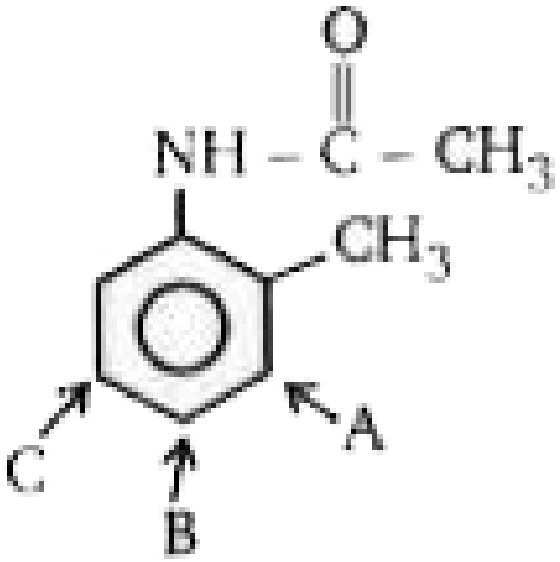
CHEMISTRY

BOOKS - MS CHOUHAN

AROMATIC COMPOUNDS

Level 1



1.

Identify the position where electrophillic aromatic substitution (EAS) is most faourable .

A. A

B. B

C. C

D. A and C

Answer: B

Watch Video Solution

2. 

Correct order of rate of EAS (electrophillic aromatic substitution) is :

A. $c > b > a > a > d$

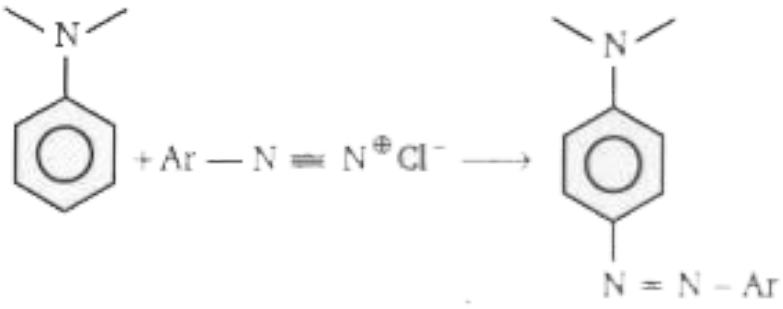
B. $c > d > a > b$

C. $a > b > c > d$

D. $c > d > b > a$

Answer: D

Watch Video Solution

3. 

Above (C-N) coupling reaction take place at:

A. low pH

B. intermediate pH

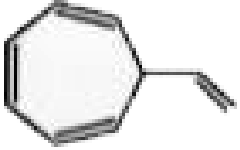
C. high pH

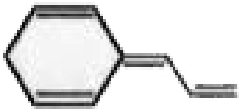
D. any pH

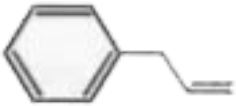
Answer: B

Watch Video Solution

4. Which of the following has the lowest heat of combustion?

A. 

B. 

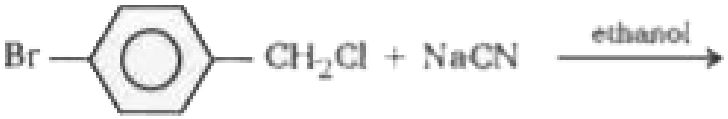
C. 

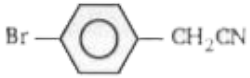
D. 

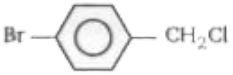
Answer: C

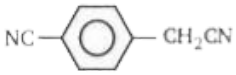
Watch Video Solution

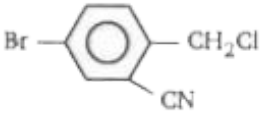
5. The product obtained from the reaction is



A. 

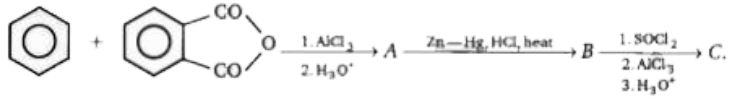
B. 

C. 

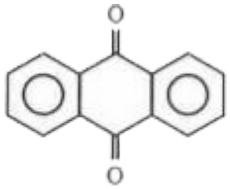
D. 

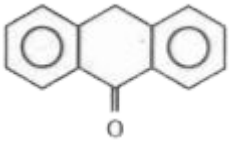
Answer: A

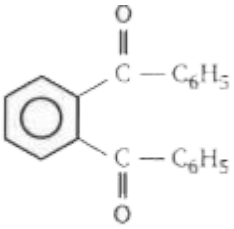
Watch Video Solution

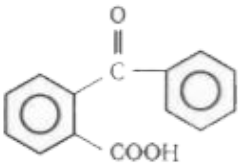
6. 

The end product (C) is :

A. 

B. 

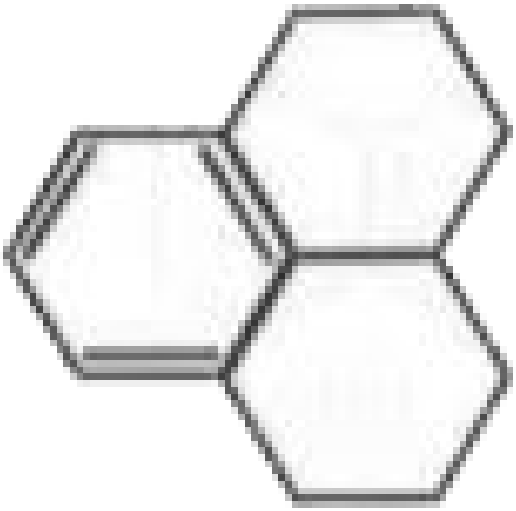
C. 

D. 

Answer: B

Watch Video Solution

7. How many benzylic hydrogens are present in the hydrocarbon shown below?



A. 3

B. 4

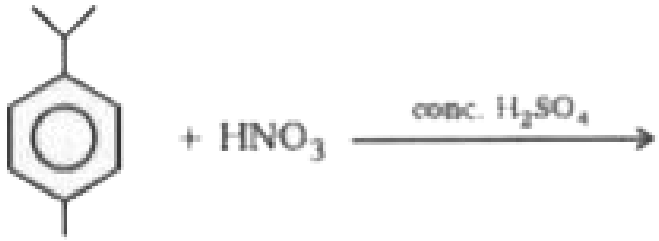
C. 5

D. 8

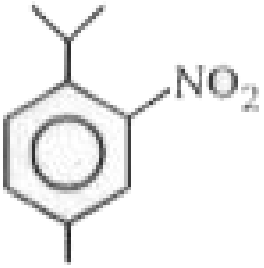
Answer: C

Watch Video Solution

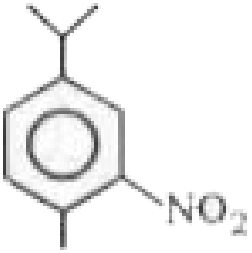
8. The major product formed in the reaction is :



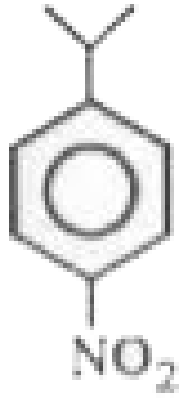
A.



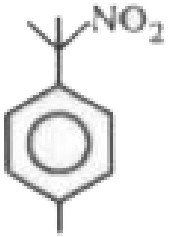
B.



C.



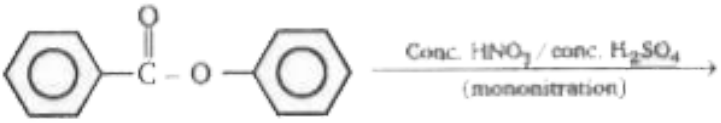
D.

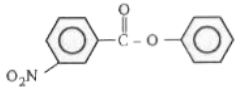


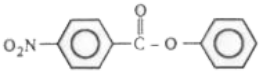
Answer: B

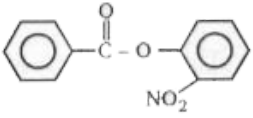
Watch Video Solution

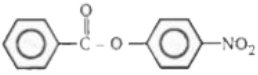
9. The major product formed in the reaction is :



A. 

B. 

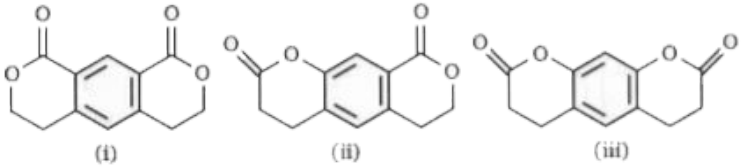
C. 

D. 

Answer: D

Watch Video Solution

10. Increasing order of rate of reaction with HNO_3 / H_2SO_4 is :



A. $iii < ii < i$

B. $ii < iii < i$

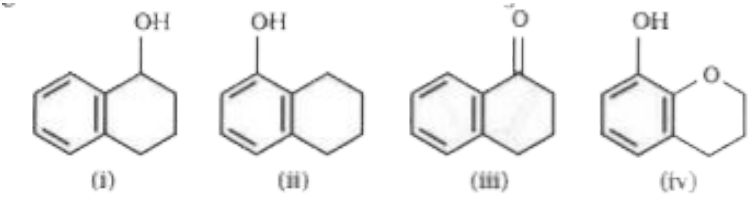
C. $I < iii < ii$

D. $I < ii < iii$

Answer: D

Watch Video Solution

11. Increasing order of rate of reaction with $Br_2 / AlCl_3$ is :



A. $iii < I < ii < iv$

B. $iv < ii < I < iii$

C. $ii < iv < iii < i$

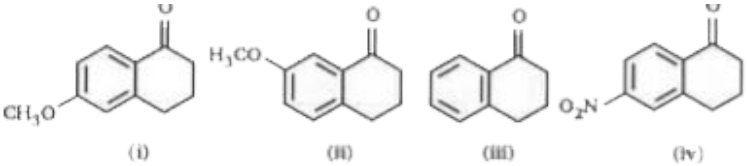
D. $iv < ii < iii < i$

Answer: A

Watch Video Solution

Watch Video Solution

12. Increasing order of equilbrium constant for the formation of a hydrate is :



A. $I < ii < iii < iv$

B. $iv < ii < I < iii$

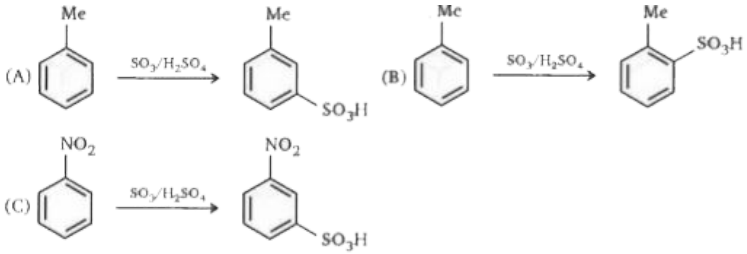
C. $ii < iv < iii < i$

D. $iv < ii < iii < i$

Answer: A

Watch Video Solution

13. Rank the following reaction A, B and C in order of increasing rate,



A. $B > A > C$

B. $B > C > A$

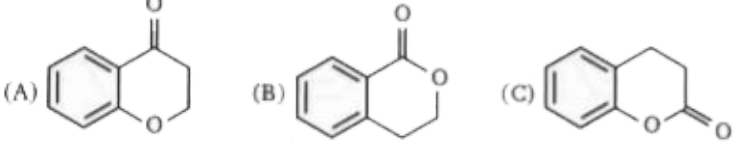
C. $A > B > C$

D. $A > C > B$

Answer: A

Watch Video Solution

14. Rank in order of increasing rate of reaction towards EAS with bromine in the presence of $FeBr_3$



A. B lt A lt C

B. A lt B lt C

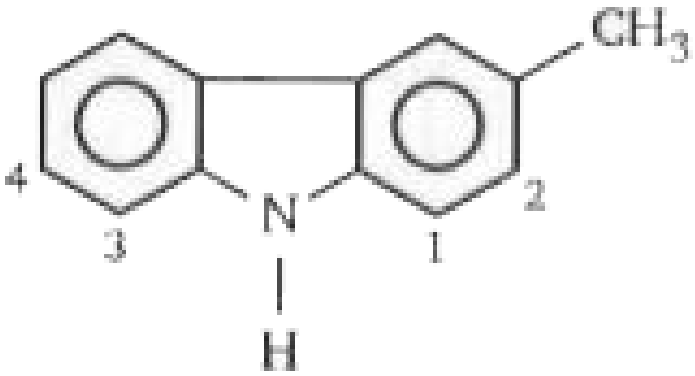
C. B lt C lt A

D. A lt C lt B

Answer: A

Watch Video Solution

15.



Identify the position where E.A.S. can take place.

A. 1

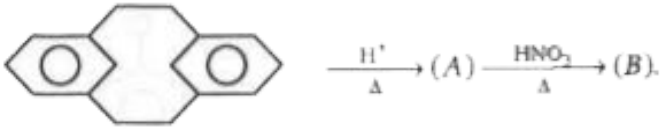
B. 2

C. 3

D. 4

Answer: A

Watch Video Solution

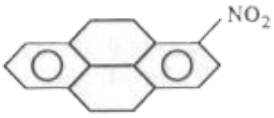


Product (B) in the above reactions is:

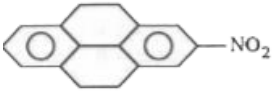
16.

Product (B) in the above reactions is:

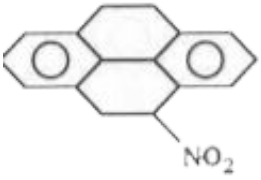
A.



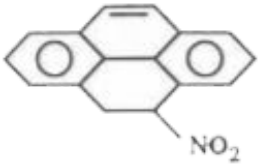
B.



C.

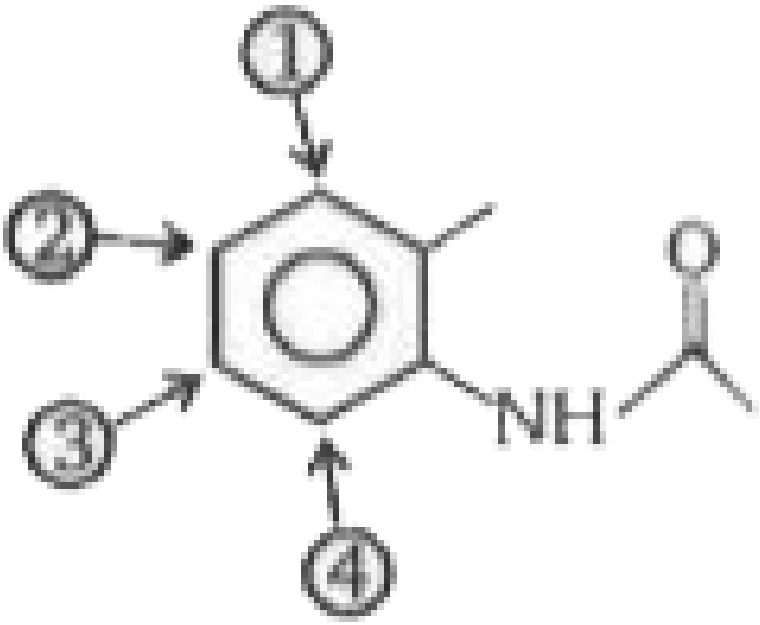


D.



Answer: B

Watch Video Solution



17.

Sulphonation is most favourable at the carbon number....

A. 1

B. 2

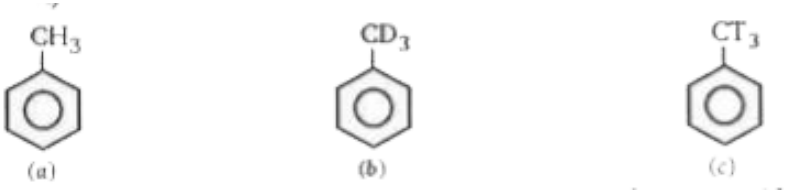
C. 3

D. 4

Answer: B

Watch Video Solution

18. Arrange the following in decreasing order of reactivity towards EAS (electrophilic aromatic substitution)



A. a gt b gt c

B. c gt b gt a

C. a gt c gt b

D. c gt a gt b

Answer: A

Watch Video Solution

19.  (a)  (b)  (c)  (d)

Decreasing order of rate of electrophilic aromatic substitution is : (

A. a gt b gt c gt d

B. a gt c gt b gt d

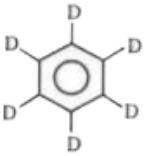
C. b gt a gt c gt d

D. b gt c gt a gt d

Answer: B

Watch Video Solution

20. Arrange the following in increasing order of rate of Nitration:

 (a)  (b)  (c)  (d)  (e)

A. b lt c lt a lt d lt e

B. d lt e lt a = c lt b

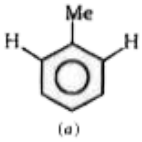
C. d lt a lt c lt e lt b

D. a lt c lt b lt e lt d

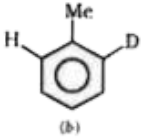
Answer: B

Watch Video Solution

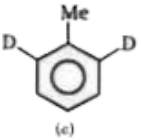
21.



(a)



(b)



(c)

The rate of nitration will be:

A. a gt b gt c

B. a gt c gt b

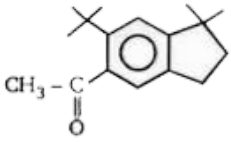
C. a = b = c

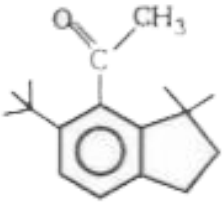
D. c gt a gt b

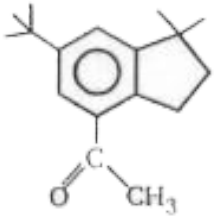
Answer: C

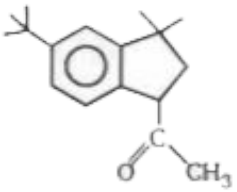
Watch Video Solution

22. The major product of the reaction is

A. 

B. 

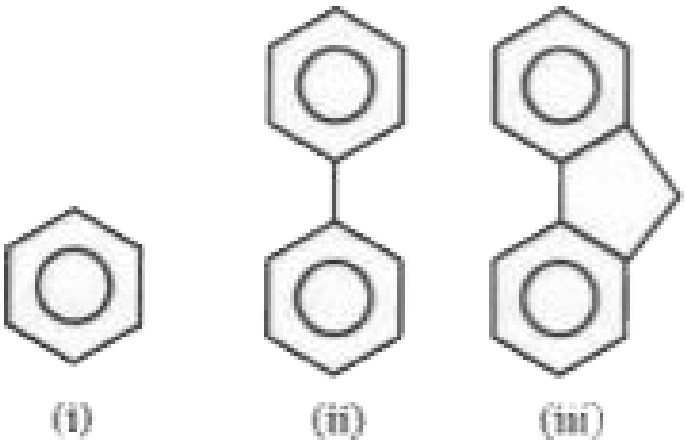
C. 

D. 

