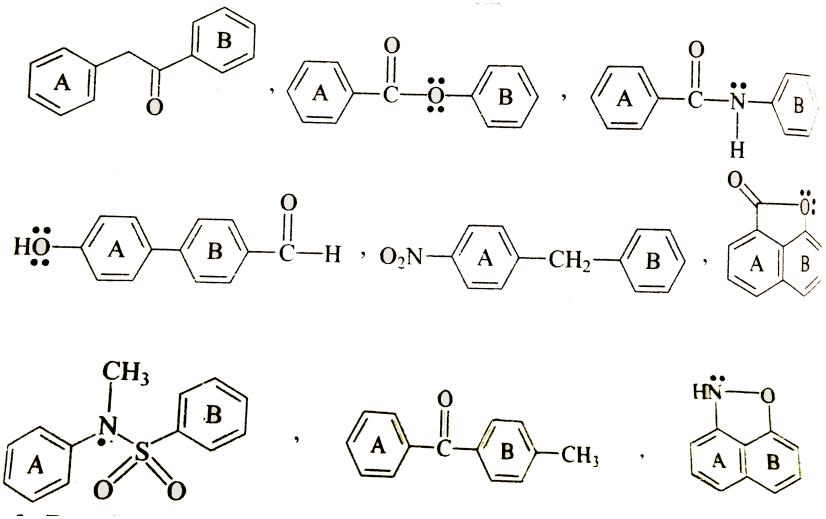
2. Each of the compounds shows below has two aromatic ring. Labled as A and Identify number of compounds in which ring B is more active than ring A for electrophilic aromatic substitution reaction .



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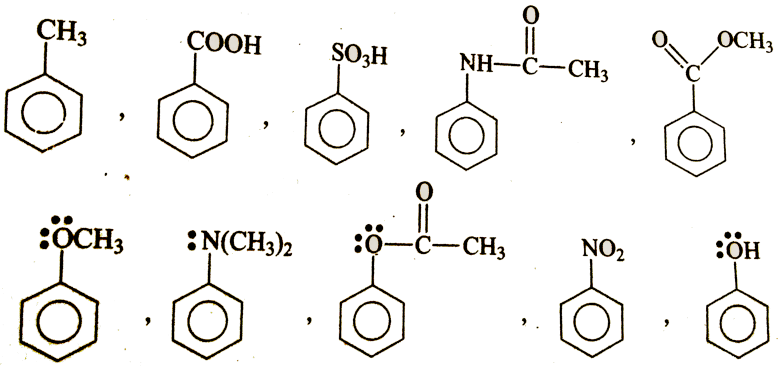
3. Examine the structural formula shown below and find out how many compounds undergo electrophilic nitration more rapidly than flouro benzene.



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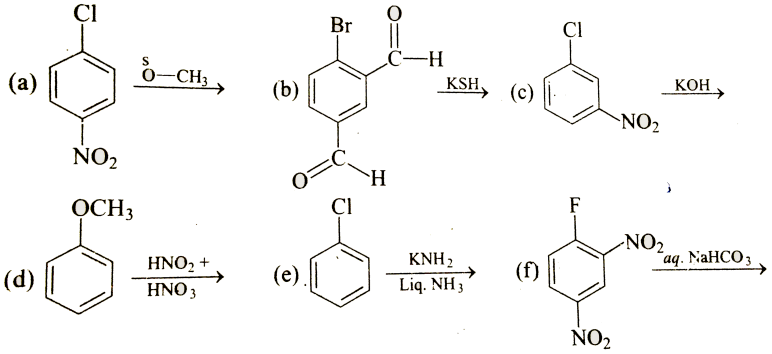
4. Identify number of reaction that can gives nucleophilic aromatic substitution products



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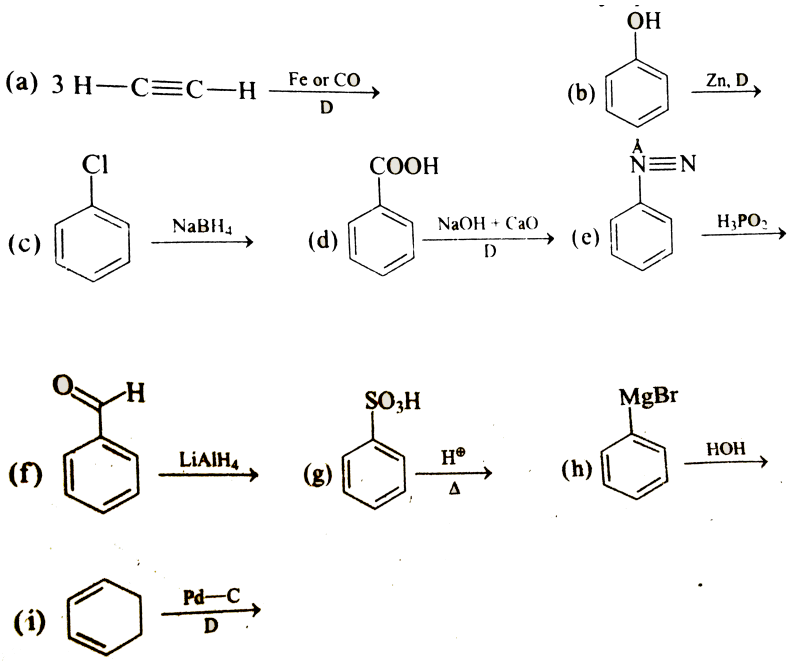
5. Identify number of reaction that can gives benzene as major product .