Answer: C

Watch Video Solution

23. Arrange in their decreasing order of rate of electrophilic aromatic substitution :



A. i gt ii gt iii

B. iii gt ii gt i

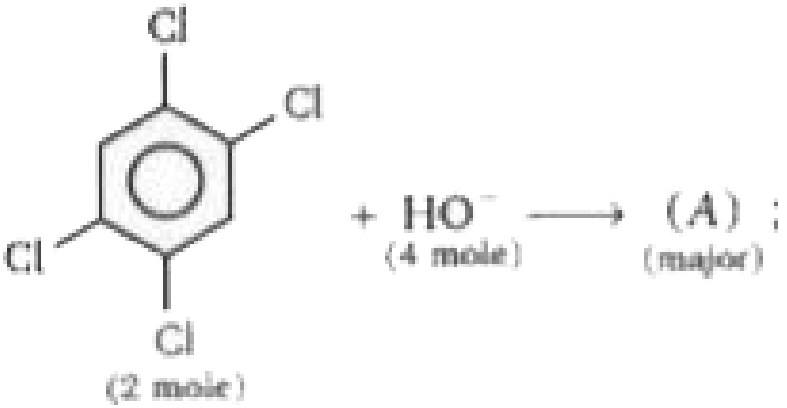
C. iii gt i gt ii

D. i gt iii gt ii

Answer: B

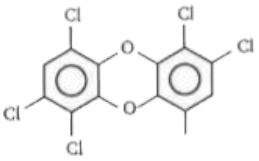
Watch Video Solution

24.

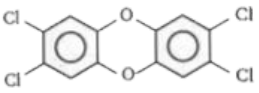


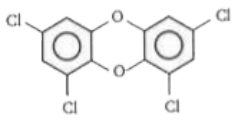
Product (A) of the given reaction is :

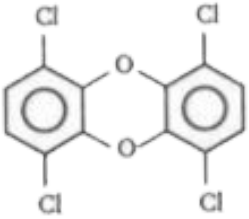
A.



B.



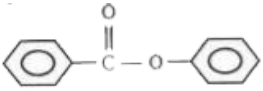
C. 

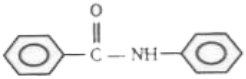
D. 

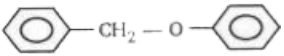
Answer: B

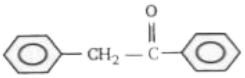
Watch Video Solution

25. In which of the following compound electrophilic aromatic substitution take place in phenyl ring present in left hand side ?

A. 

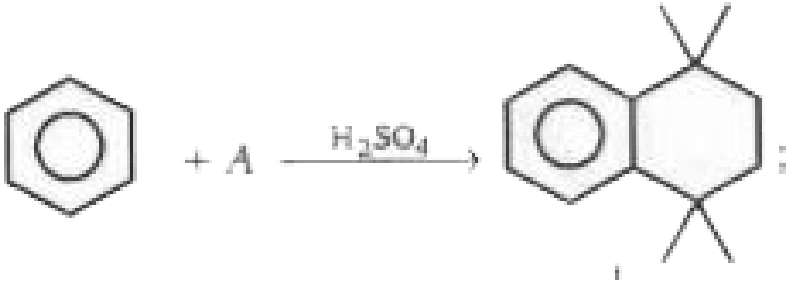
B. 

C. 

D. 

Answer: D

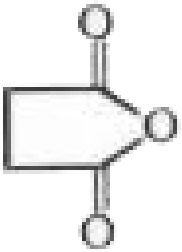
Watch Video Solution



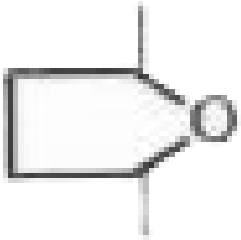
26. , Reactant

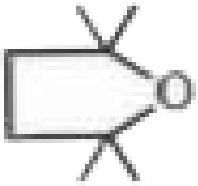
(A) is :

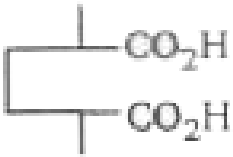
A.



B.



C. 

D. 

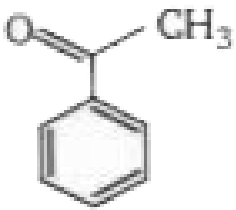
Answer: C

Watch Video Solution

27. Which of the following compounds is the slowest to react with nitrosonium ion $\left(NO^+\right)$?

A. 

B.



C.

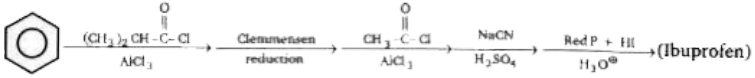
D.

Answer: C

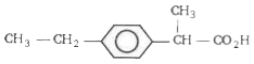
Watch Video Solution

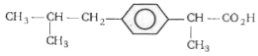
28. Complete the following reaction

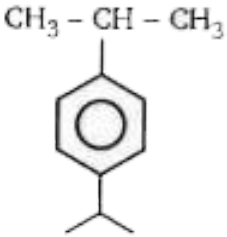
.

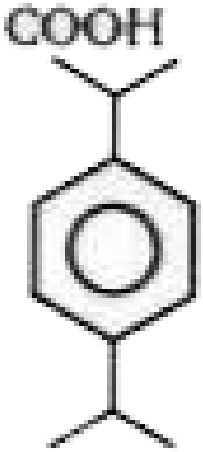


Ibuprofen is :

A. 

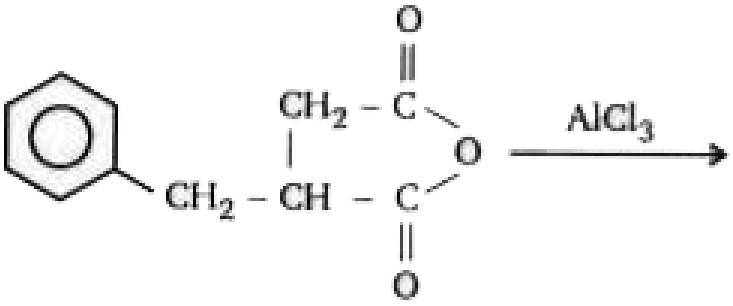
B. 

C. 

D. 

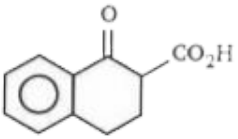
Answer: B

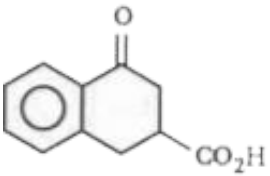
Watch Video Solution

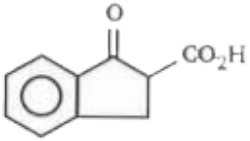


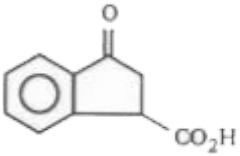
29.

What is the major product of above Friedel-Craft reaction ?

A.


B.


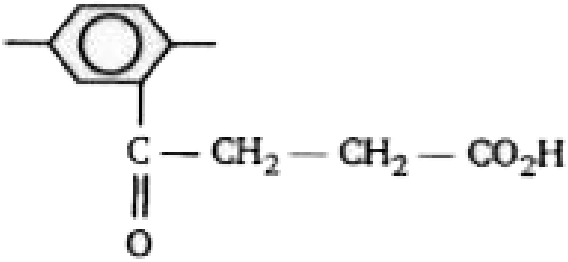
C.


D.


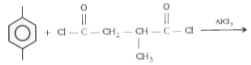
Answer: B

Watch Video Solution

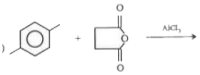
30. What combination of acid chloride or anhydride and arene would you choose to prepare given compound ?



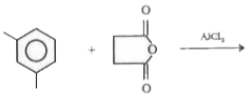
A.



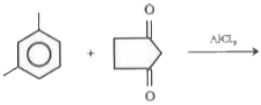
B.



C.



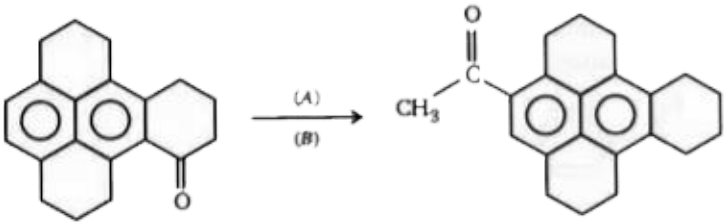
D.



Answer: B

Watch Video Solution

31. In the given conversion best yield will obtained with :



A. $A = CH_3 - \overset{O}{\overset{||}{C}} - Cl, AlCl_3, B = Zn(Hg), HCl$

B. $A = Zn(Hg), HCl, B = CH_3 - \overset{O}{\overset{||}{C}} - Cl, AlCl_3$

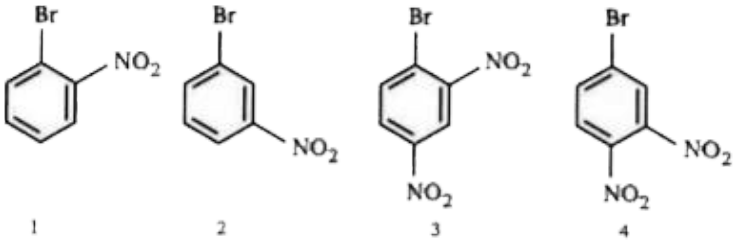
C. $A = CH_3 - CH_2 - Cl, B = Zn(Hg), HCl$

D. $A = NH_2 - NH_2 / HO^-, D, B = CH_3 - CH_2 - Cl, AlCl_3$

Answer: B

Watch Video Solution

32. Rank the following in order of decreasing rate of reaction with alkoxide ion $\left(CH_3CH_{20}O^-\right)$ in a nucleophilic aromatic substitution reaction :



A. 3 gt 4 gt 1 gt 2

B. 3 gt 4 gt 2 gt 1

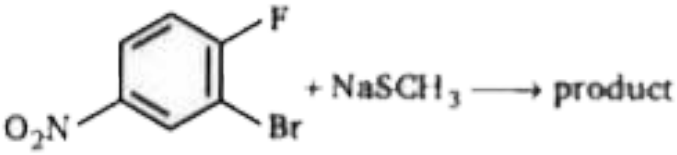
C. 2 gt 1 gt 4 gt 3

D. 4 gt 3 gt 2 gt 1

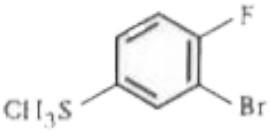
Answer: A

Watch Video Solution

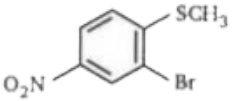
33. Identify the principal organic product of the following reaction.



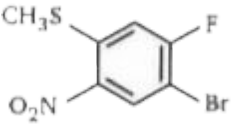
A.



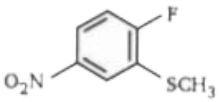
B.



C.



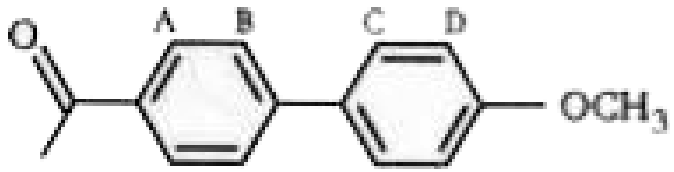
D.



Answer: B

Watch Video Solution

34. Which position will be attacked most rapidly by the nitronium ion $(-NO_2)^+$ when the compound undergoes nitration with HNO_3/H_2SO_4 :



A. A

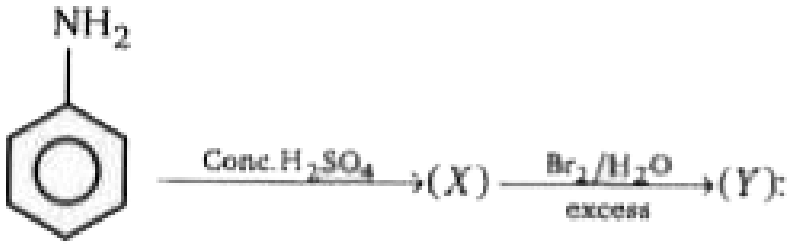
B. B

C. C

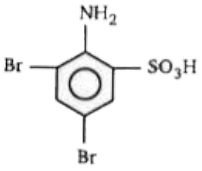
D. D

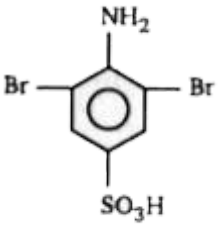
Answer: D

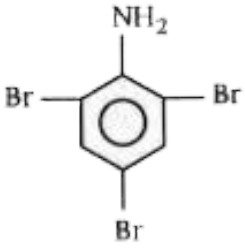
Watch Video Solution

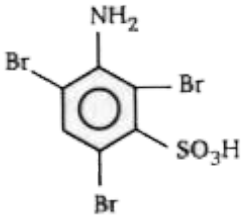
35. 

Product (Y) of this reaction is :

A. 

B. 

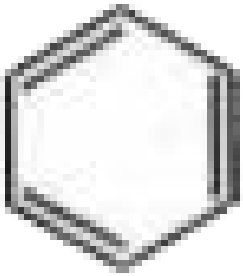
C. 

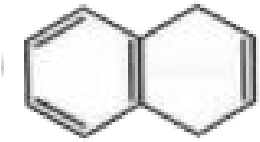
D. 

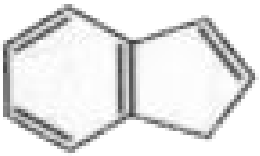
Answer: C

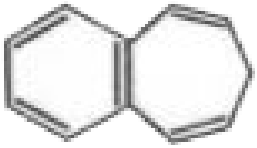
Watch Video Solution

36. All the hydrocarbons shown are very weak acids. One, however, is far more acidic than the others. Which one is the strongest acid ?

A. 

B. 

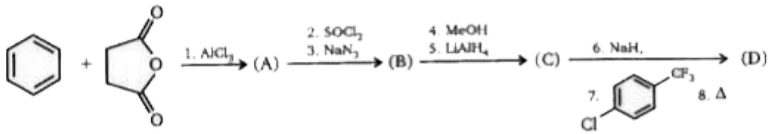
C. 

D. 

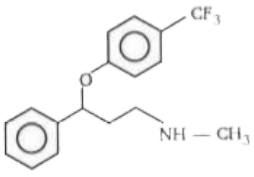
Answer: C

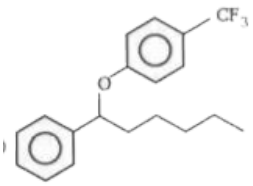
Watch Video Solution

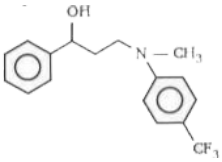
37.

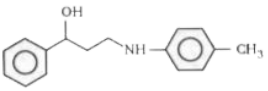


Product (D) in above sequence is :

A. 

B. 

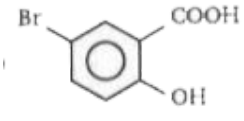
C. 

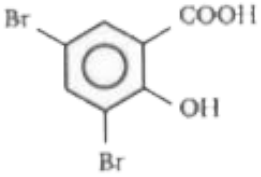
D. 

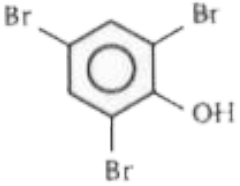
Answer: A

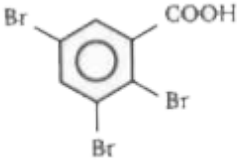
Watch Video Solution

38. The action of bromine water (excess) on salicylic acid results in the formation of :

A. 

B. 

C. 

D. 

Answer: C

Watch Video Solution

39. What is the correct order of o/p ratio when E^+ attacks the following system ?

A- PhF , B-PhCl, C-PhBr, D-PhI

A. A lt B lt C lt D

B. A = B = C=D

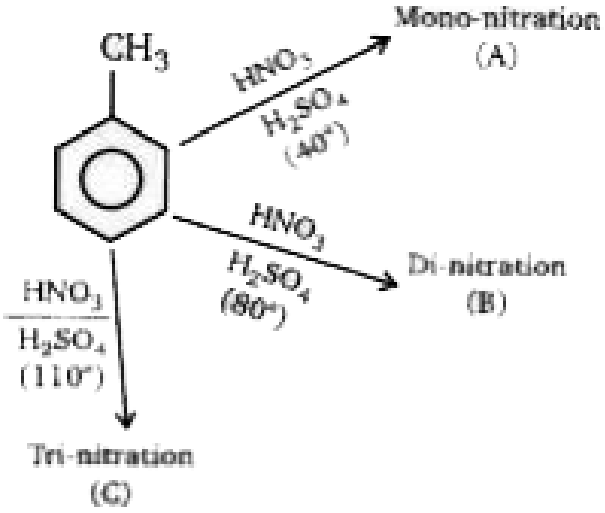
C. D lt C lt B lt A

D. D lt B lt A lt C

Answer: A

Watch Video Solution

40. How many products are capable of beings formed from toluene in each of following reaction ?



A. A = 3, B = 6,C = 8

B. A = 3, B = 6, C = 6

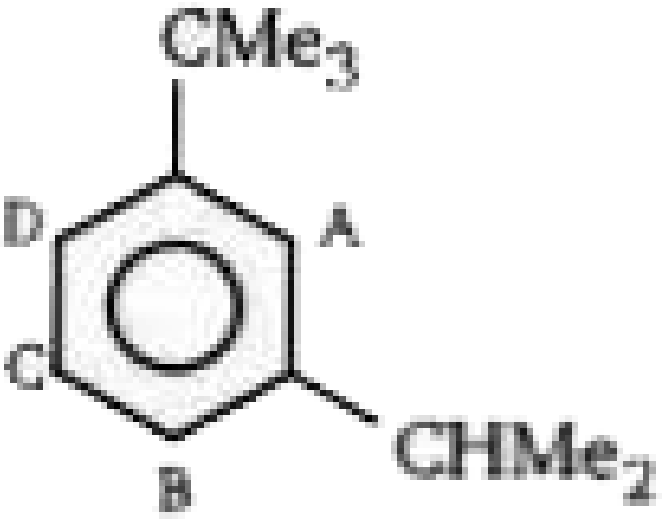
C. A = 3, B = 6, C = 10

D. A = 3, B = 4, C = 6

Answer: B

Watch Video Solution

41. Nitration takes place at the which position of the given compound ?



A. A

B. B

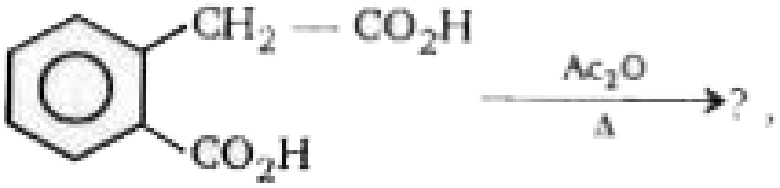
C. C

D. D

Answer: B

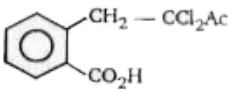
Watch Video Solution

42.

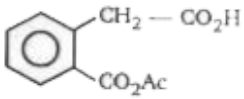


Indentify the product.

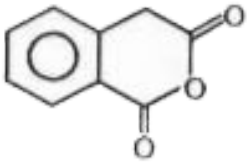
A.

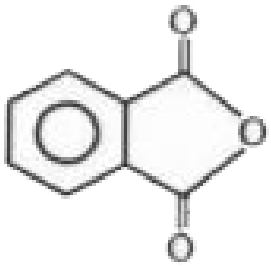


B.



C.

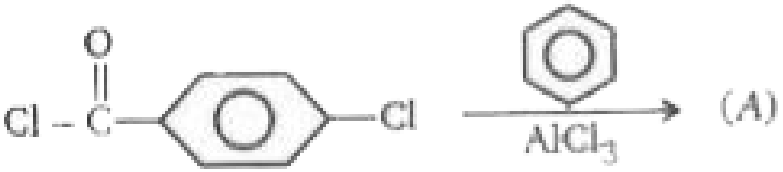




D.

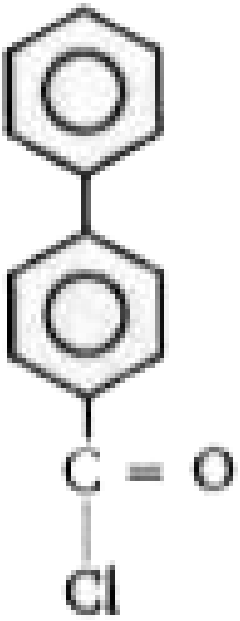
Answer: D

Watch Video Solution

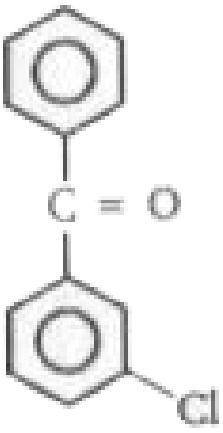


43.

Unknown (A) is :

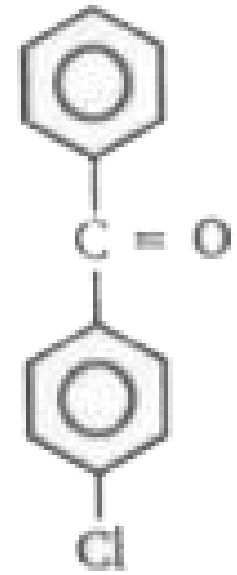


A.



B.

C.

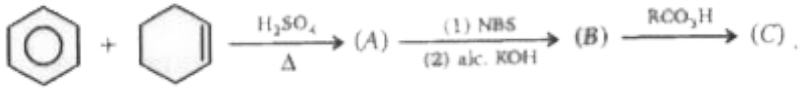


D.

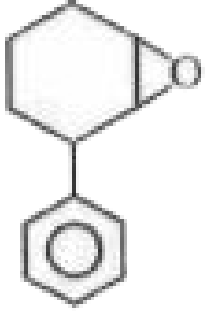
Answer: C

Watch Video Solution

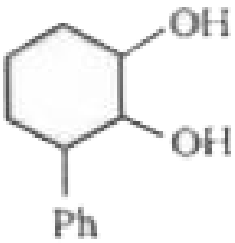
44.

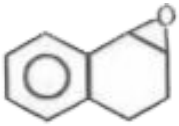


Product (C) is:

A. 

B. 

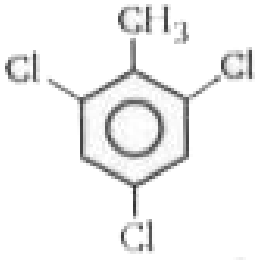
C. 

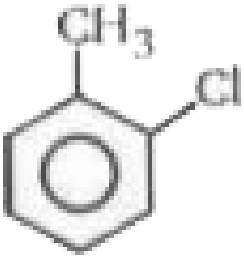
D. 

Answer: C

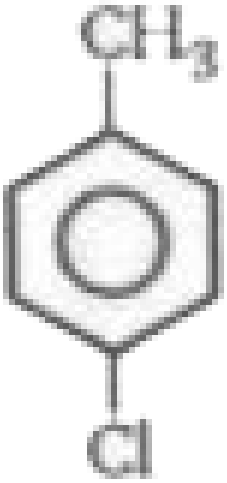
Watch Video Solution

45. The reaction of toluene with chlorine in the presence of light gives :

A. 

B. 

C. 

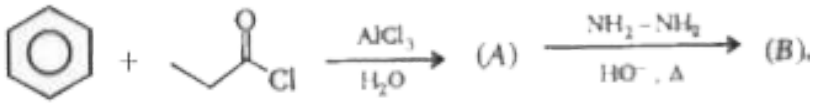


D.

Answer: A

Watch Video Solution

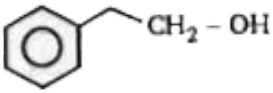
46.



Product (B) in this reaction is :

A.

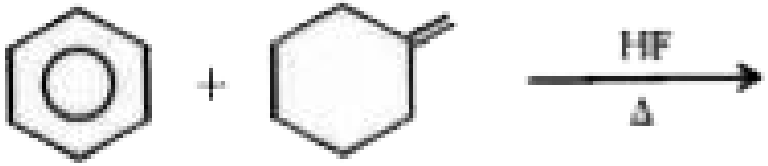
B. 

C. 

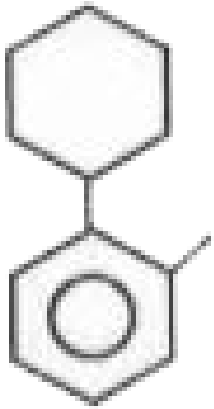
D. 

Answer: C

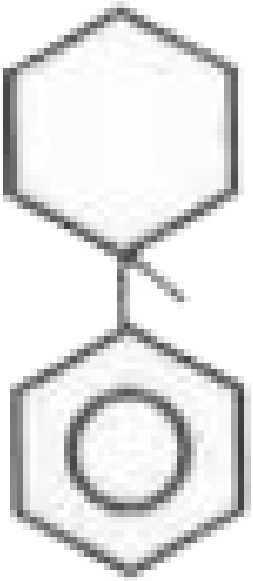
Watch Video Solution

47. 

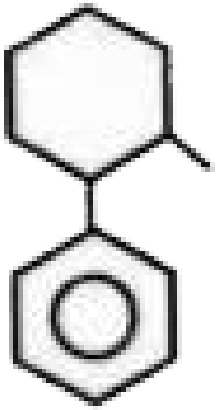
Suitable product of this reaction is :



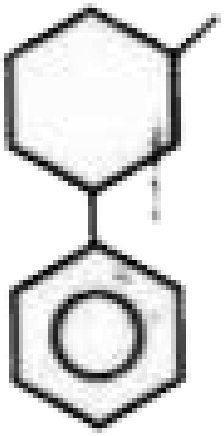
A.



B.



C.

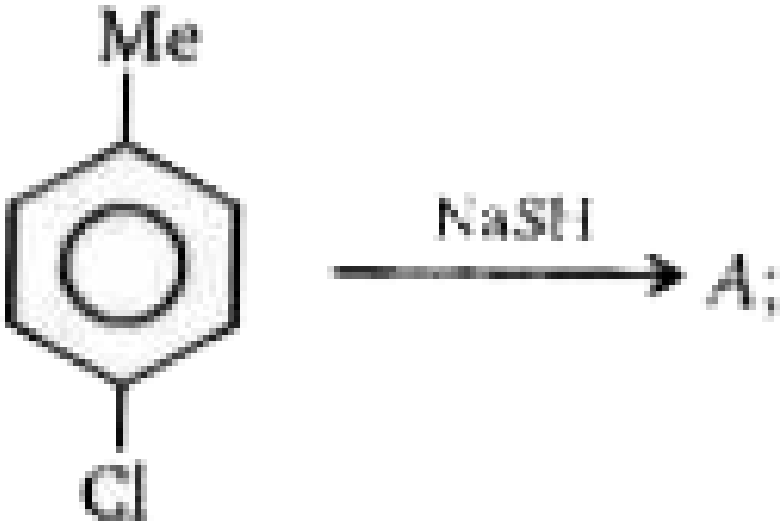


D.

Answer: A

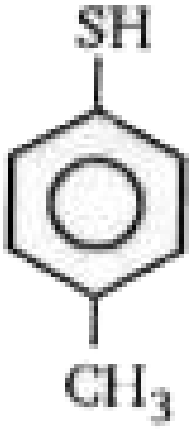
Watch Video Solution

48.

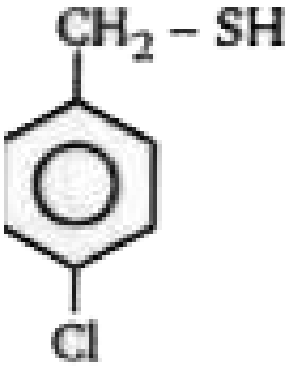


Product (A) of the reaction is :

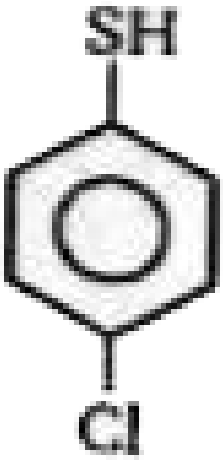
A.



B. no reaction



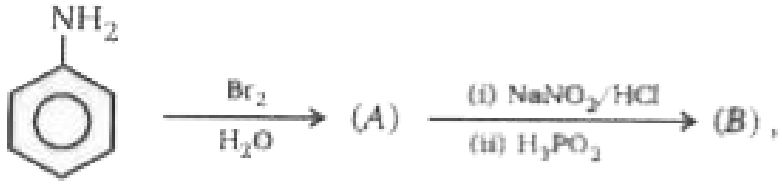
C.



D.

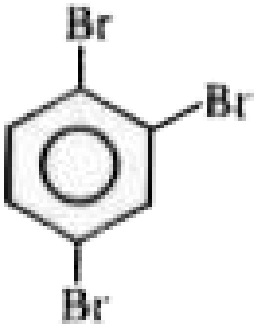
Answer: B

Watch Video Solution

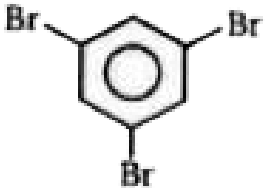


49. Product (B)

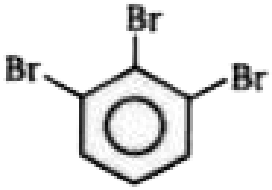
in this reaction is :



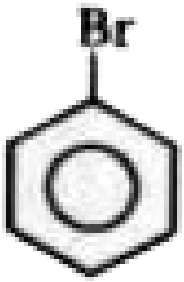
A.



B.



C.

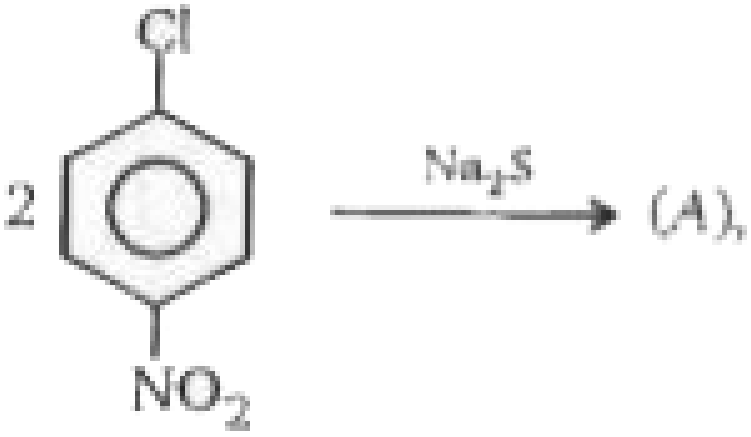


D.

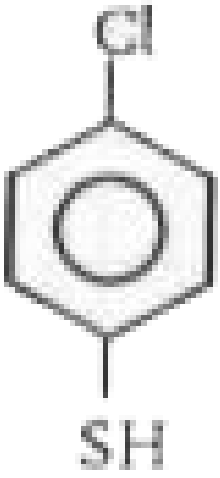
Answer: B

Watch Video Solution

50.



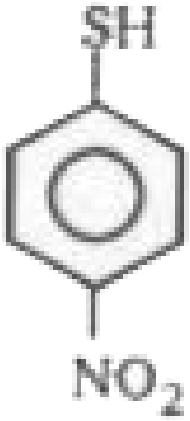
Product (A) in this reaction is :



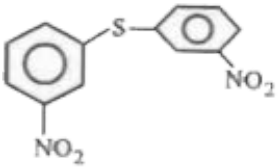
A.

B.

C.

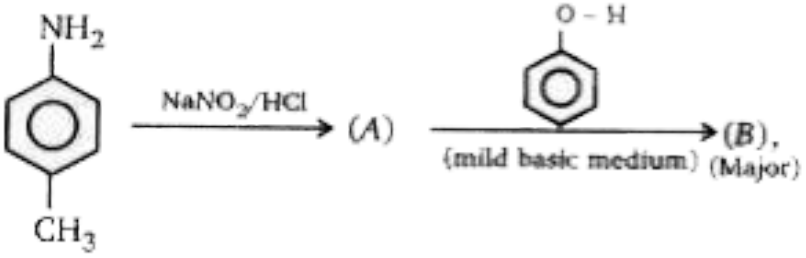


D.



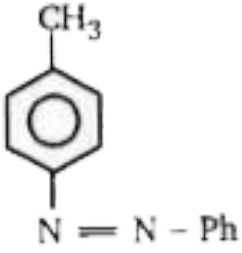
Answer: B

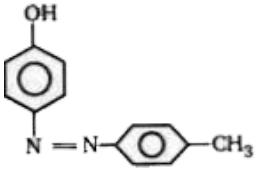
Watch Video Solution

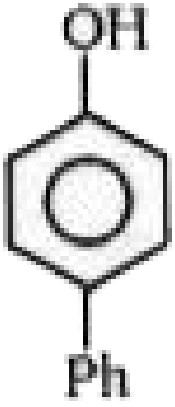


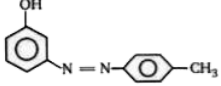
51. Product (B)

of this reaction is :

A. 

B. 

C. 

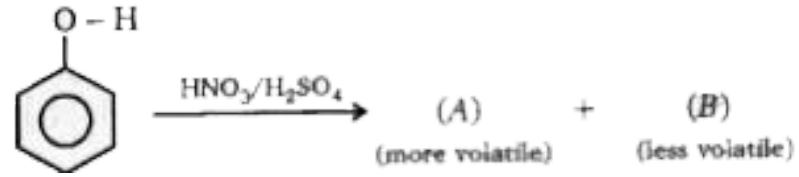


D.

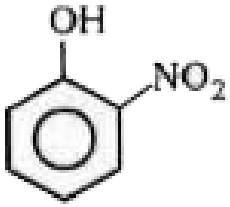
Answer: B

Watch Video Solution

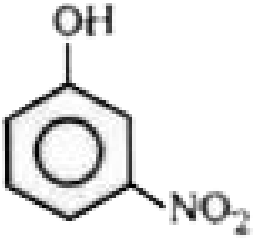
52.



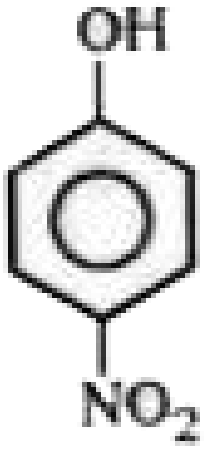
Product (A) of the above reaction is :



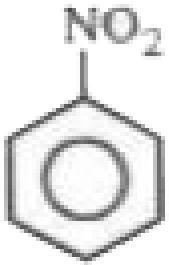
A.



B.



C.

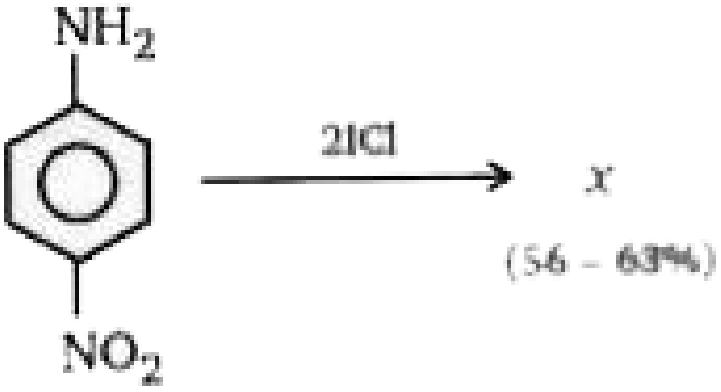


D.

Answer: A

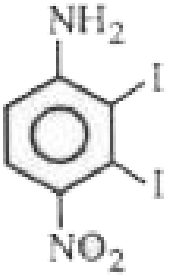
Watch Video Solution

53.

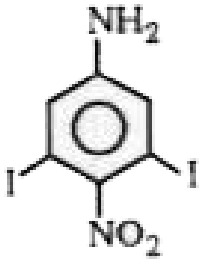


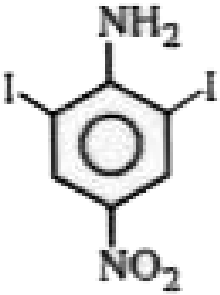
Major product (x) in this reaction is :

A.

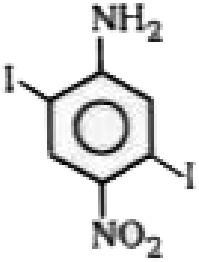


B.





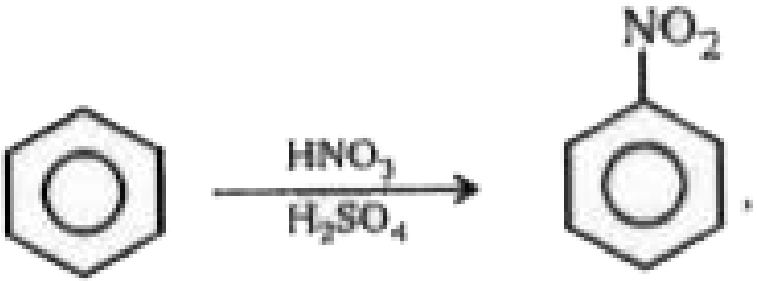
C.



D.

Answer: C

Watch Video Solution



54. van't-Hoff factor (i) for this reaction is :

A. 2

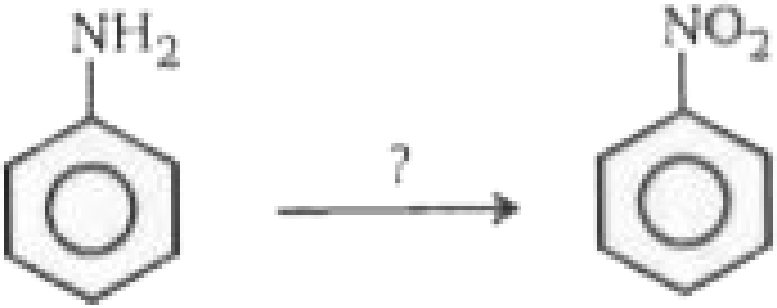
B. 3

C. 4

D. 5

Answer: C

Watch Video Solution

55. 

the missing reagent is :

A. CF_3CO_3H

B. H_2SO_4

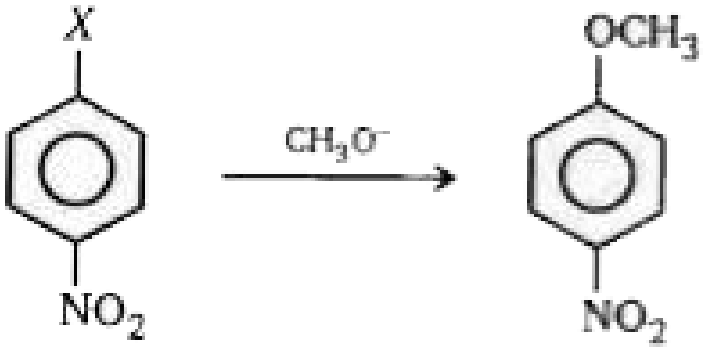
C. LAH

D. $NaBH_4$

Answer: A

Watch Video Solution

56.



above reaction is an example of Nucleophilic aromatic substitution. Which of the following halide (-X) is most readily replaced.