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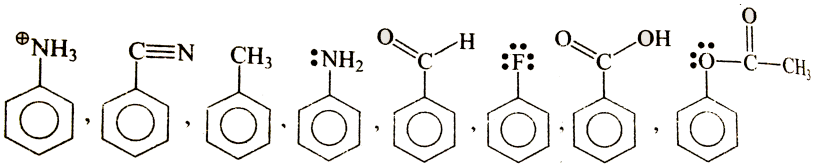
6. Examine the structural formula shown below and find out how many compounds can not give Friedel Carfts reaction .



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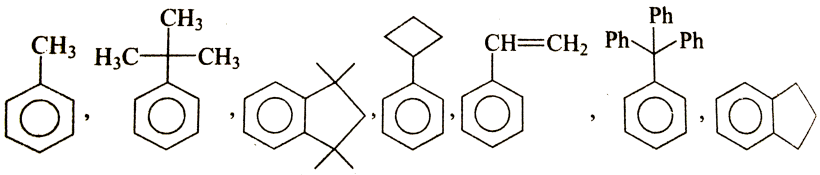
7. Eaxmine the structural formula shown below and find out how many compounds will show oxidation reaction with acidic $KMnO_4$



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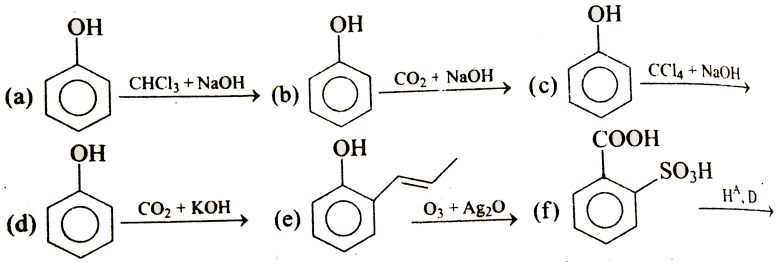
8. Identify number of reaction that would gives salicylic acid as major product



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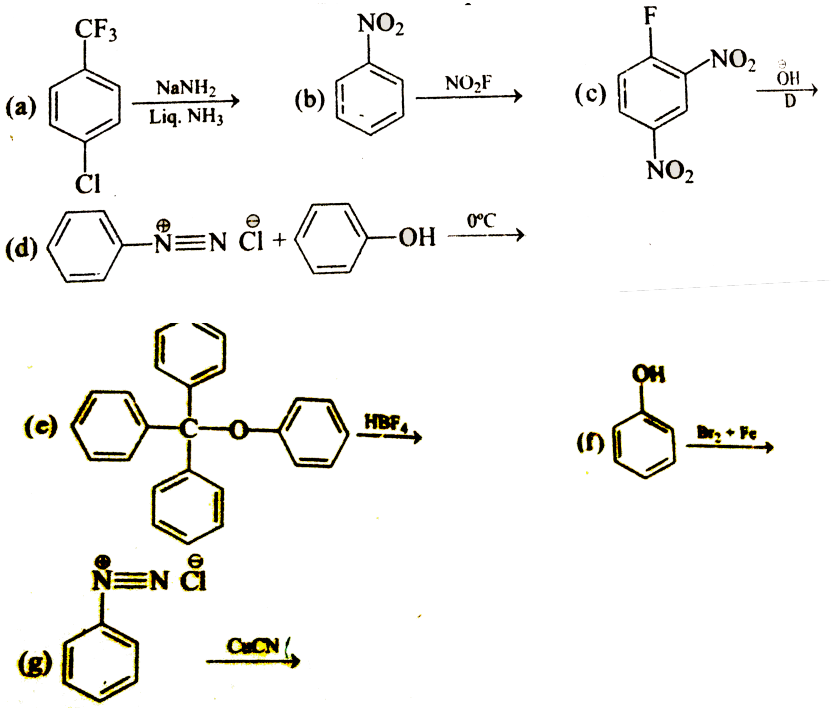
9. Find out number of reaction that are electrophilic aromatic substitution in nature .



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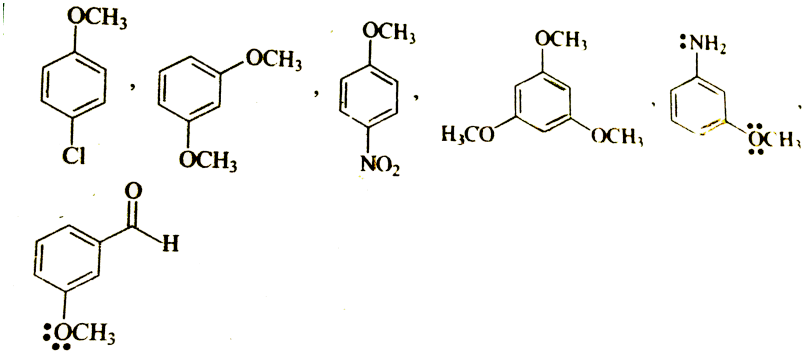
10. Examine the structural formulas shown below and identify how many compounds will show coupling reaction with diazonium salts faster than

ansiole



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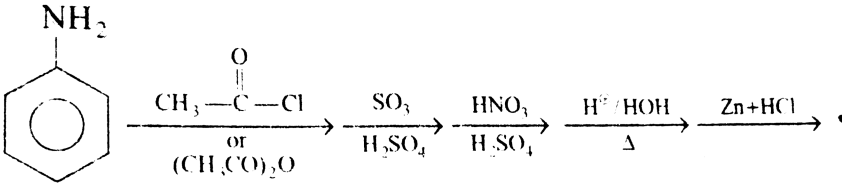
Subjective Type Problems

1. Match the following columns



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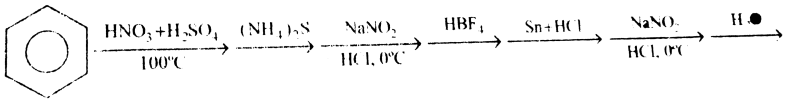
2. Complete the following reaction



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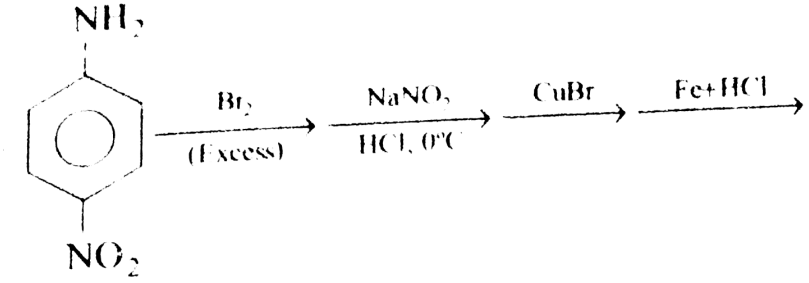
3.



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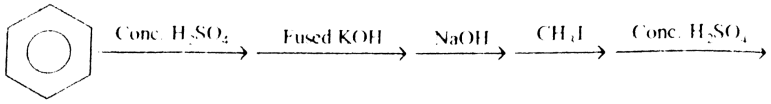
4. Complete the following reaction



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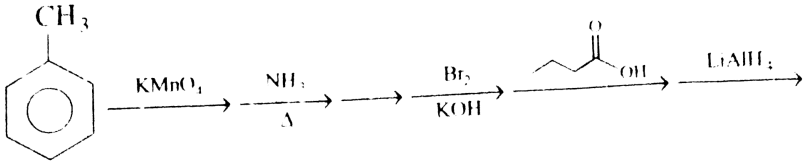
5. Complete the following reaction



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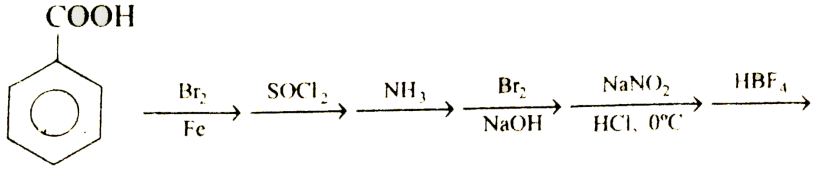
6. Complete the following reaction



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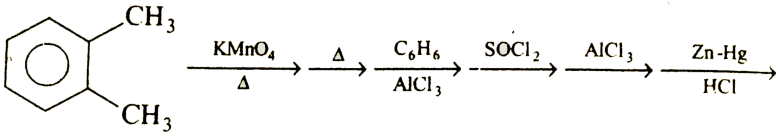
7. Complete the following reaction



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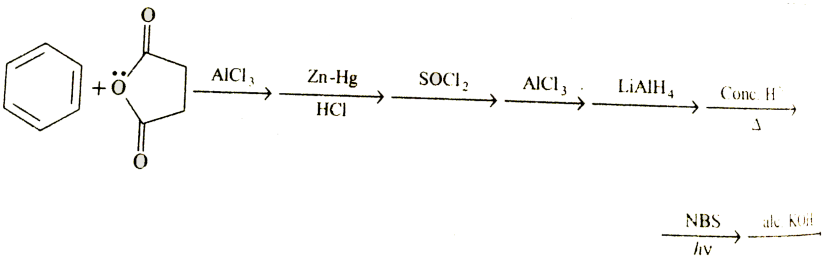
8. Complete the following reaction



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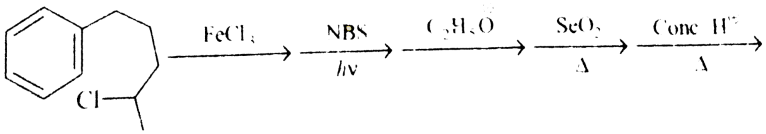
9. Complete the following reaction



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