A. $\_ F$

B. $- Cl$

C. $- Br$

D. $- I$

Answer: A

Watch Video Solution

57. When comparing the hydrogenation of benzene with that of a hypothetical 1, 3, 5-cyclohexatriene, benzene ____than the cyclohexatriene.

A. absorbs 152 kJ/mol more heat

B. gives off 152 kJ/mol more heat

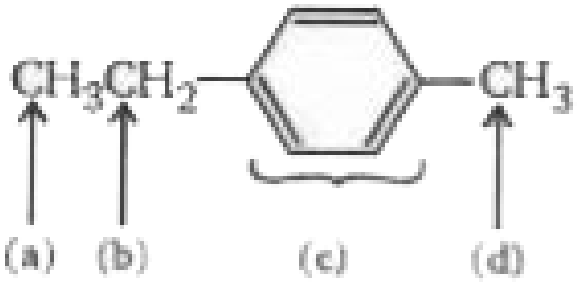
C. absorbs 152kJ /mol less heat

D. gives off 152 kJ/mol less heat

Answer: B

Watch Video Solution

58. Which of the following hydrogens is most easily abstracted on reaction with bromine free radicals, Br^+ ?



A. a

B. b

C. c

D. d

Answer: B

Watch Video Solution

59. The electrophilic aromatic substitution proceeds through a :

A. free radical

B. sigma complex

C. benzyne

D. carbene

Answer: B

Watch Video Solution

60. Which of the following substitution of benzene is ortho-para in electrophilic substitution and ortho-para in nucleophilic substitution ?

A. $-NO_2$

B. $-NO$

C. $-SO_3H$

D. $-SO_2Me$

Answer: B

Watch Video Solution

61. The number of possible isomers of dichloronitrobenzene is :

A. 3

B. 4

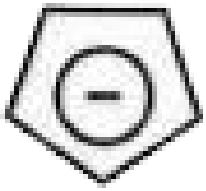
C. 6

D. 8

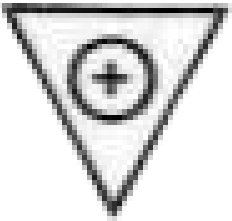
Answer: C

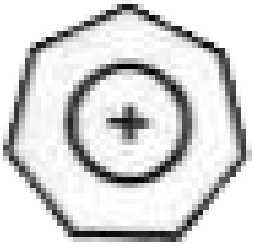
Watch Video Solution

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

A. 

B. 

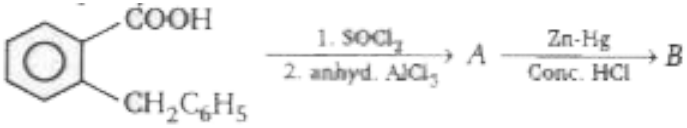
C. 

D. 

Answer: B

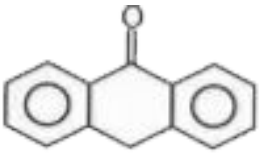
Watch Video Solution

63. Consider the following sequence of reactions.



The end product (B) is:

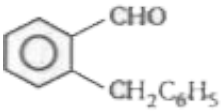
A.



B.

C.

D.



Answer: B

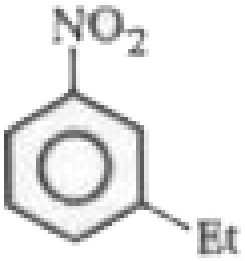
Watch Video Solution

64. $Ph - NO_2 - Et - Cl \xrightarrow{AlCl_3} (A)$, Product (A) of the given reaction is

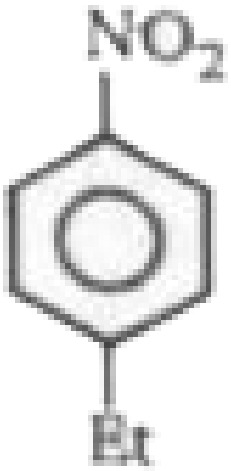
:

A. $Ph - NH - Et$

B. no reaction



C.



D.

Answer: B

Watch Video Solution

65. In nitration of benzene by mixed acid the rate of reaction will be :

A. $C_6H_6 = C_6D_6 = C_6T_6$

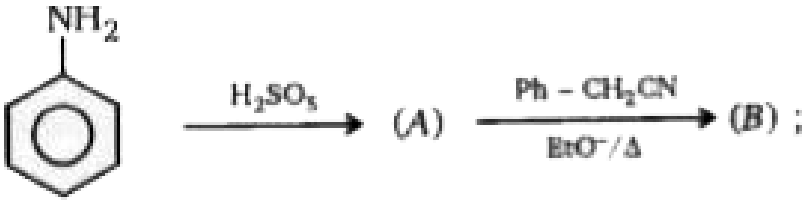
B. $C_6H_6 > C_6D_6 > C_6T_6$

C. $C_6H_6 = C_6D_6 > C_6T_6$

D. $C_6H_6 < C_6D_6 < C_6T_6$

Answer: A

Watch Video Solution

66. 

Product (B) is :

A. $Ph - N = \underset{\underset{C}{|}}{-} CN$

B. $Ph - N = C - PH$

C. Ph – N = N – Ph

D. Ph –CH = CH - Ph

Answer: A

View Text Solution

67. Which of the following ring compounds obeys Huckel's rule ?

A. $C_4H_4^{-1}$

B. $C_4H_4^{+1}$

C. $C_4H_4^{-2}$

D. C_4H_4

Answer: C

Watch Video Solution

68. Nitration of which of the following reactant gives maximum % of meta product (using HNO_3 / H_2SO_4) ?

A. Toluene

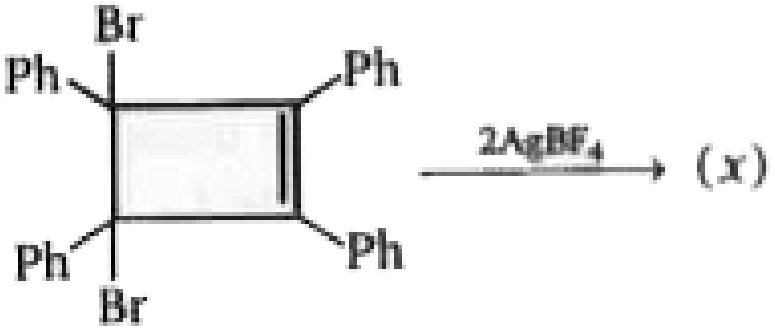
B. Aniline

C. Benzene

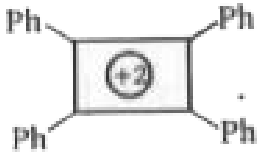
D. Isopropyl benzene

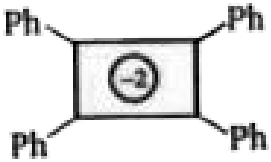
Answer: B

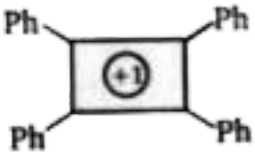
Watch Video Solution

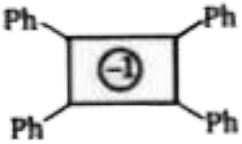


69. compound (x) will be :

A. 

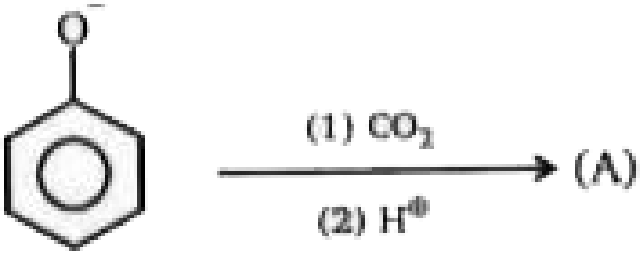
B. 

C. 

D. 

Answer: A

Watch Video Solution

70. 

Which of the following is true statement about the reaction ?

A. Ortho isomer is major if PhoNa is used

B. Para isomer is major if PhOK is used

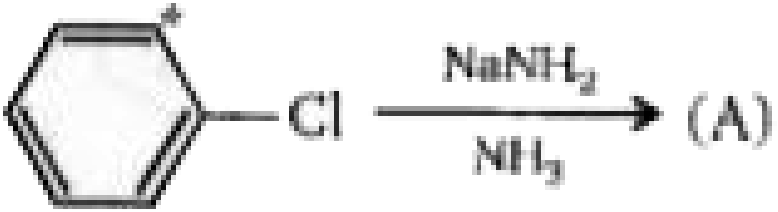
C. Product formed is further used for preparation of drug aspirin

D. All of these

Answer: D

Watch Video Solution

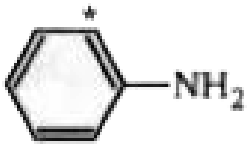
71. Two benzyne intermediates are likely to be formed equally. Reaction with amide ion can occur in two different directions with each benzyne, giving three possible products. They are formed in a 1:2:1 ratio. Asterisk (*) refers to ^{14}C.



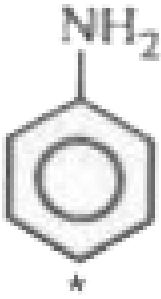
Product major, product (A) is :

A.

B.



C.

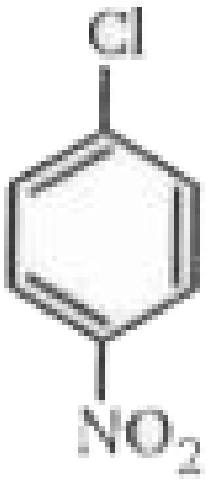


D.

Answer: B

Watch Video Solution

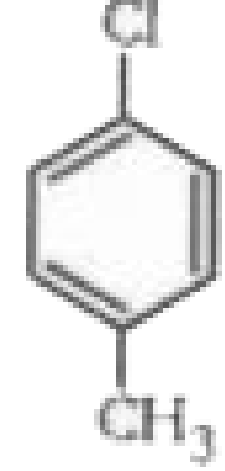
72. Which one of the following undergoes nucleophilic aromatic substitution at the fastest rate ?



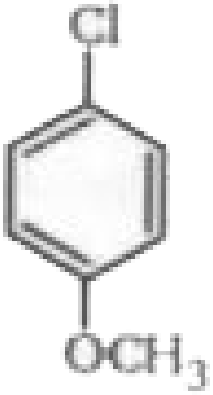
A.

B.

C.



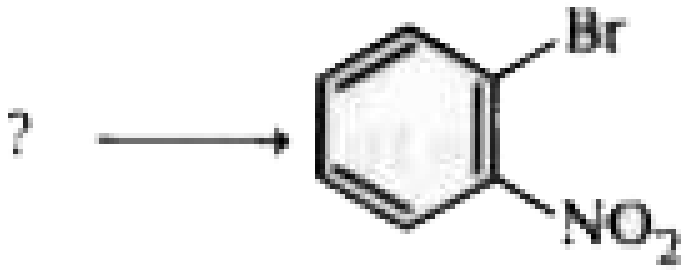
D.



Answer: A

Watch Video Solution

73. For the reaction,



, the best combination of reactants is :

A. $C_6H_5Br + HNO_3 + H_2SO_4$

B. $C_6H_5Br + H_2SO_4$, heat

C. $C_6H_5NO_2 + Br_2, FeBr_3$

D. $C_6H_5NO_2 + HBr$

Answer: A

Watch Video Solution

74. The action of $AlCl_3$ in Friedel Craft's reaction is:

A. to absorb HCl

B. to release HCl

C. to produce electrophile

D. to produce nucleophile

Answer: C

Watch Video Solution

75. n-Butylbenzene on oxidation with hot alkanine $KMnO_4$ gives :

A. benzoic acid

B. butanoic acid

C. benzyl alcohol

D. benzaldehyde

Answer: A

Watch Video Solution

76. Which sequence of steps describes the best synthesis of 2-phenylpropene ?

(a) Benzene + 2-chloropropene , $AlCl_3$

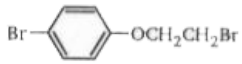
(b) 1. Benzaldehyde ($C_6H_5CH = O$) + CH_3CH_2MgBr, diethyl ether
2. H_3O^+ 3. H_2SO_4, heat

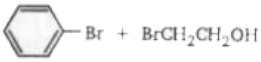
(c) 1. Bromobenzene + Mg, diethyl ether 2. Propanal ($CH_3CH_2CH = O$)
3. H_3O^+ 4. H_2SO_4, heat

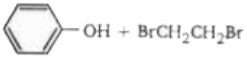
(d) 1. Bromobenzene + Mg, diethyl ether 2. Acetone [$(CH_3)_2C = O$]
3. H_3O^+ 4. H_2SO_4, heat

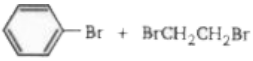
Watch Video Solution

77. What are the products of the following reaction ?

A. 

B. 

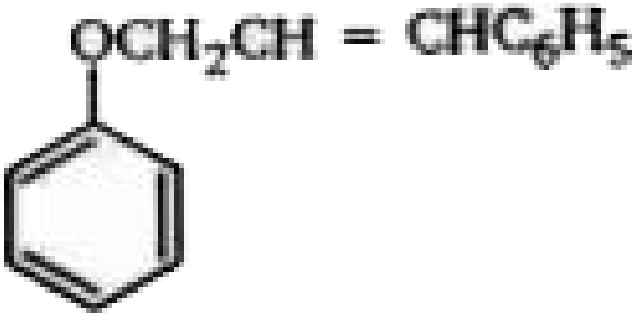
C. 

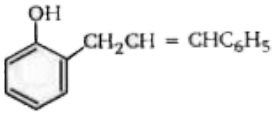
D. 

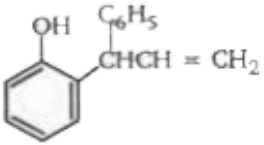
Answer: C

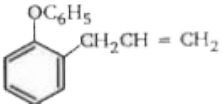
Watch Video Solution

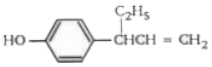
78. What is the product obtained by heating the following allylic ether of phenol ?



A. 

B. 

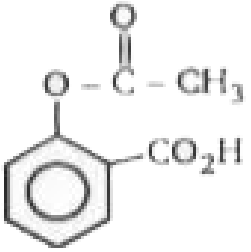
C. 

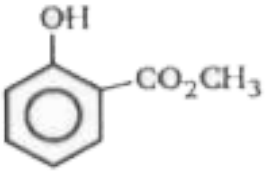
D. 

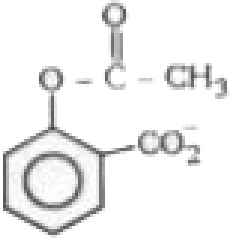
Answer: B

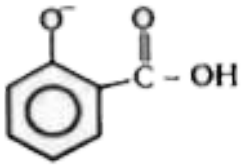
Watch Video Solution

79. When you ingest aspirin, it passes through your stomach, which has an acidic pH, before traveling through the basic environment of your intestine. Provide the structure form as it exists in the intestine.

A. 

B. 

C. 

D. 

Answer: C

Watch Video Solution

80. Which of the following sets of reagents, used in the order shown, would be enable for the preparation of p-chlorophenol from p-chloronitrobenzene ?

A. 1. Fe, HCl, 2. $NaOH$, 3. $NaNO_2$, H_2SO_4, 4. H_3PO_2

B. 1. Fe, HCl, 2. $NaOH$, 3. $NaNO_2$, H_2SO_4, 4. H_2O, heat

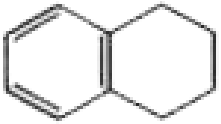
C. 1. Fe, HCl, 2. $NaOH$, 3. $NaNO_2$, H_2SO_4 , 4. ethanol

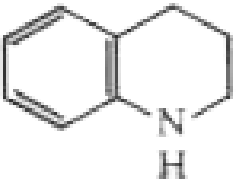
D. 1. NaOH, heat, 2. HCl

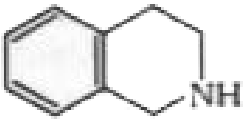
Answer: B

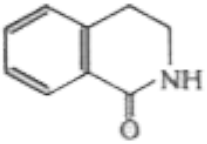
Watch Video Solution

81. Which one of the following compounds undergoes bromination of its aromatic ring (electrophilic aromatic substitution) at the fastest rate ?

A. 

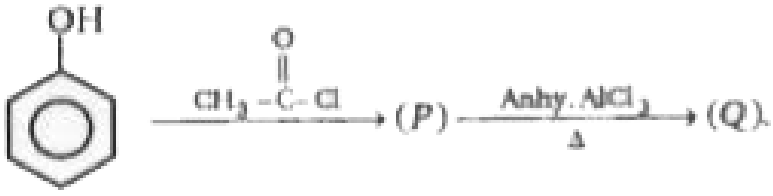
B. 

C. 

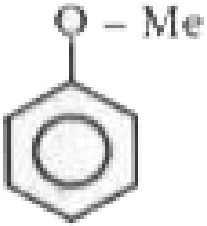
D. 

Answer: B

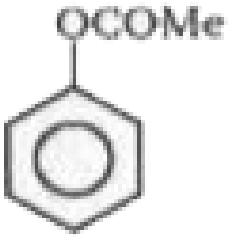
Watch Video Solution

82. 

Product (Q) in this reaction is :

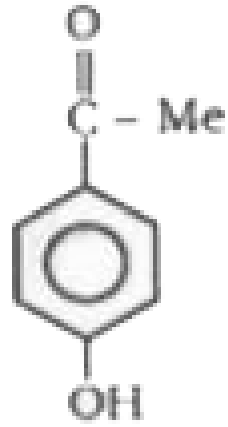


A.

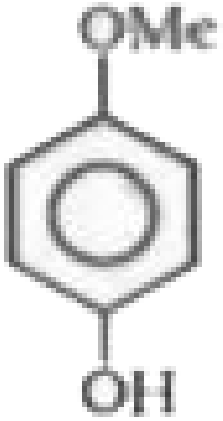


B.

C.

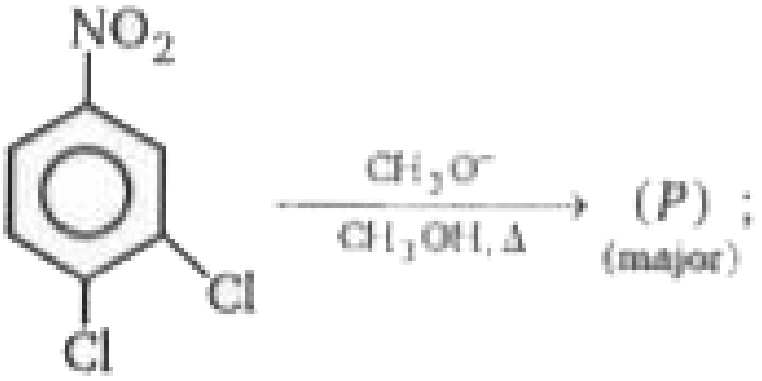


D.

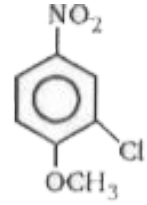


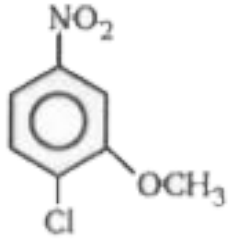
Answer: C

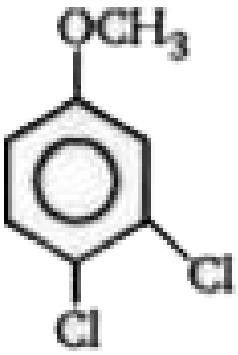
Watch Video Solution

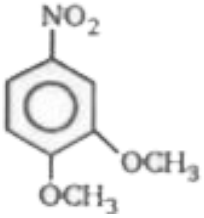
83. 

The product (P) will be :

A. 

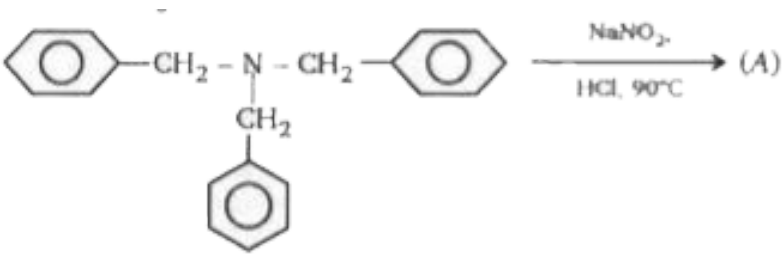
B. 

C. 

D. 

Answer: A

Watch Video Solution

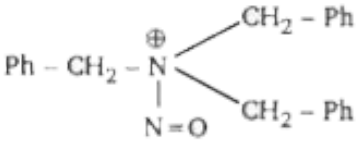


84.

Product (A) is :

A. $Ph - CH_2 - \underset{\underset{N=O}{|}}{-} - CH_2 - Ph$

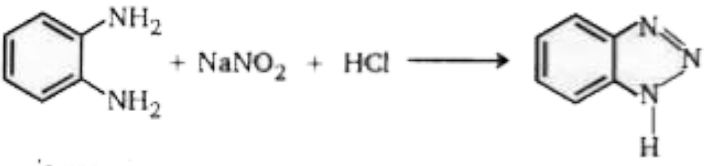
B. $Ph - CH_2 - \underset{\underset{Ph}{|}}{N} - N = O$

C. 

D. $Ph - N = O$

Answer: C

Watch Video Solution

85. 

This reaction is example of :

A. Intermolecular C-N coupling

B. Intramolecular C-N coupling

C. Intermolecular N - N coupling

D. Intramolecular N - N coupling

Answer: D

Watch Video Solution

86. The total number of possible isomeric trimethyl benzene is

A. 2

B. 3

C. 4

D. 6

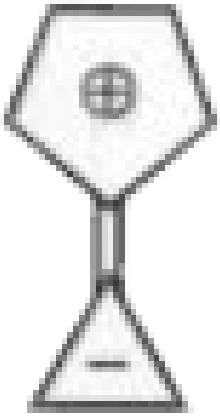
Answer: B

Watch Video Solution

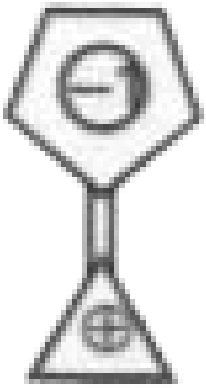
87. Caliene, C_7H_6 , is expected to be a fairly polar aromatic molecule. Which of the following resonance forms contributes to the greatest extent towards the real structure (resonance hybrid) of the molecule ?

A.

B.



C.

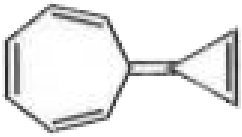


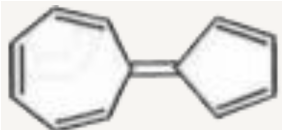
D.

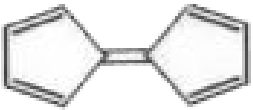
Answer: D

Watch Video Solution

88. Which of the following molecules is expected to have the greatest resonance stabilization ?

A. 

B. 

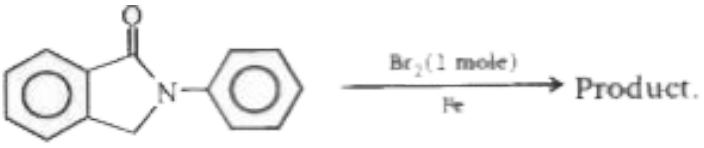
C. 

D. 

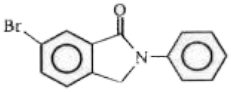
Answer: B

Watch Video Solution

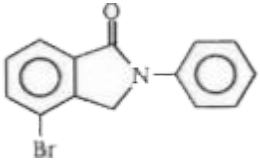
89. In the reaction given below, the major product formed is :



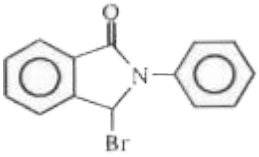
A.



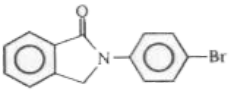
B.



C.



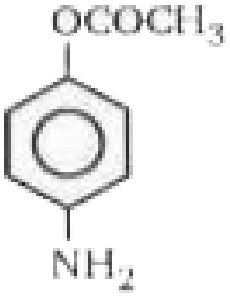
D.

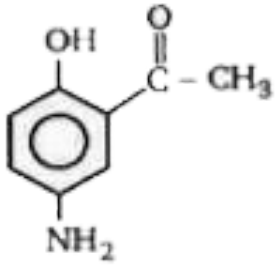


Answer: D

Watch Video Solution

90. p-aminophenol reacts with one equivalent of acetyl chloride in the presence of pyridine to give mainly:

A. 

B. 

C.

D. 

None

Answer: D

Watch Video Solution

91. Which of the following reactions can be used to prepare acetophenone ?

A. $C_6H_6 + CH_3COCl \xrightarrow[2.H_2O]{1.AlCl_3}$

B. $(C_6H_5COO)_2Ca + (CH_3COO)_2Ca \xrightarrow{\text{heat}}$

C. $C_6H_6CN \xrightarrow[2.H_3O^+]{1.CH_3MgI}$

D. All of these

Answer: D

Watch Video Solution

92. Consider the following sequence of reactions.

$$C_6H_6 + CH_3CH = CH_2 \xrightarrow[\text{heat}]{H_3PO_4} A \xrightarrow[2.H_3O^+, \text{heat}]{1.O_2.\text{heat}} B + C$$

The products (B) and (C) are :

A. benzaldehyde and acetaldehyde

B. benzoic acid and acetic acid

C. phenol and propionaldehyde

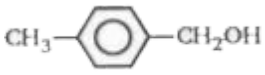
D. phenol and acetone

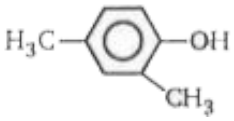
Answer: D

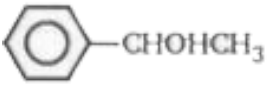
Watch Video Solution

93. An organic compound having the molecular formula $C_8H_{10}O$ on being heated with I_2 and dilute NaOH gives a yellow precipitate. The expected compound is :

A. $C_6H_5CH_2CH_2OH$

B. 

C. 

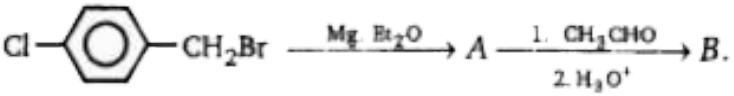


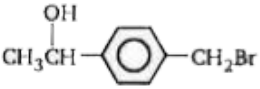
D.

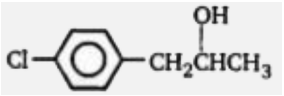
Answer: D

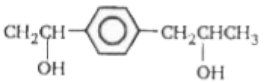
Watch Video Solution

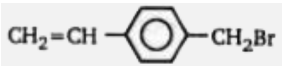
94. The product (B) of the reaction sequence is :



A. 

B. 

C. 

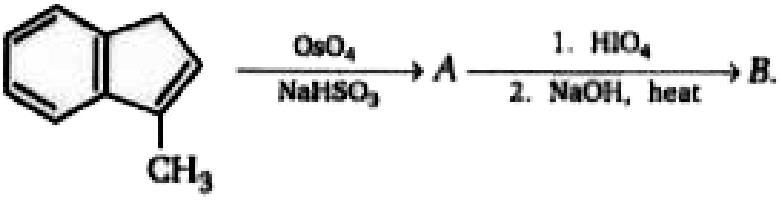
D. 

Answer: B

Watch Video Solution

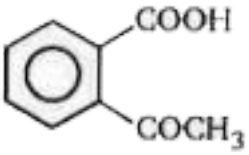
Watch Video Solution

95. Consider the following sequence of reactions.

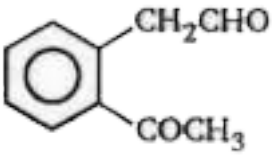


. The final product (B) is :

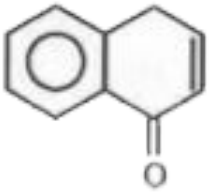
A.

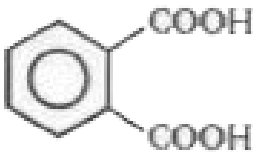


B.



C.



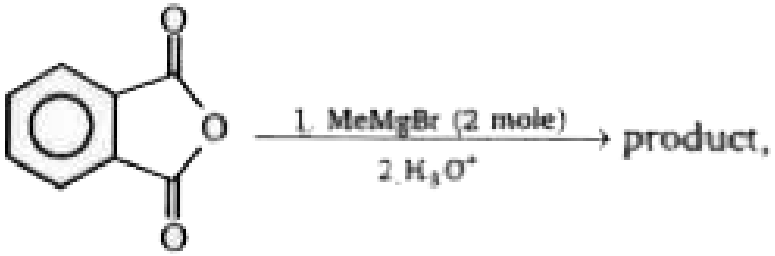


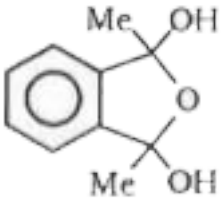
D.

Answer: C

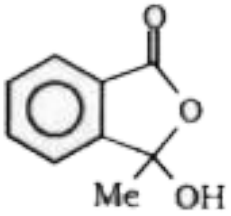
Watch Video Solution

96. For the reaction, the product expected is :

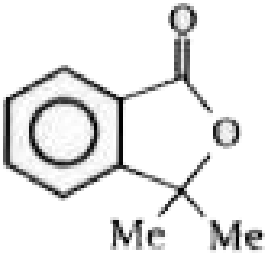


A. 

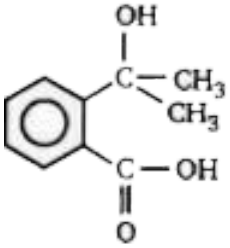
B.



C.



D.

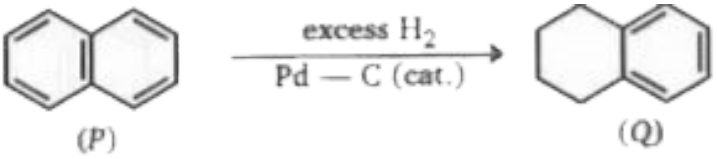


Answer: D

Watch Video Solution

97. Hydrogenation of naphthalene (P) with excess hydrogen gas stops cleanly at 1, 2, 3, 4-tetrahydronaphthalene (Q). What conclusion can be

drawn from this experiment ?



A. the hydrogenation of P is exothermic

B. one aromatic ring of P is more reactive than the aromatic ring of Q

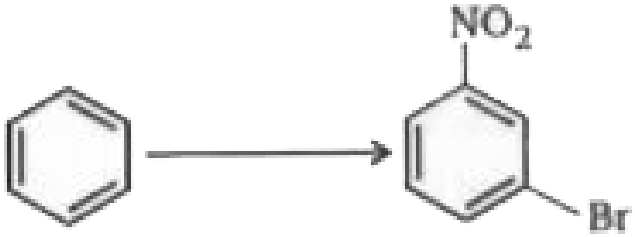
C. one aromatic ring of P is less reactive than the other ring of Q

D. reduction of the first C = C of P is faster than reduction of the second or third C=C

Answer: B

Watch Video Solution

98. Suggest the best reaction conditions for the synthesis shown below.



A. $(1) HNO_3$, H_2SO_2 ,then (2) Br_2

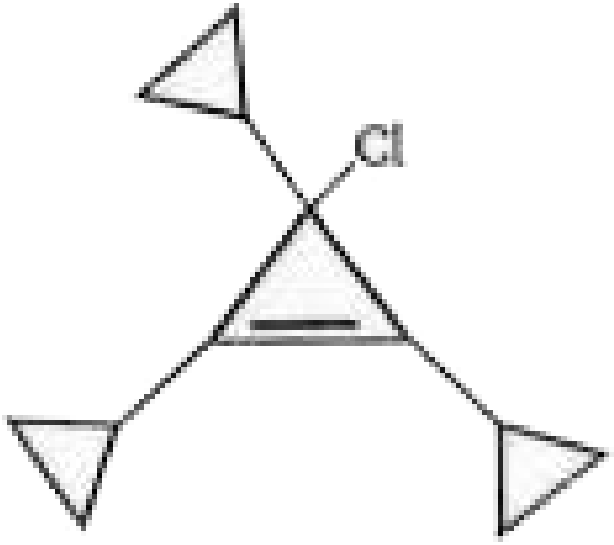
B. $(1) Br_2$,then (2) HNO_3, H_2SO_2

C. $(1) CH_3Br$, $AlBr_3$, then (2) HNO_3, H_2SO_3

D. HNO_3, H_2SO_2, then (2) Br_2, $FeBr_3$

Answer: D

Watch Video Solution



99.

In the above compound Cl will liberated easily in the form of:

A. Cl

B. Cl^-

C. Cl^+

D. Cl^{2+}

Answer: B

Watch Video Solution

100. Consider the following sequence of reactions:

The final product (B) is :

A. benzonitrile

B. benzylamine

C. aniline

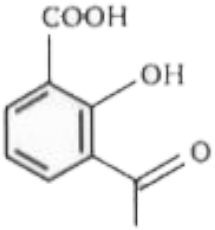
D. benzamide

Answer: B

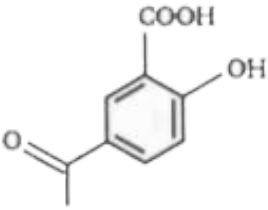
Watch Video Solution

101. The major product of the acetylation of salicylic acid with $Ac_2O(/)H^+$ followed by heating with anhydrous $AlCl_3$ is :

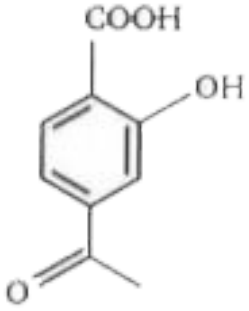
A.

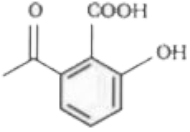


B.



C.



D. 

Answer: B

Watch Video Solution

102. Which one of the following statements is True:

1

2

A. PhLi adds to both compounds with equal ease

B. PhLi does not add to either of the compounds

C. PhLi reacts readily with 1 but does not add to 2

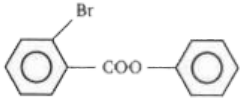
D. PhLi reacts readily with 2 but does not add to 1

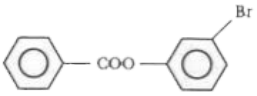
Answer: C

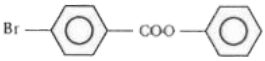
Watch Video Solution

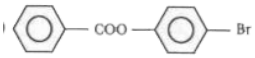
Watch Video Solution

103. The major product expected from the mono-bromination of phenyl benzoate is :

A. 

B. 

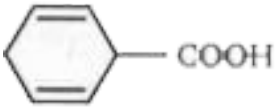
C. 

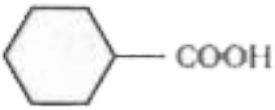
D. 

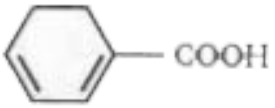
Answer: D

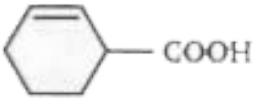
Watch Video Solution

104. The Birch reduction of benzoic acid gives :

A. 

B. 

C. 

D. 

Answer: A

Watch Video Solution

105. The decreasing order of reactivity of meta-nitrobromobenzene (I), 2,4,6-trinitrobromo benzene (II), para-nitrobromobenzene (III), and 2,4-dinitrobromobenzene (IV) towards HO^- ions is :

A. I gt II gt III gt IV

B. II gt I gt III gt I

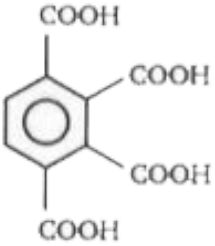
C. IV gt II gt III gt I

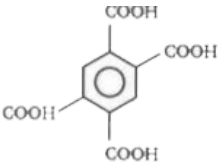
D. II gt IV gt I gt III

Answer: B

Watch Video Solution

106. Which of the following tetracarboxylic acid form di-anhydride :

A. 

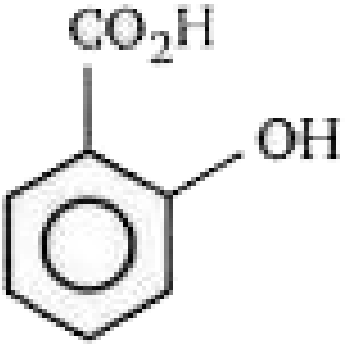
B. 

C. neither (a) nor (b)

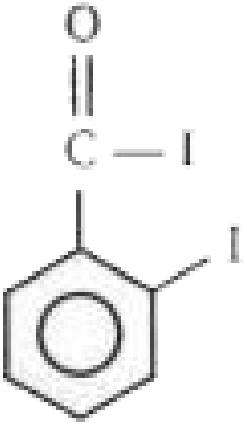
D. both (a) and (b)

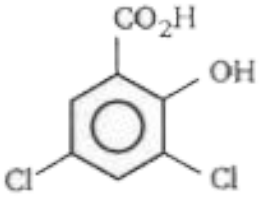
Answer: D

Watch Video Solution

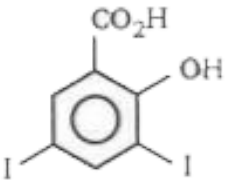
107.  $\xrightarrow{2I-Cl}$ (A); unknown

(A) is :

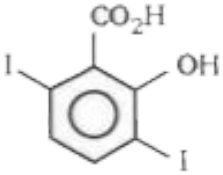
A. 

B. 

C.



D.

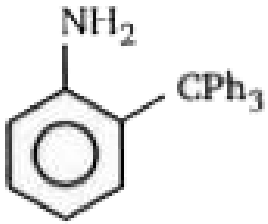


Answer: C

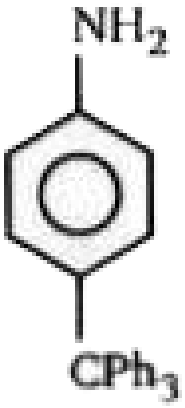
Watch Video Solution

108. $Ph - NH_2 + Ph_3COH \xrightarrow{H^+ / D}$ underset("major")(P)` (not a N-derivative), Product (P) is :

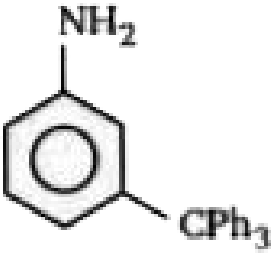
A.



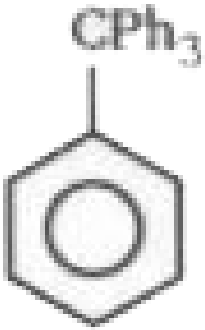
B.



C.



D.



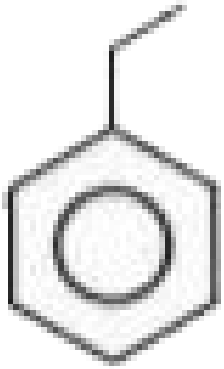
Answer: C

Watch Video Solution

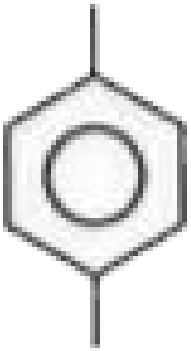
109. Deduce structure of (A).

$(A)C_8H_{10} \xrightarrow{KMnO_4} BC_8H_6O_4 \xrightarrow[Fe]{Br_2} C_6H_5BrO_4$ (C) (one-product only)

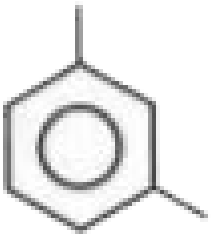
:



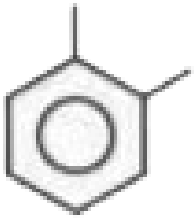
A.



B.



C.



D.

Answer: B

Watch Video Solution

110. The deamination of $Ph_2C(OH)CH_2NH_2$ with $NaNO_2 - HCl$ gives a product (P), which on oxidation gives benzoic acid only. Identify the product (P).

A. $Ph - CH_2 - CH_2 - Ph$

B. $Ph - \overset{\overset{O}{||}}{C} - CH_2 - Ph$

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

D. $Ph - CH_2 - NH - Ph$

Answer: B

Watch Video Solution

111. $Ph - CO_2H \xrightarrow{SOCl_2} A \xrightarrow{Me_2NH} B \xrightarrow{(C)} Ph - CHO$, unknown reagent (C) is :

A. $LiAlH_4$

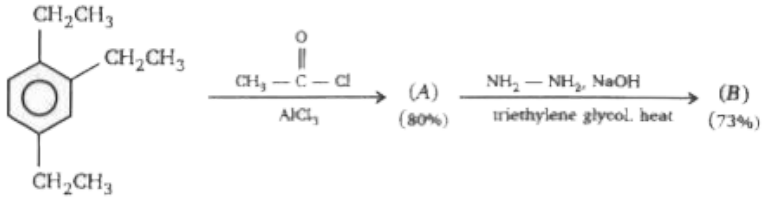
B. $NaBH_4$

C. $LiAlH(t - BuO)_3$

D. PCC/CH_2Cl_2

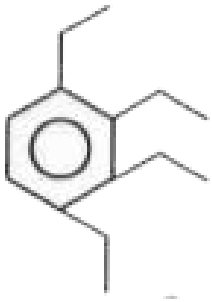
Answer: C

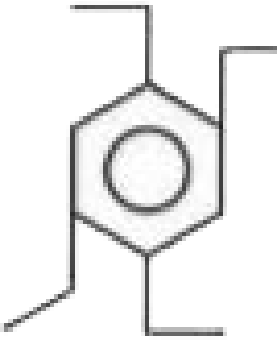
Watch Video Solution



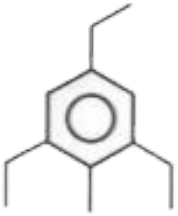
112. Product (*B*) is :

Product (B) is :

A. 

B. 

C.



D.

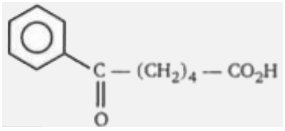
Answer: B

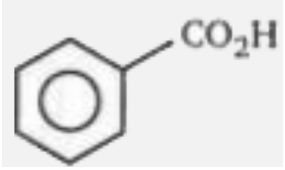
Watch Video Solution

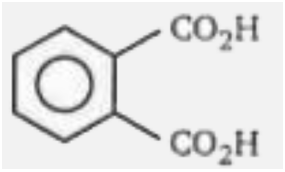
113.

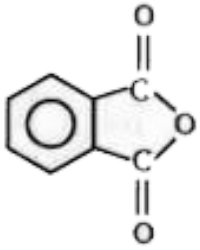
$$C_6H_5(CH_2)_5\overset{\overset{O}{\|}}{C}-Cl \xrightarrow[CS_2]{AlCl_3} \underset{C_{12}H_{14}O}{(A)} \xrightarrow[H_3O^{\oplus}]{KMnO_4,\ D} (B);$$

Compound (B) is :

A. 

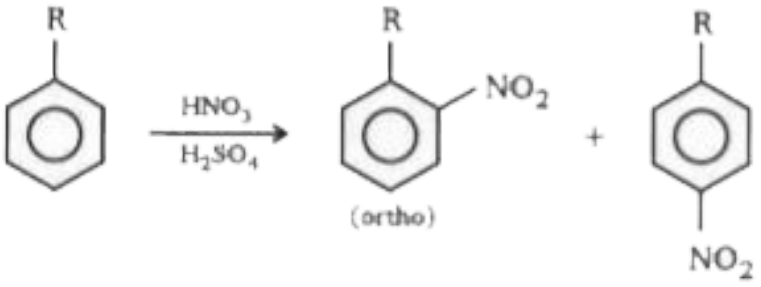
B. 

C. 

D. 

Answer: C

Watch Video Solution



114.

In the above reaction o/p ratio will be highest when :

A. $R = -CH_3$

B. $R = -CH_2 - CH_3$

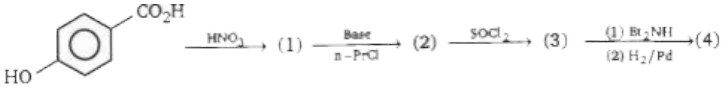
C. $R = -CHMe_2$

D. $R = -Cme_3$

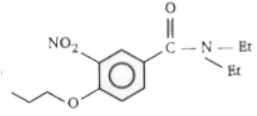
Answer: A

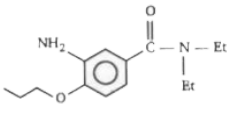
Watch Video Solution

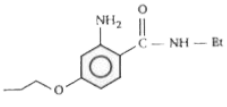
115.

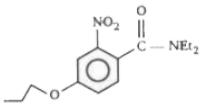


product (4) in the above reaction is :

A. 

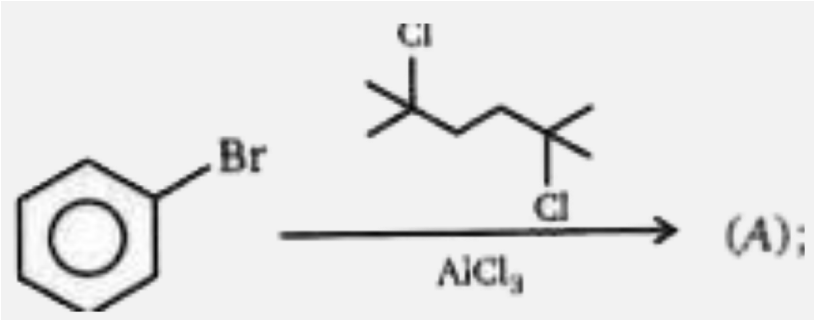
B. 

C. 

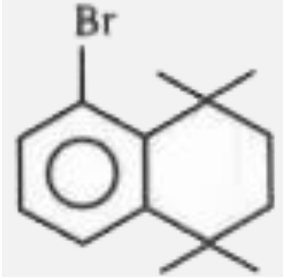
D. 

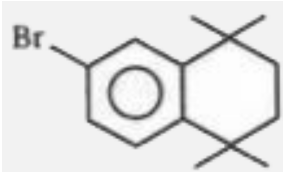
Answer: B

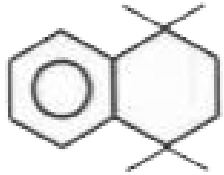
Watch Video Solution

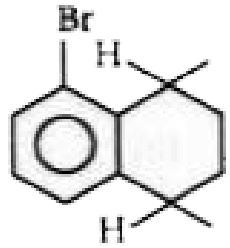
116. 

Product (A) of the reaction is :

A. 

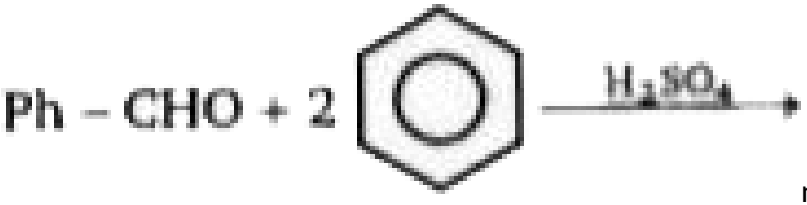
B. 

C. 

D. 

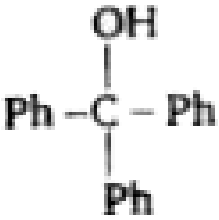
Answer: B

Watch Video Solution

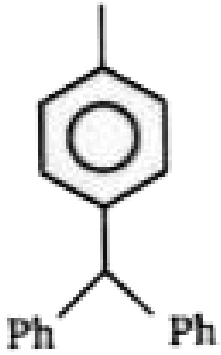


117. major product of this reaction is :

A. Ph_3CH



B.

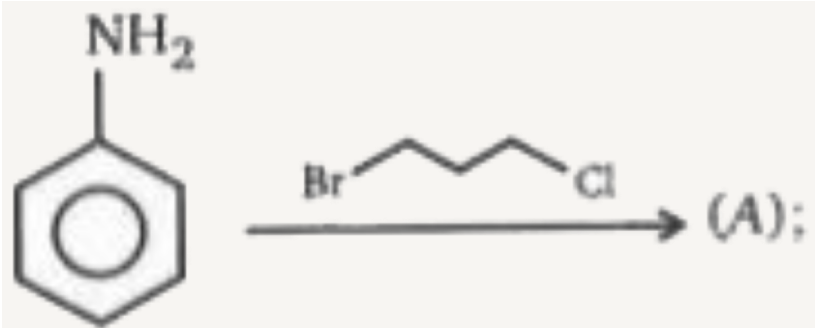


C.

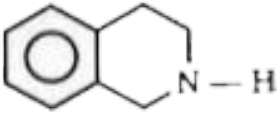
D. Ph_2CH_2

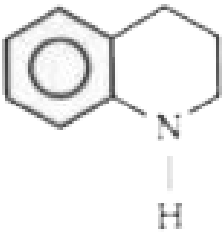
Answer: A

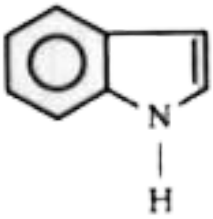
Watch Video Solution

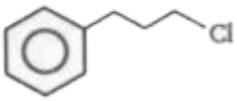
118. 

Product (A) of this reaction is :

A. 

B. 

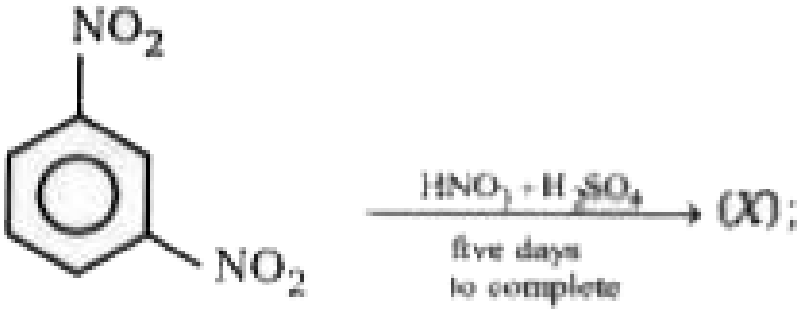
C. 

D. 

Answer: B

Watch Video Solution

119.



Compound (X) is :

A. 1,2,4-Trinitrobenzene

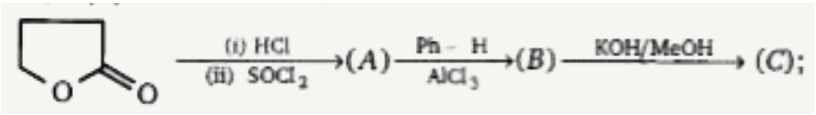
B. 1,3,5-Trinitrobenzene

C. 1,2,3 -Trinitrobenzene

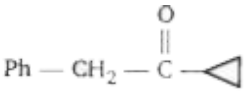
D. Tri-nitro toluene (TNT)

Answer: B

Watch Video Solution

120. 

Compound (C) is

A. 

B. $Ph - CH = CH - \overset{O}{\overset{||}{C}} - CH_3$

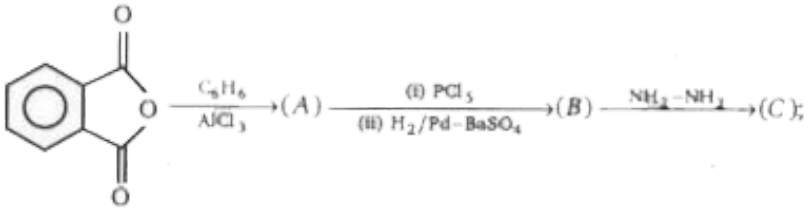
C. 

D. $Ph - \overset{O}{\overset{||}{C}} - CH = CH - CH_3$

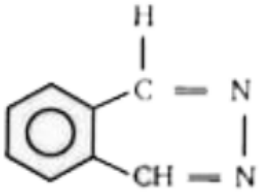
Answer: C

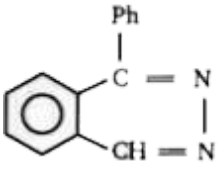
Watch Video Solution

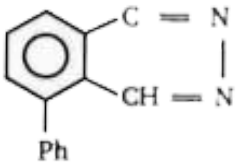
121.

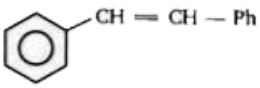


Compound (C) is

A. 

B. 

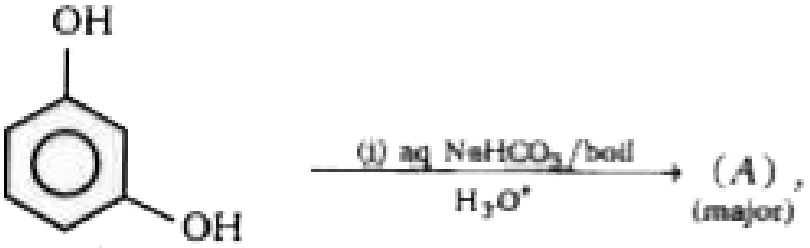
C. 

D. 

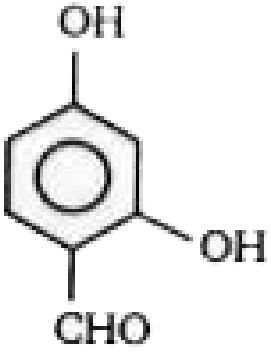
Answer: B

Watch Video Solution

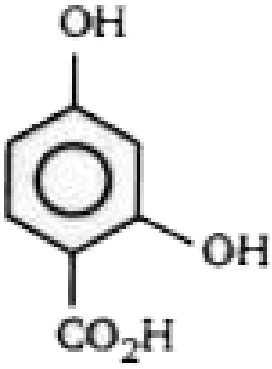
122.



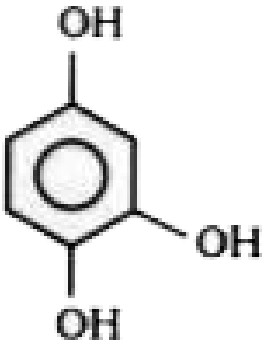
Product (A) in this reaction is :



A.



B.

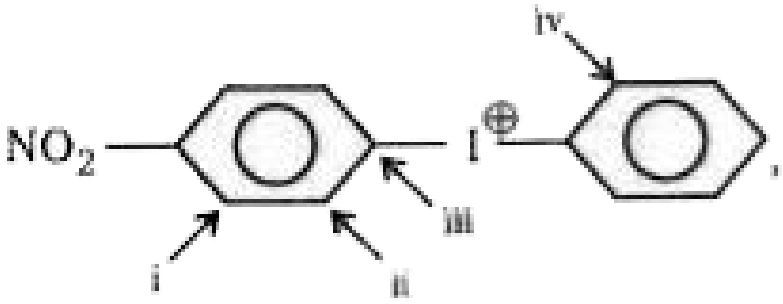


C.

D. No reaction

Answer: B

Watch Video Solution



123. , Identify position where attack of $(ArO-)$ is favourable.

A. i

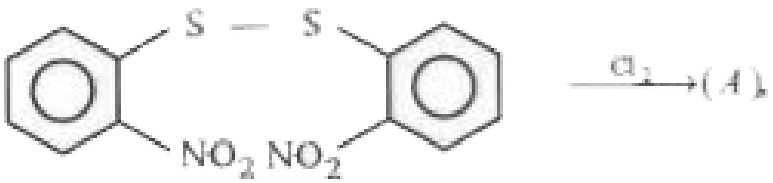
B. ii

C. iii

D. iv

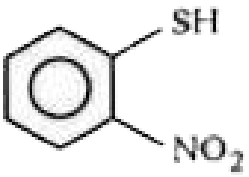
Answer: C

Watch Video Solution

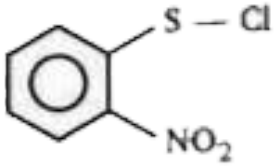


124. Product

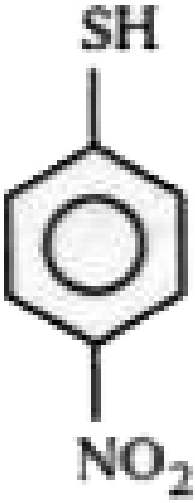
(A) of this reaction is :



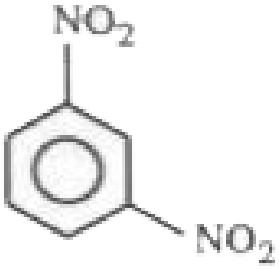
A.



B.



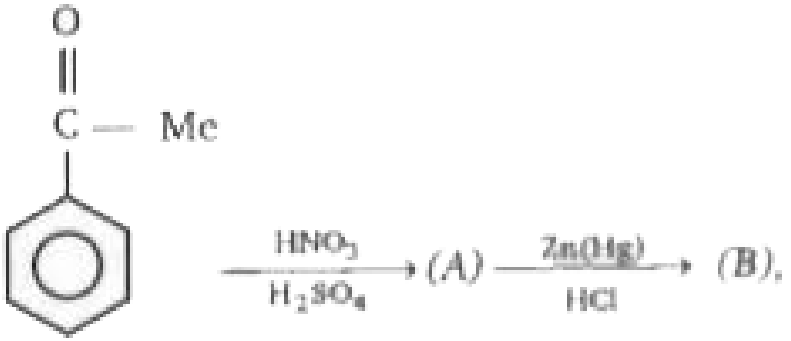
C.



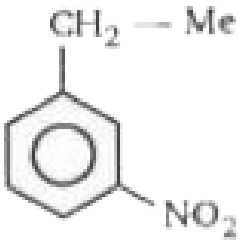
D.

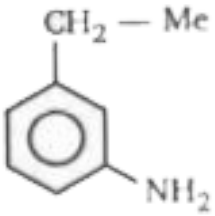
Answer: B

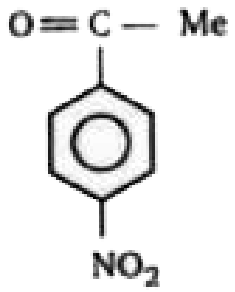
Watch Video Solution

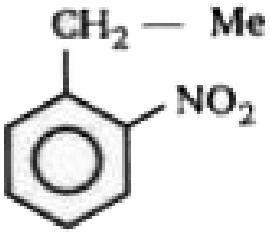
125. 

Product (B) of this reaction is :

A. 

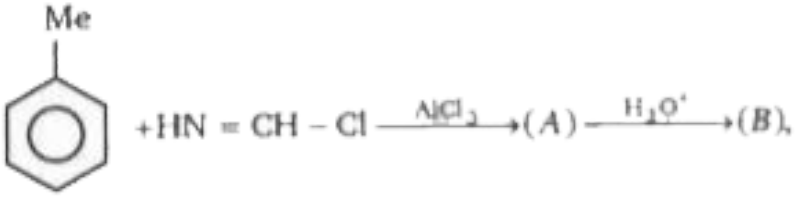
B. 

C. 

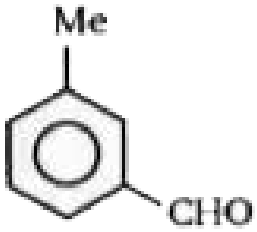
D. 

Answer: B

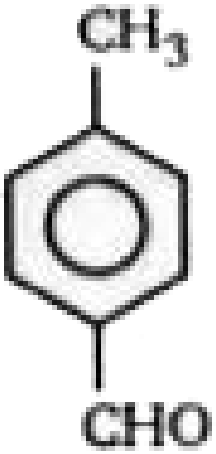
Watch Video Solution

126. 

Product (B) of this reaction is :

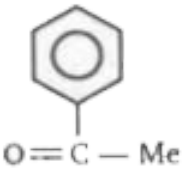


A.



B.

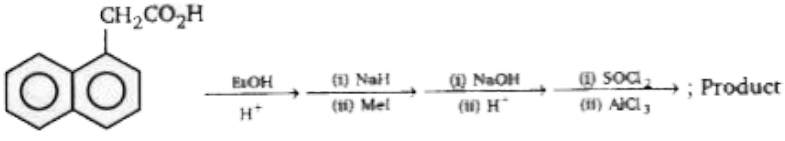
C. no reaction



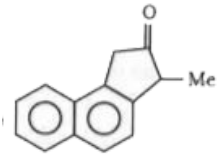
D.

Answer: B

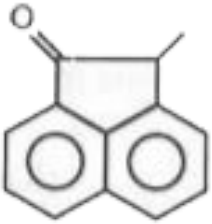
Watch Video Solution

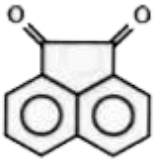
127. 

End product of the above reaction is :

A. 

B. 

C. 

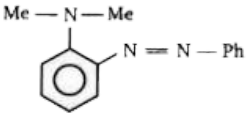
D. 

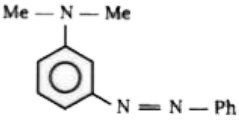
Answer: C

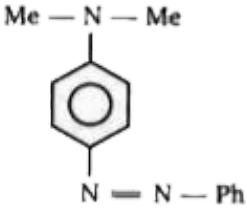
Watch Video Solution

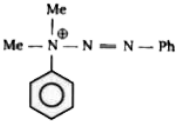
128. $Ph - NH_2 \xrightarrow{CH_3 - Cl\ (2mole)} (A) \xrightarrow{Ph - \overset{\oplus}{N}_2\ \overset{\ominus}{Cl}} \underset{\text{Butter yellow}}{(B)}$ (major)

Product of the above reaction is :

A. 

B. 

C. 

D. 

Answer: C

Watch Video Solution

129. p-Toluedine reacts with benzene diazonium chloride to form compound, which on boiling with aq. H_2SO_4 give ..... products :

A. 3

B. 2

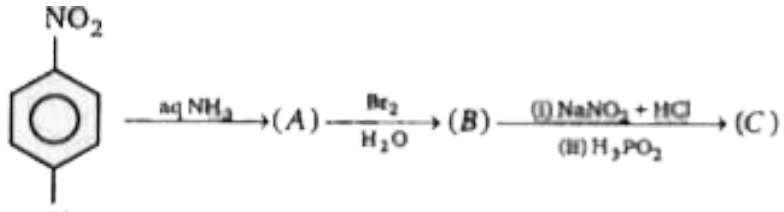
C. 4

D. 5

Answer: C

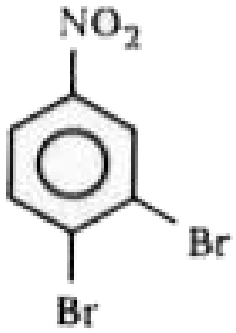
Watch Video Solution

130.

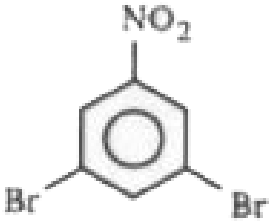


Product (C) of the above reaction is :

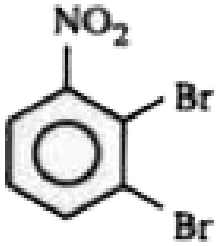
A.



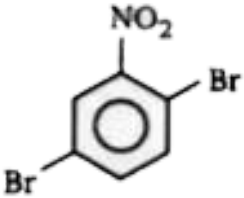
B.



C.

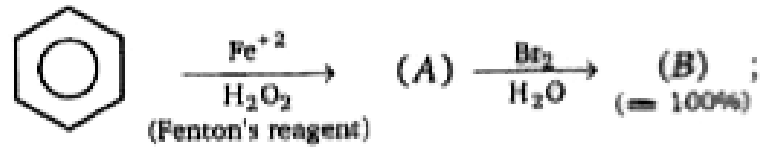


D.

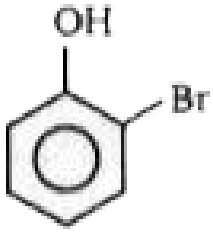


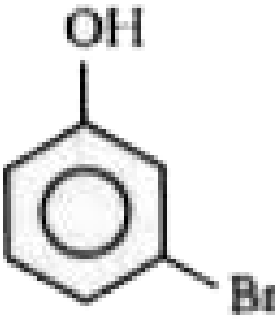
Answer: B

Watch Video Solution

131. 

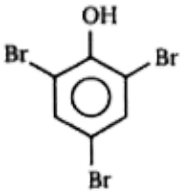
Major product (B) of this reaction is

A. 

B. 

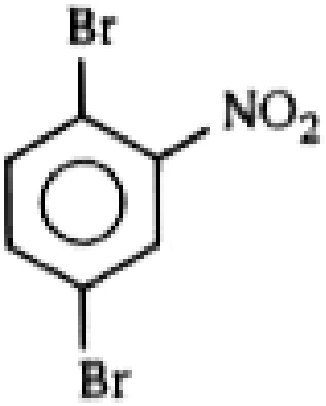
C.

D.



Answer: D

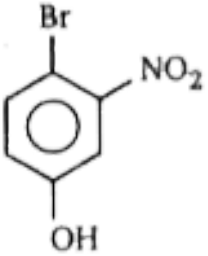
Watch Video Solution



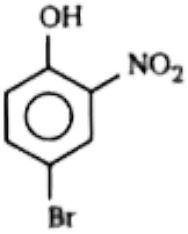
$\xrightarrow{HO^-}$ (A) ;

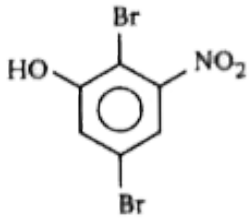
132. Product of the given reaction is :

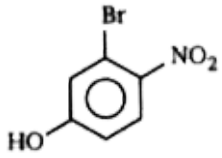
A.



B.

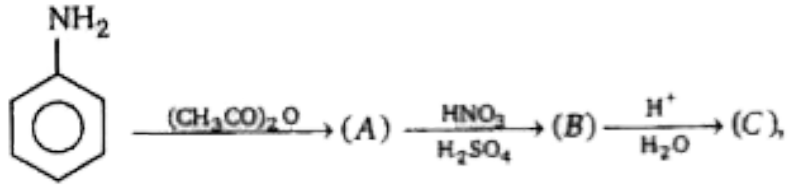


C. 

D. 

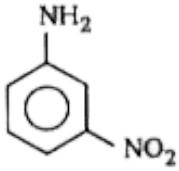
Answer: B

Watch Video Solution

133. 

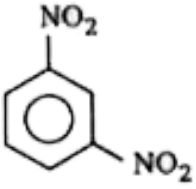
Product (C) of this reaction is :

A.



B.

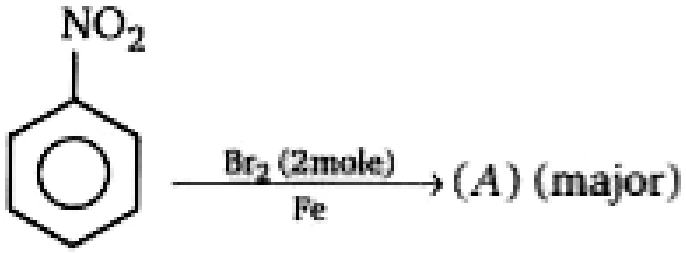
C.



D.

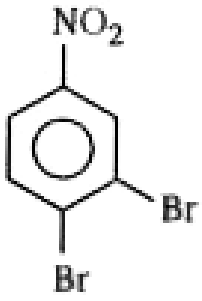
Answer: B

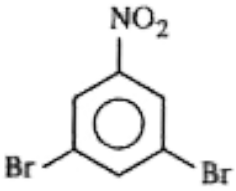
Watch Video Solution

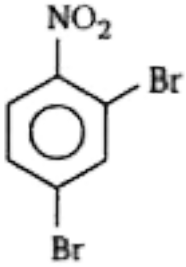


134. Product

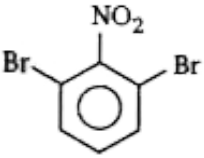
(A) will be :

A. 

B. 



C.

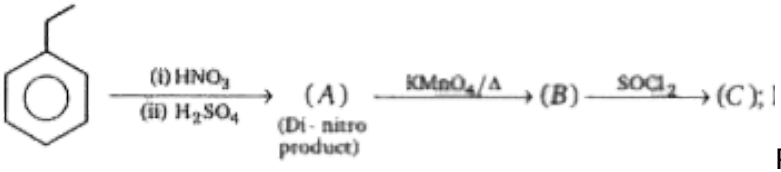


D.

Answer: A

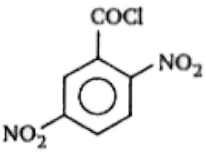
Watch Video Solution

135.



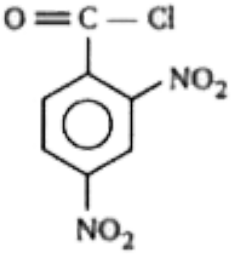
Product

(C) of this reaction is :

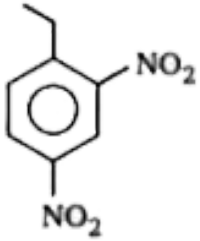


A.

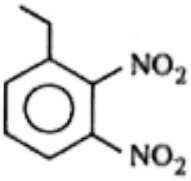
B.



C.

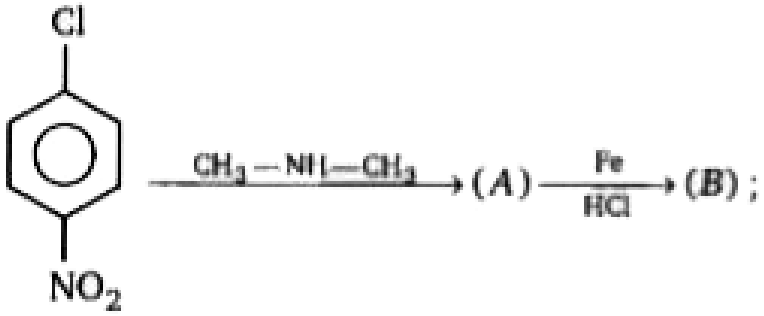


D.

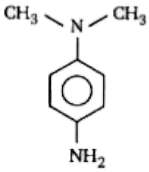


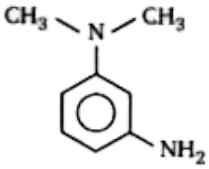
Answer: B

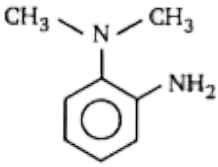
Watch Video Solution



136. Product (B) of this reaction is :

A. 

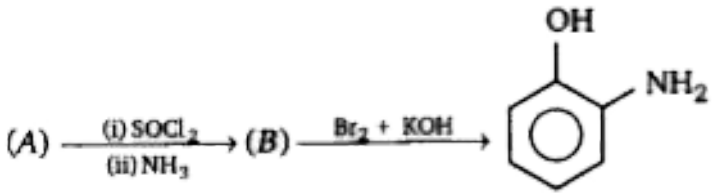
B. 

C. 

D. none of these

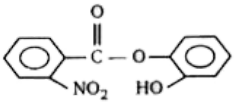
Answer: A

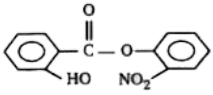
Watch Video Solution

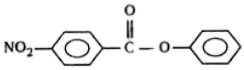


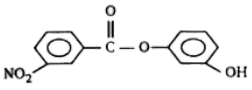
137.

Which of the following compound on hydrolysis gives reactant (A):

A. 

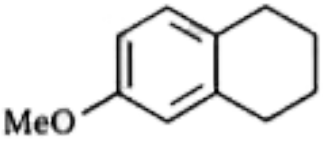
B. 

C. 

D. 

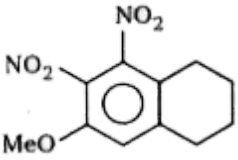
Answer: B

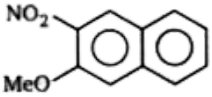
Watch Video Solution

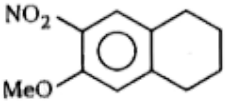
138. 

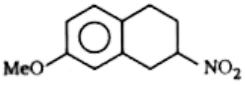
$\xrightarrow{HNO_3/H_2SO_4}$ (A);

Product (A) of the above reaction is :

A. 

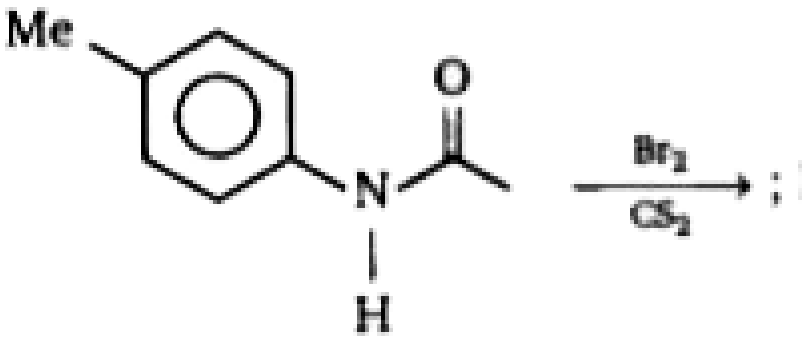
B. 

C. 

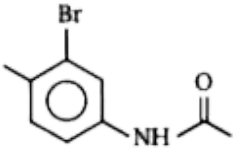
D. 

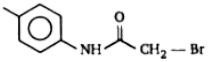
Answer: C

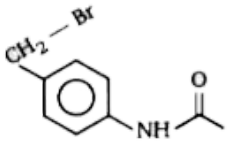
Watch Video Solution

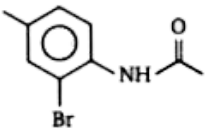


139. Product of the reaction is :

A. 

B. 

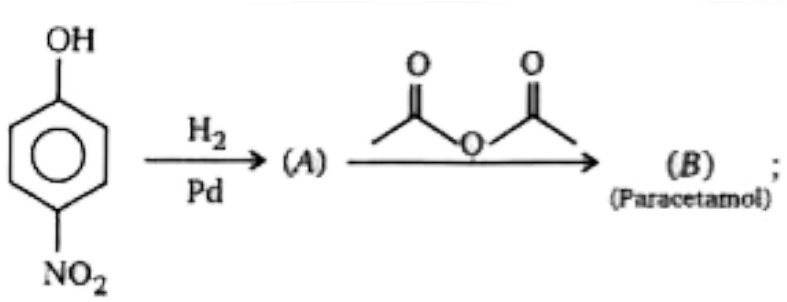
C. 

D. 

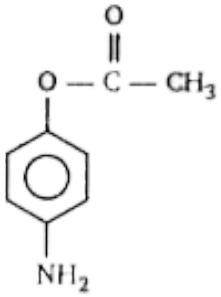
Answer: D

Watch Video Solution

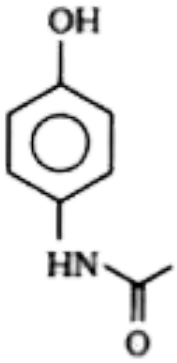
Watch Video Solution



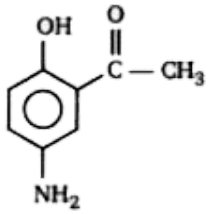
140. , Product (B) of this reaction is :



A.



B.



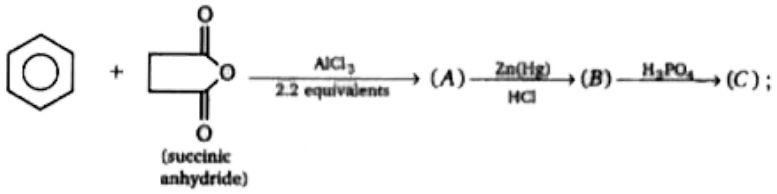
C.

D.

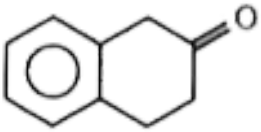
Answer: B

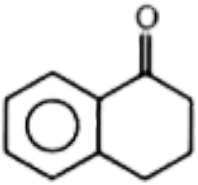
Watch Video Solution

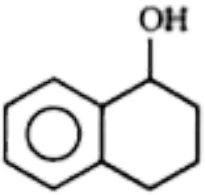
141.

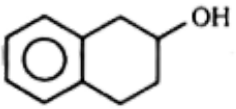


Product (C) of the above reaction is :

A. 

B. 

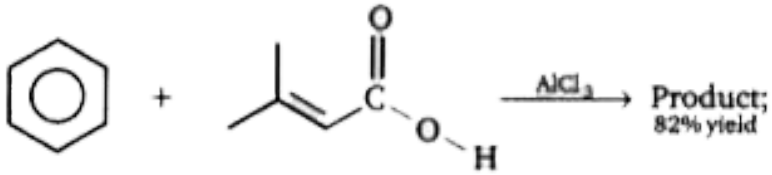
C. 

D. 

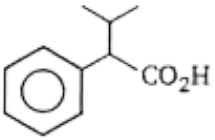
Answer: B

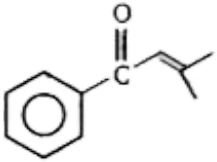
Watch Video Solution

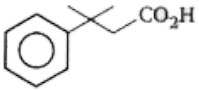
142.

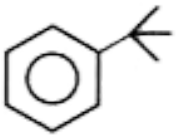


Product of the above Friedel-Craft reaction is :

A. 

B. 

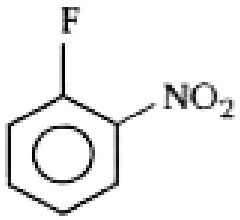
C. 

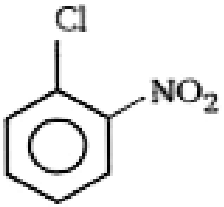
D. 

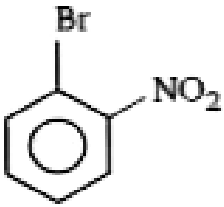
Answer: C

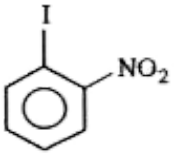
Watch Video Solution

143. Which of the following 2-halo nitrobenzene is most reactive towards nucleophilic aromatic substitution ?

A. 

B. 

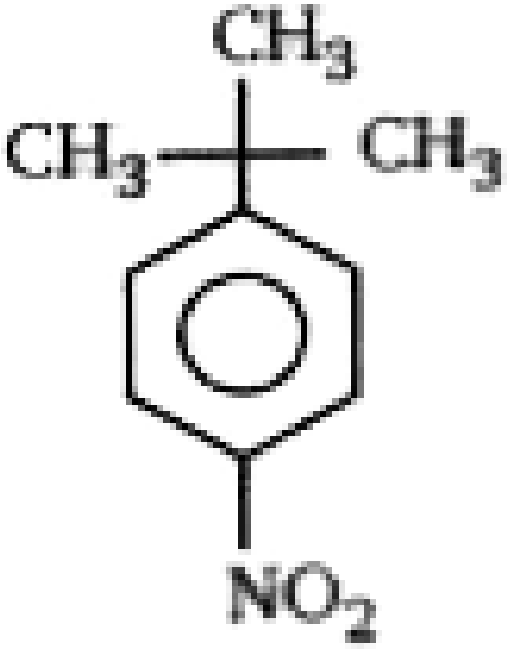
C. 

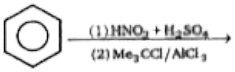
D. 

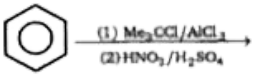
Answer: A

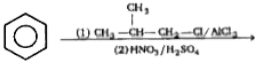
Watch Video Solution

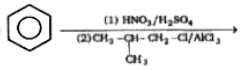
144. Choose the best method to prepare given compound :



A. 

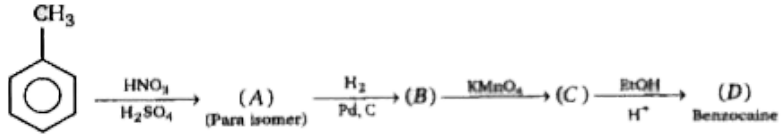
B. 

C. 

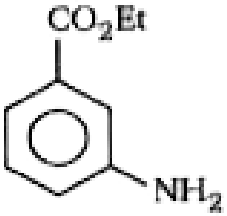
D. 

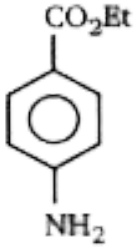
Answer: B

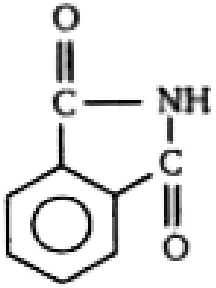
Watch Video Solution

145. 

Benzocaine has been used as a component of appetite suppressants, burn and sunburn remedies. Benzocaine is :

A. 

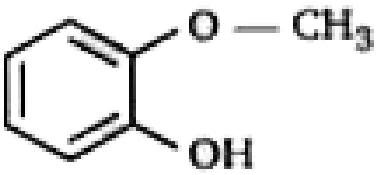
B. 

C. 

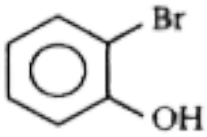
D. 

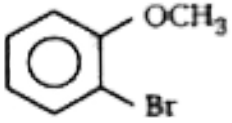
Answer: B

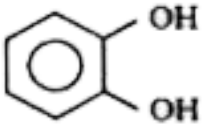
Watch Video Solution

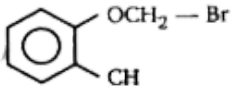
146.   Product

(A) of this reaction is :

A. 

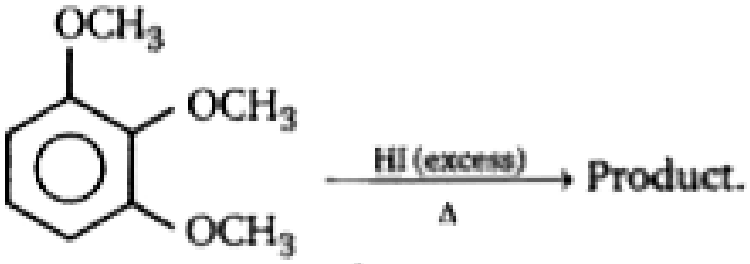
B. 

C. 

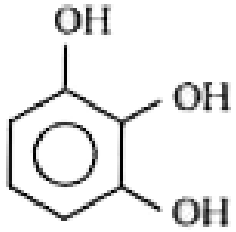
D. 

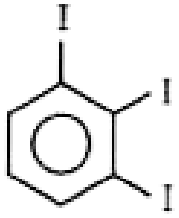
Answer: C

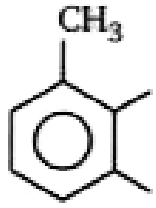
Watch Video Solution

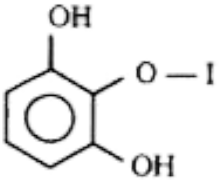
147. 

Predict major product of the above reaction is :

A. 

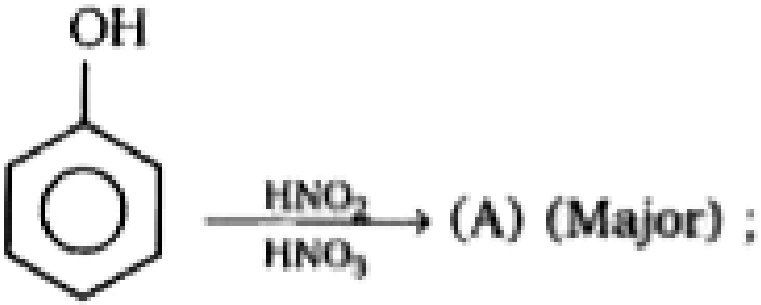
B. 

C. 

D. 

Answer: A

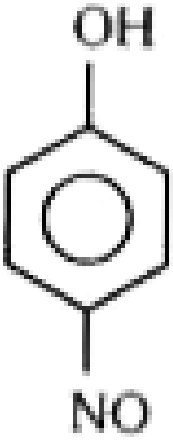
Watch Video Solution

148. 

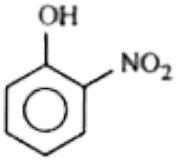
, Product

(A) is :

A.

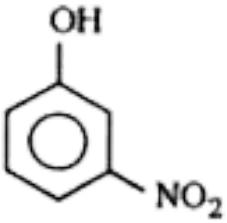


B.



C.

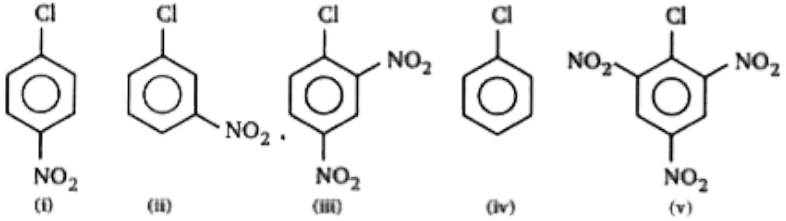
D.



Answer: C

Watch Video Solution

149. Arrange in their decreasing order of rate in SNAr.



A. i gt ii gt iv gt iii gt v

B. ii gt i gt iii gt v gt iv

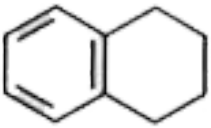
C. v gt iii gt i gt ii gt iv

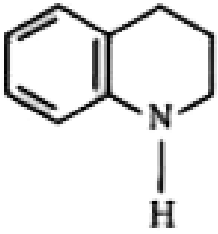
D. v gt iii gt ii gt i gt iv

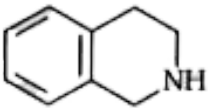
Answer: C

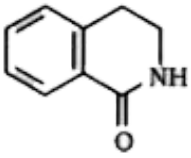
Watch Video Solution

150. Which one of the following compounds undergoes bromination of its aromatic ring (electrophilic aromatic substitution) at the fastest rate ?

A. 

B. 

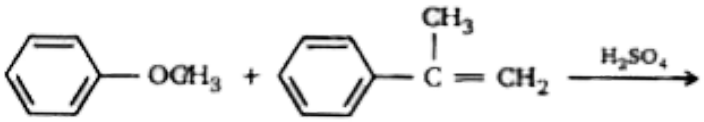
C. 

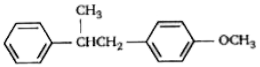
D. 

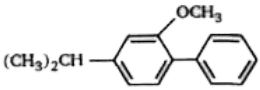
Answer: B

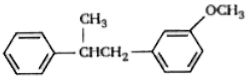
Watch Video Solution

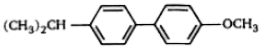
151. What is the product of the following reaction ?



A. 

B. 

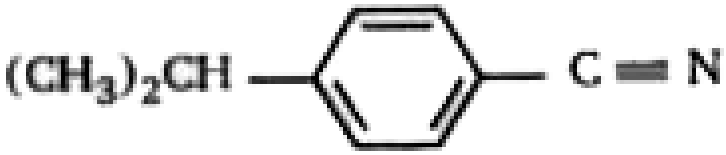
C. 

D. 

Answer: D

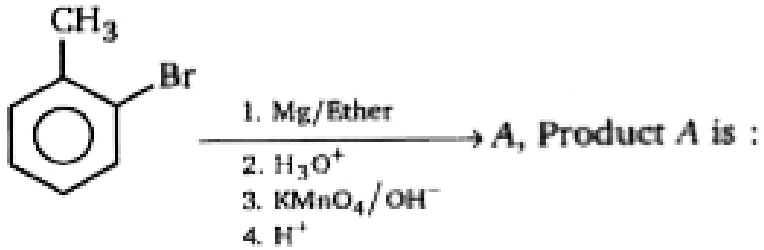
Watch Video Solution

152. Which sequence represents the best synthesis of 4-isopropylbenzonitrile ?

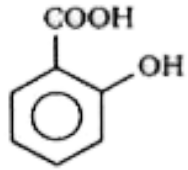


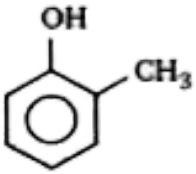
4-Isopropylbenzonitrile •

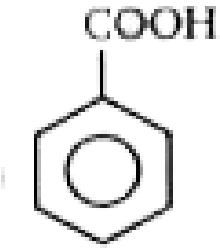
Watch Video Solution

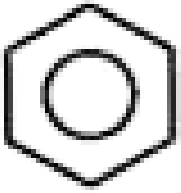
153. 

Product A is :

A. 

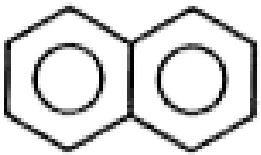
B. 

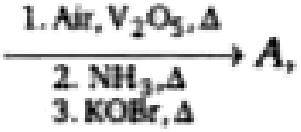
C. 

D. 

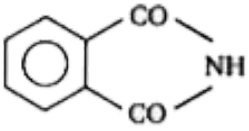
Answer: C

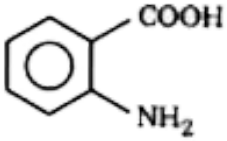
Watch Video Solution

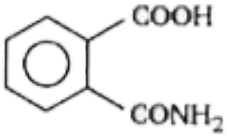
154. 

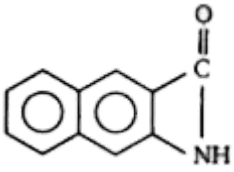


Product A is :

A. 

B. 

C. 

D. 

Answer: B

Watch Video Solution

155. What is correct order of rate of nitration of the following compounds

?

$A - C_6H_5CH_3, B - C_6H_6, C - C_6D_6, D - C_6T_6, E - C_6H_5Br_3, F - C_6$

A. $G > A > B > C > D > E > F$

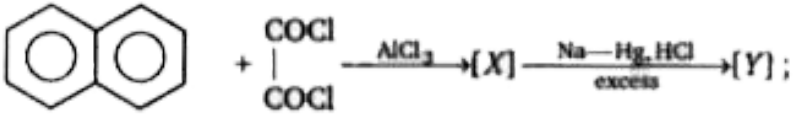
B. $G > B > C > D > A > F$

C. $G > A > B = C = D > E > F$

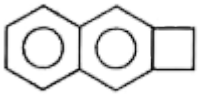
D. $G > A > B > C = D > E > F$

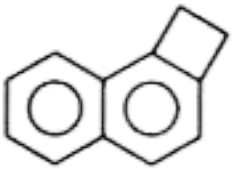
Answer: C

Watch Video Solution

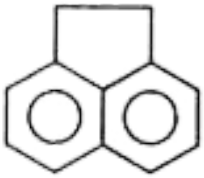


156. Product Y is :

A. 

B. 

C.



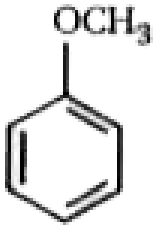
D.

Answer: C

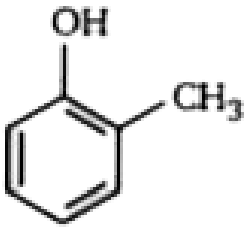
Watch Video Solution

157. Compound A (C_7H_8O) is insoluble in water, dilute HCI & aqueous $NaHCO_3$, but it dissolves in dilute NaOH. When A is treated with Br_2 water it is converted into a compound $C_7H_5OBr_3$ rapidly. The structure of A is :

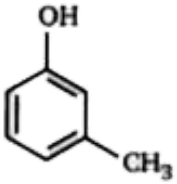
A.



B.



C.

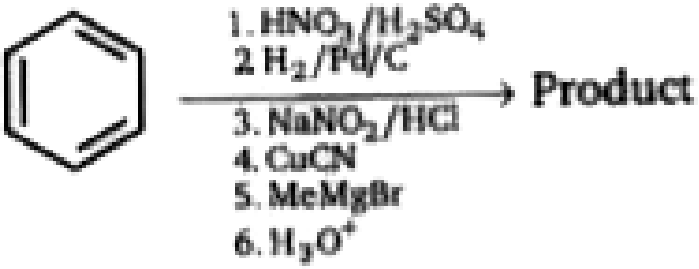


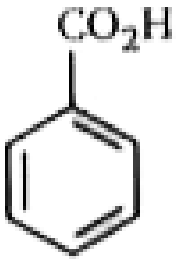
D.

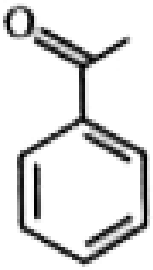
Answer: C

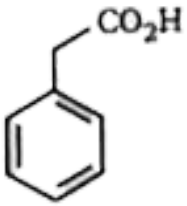
Watch Video Solution

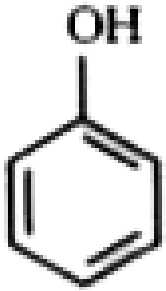
158. Give the product of the following reaction sequence :



A. 

B. 

C. 

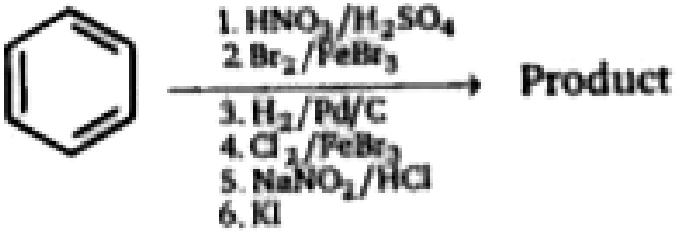


D.

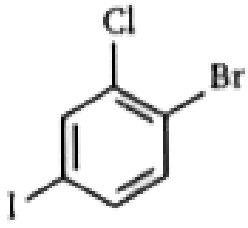
Answer: B

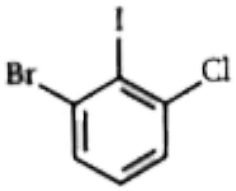
Watch Video Solution

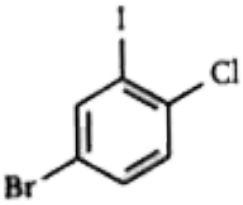
159. Give the product of the following reaction sequence:

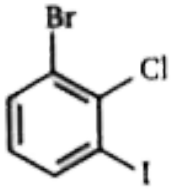


A.



B. 

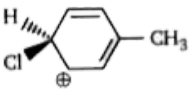
C. 

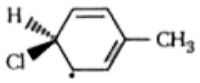
D. 

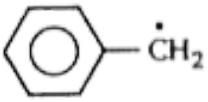
Answer: C

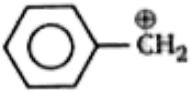
Watch Video Solution

160. Which represents an intermediate formed in the reaction of toluene and chlorine at elevated temperature in sunlight?

A. 

B. 

C. 

D. 

Answer: C

Watch Video Solution

161. The decreasing order of reactivity of meta-nitrobromobenzene (I), 2,4,6-trinitrobromo benzene (II), para-nitrobromobenzene (III), and 2,4-dinitrobromobenzene (IV) towards HO^- ions is :

A. I gt II gt III gt IV

B. II gt I gt III gt I

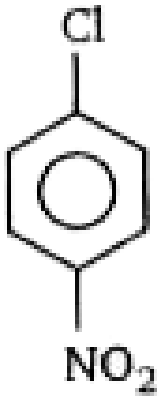
C. IV gt II gt III gt I

D. II gt IV gt I gt III

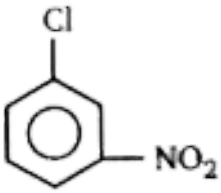
Answer: B

Watch Video Solution

162. Which one of the following compounds is most reactive for ArS_{N^2} reaction ?

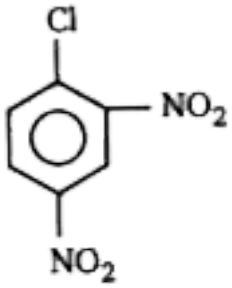


A.

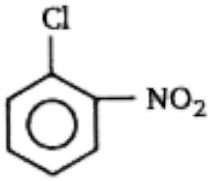


B.

C.



D.

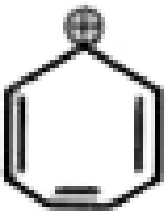


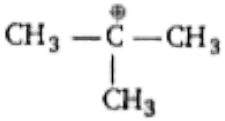
Answer: C

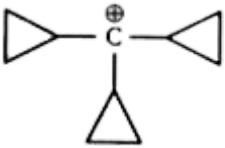
Watch Video Solution

163. Which one amongst the following carbocations is most stable ?

A. $C_6H_5-\overset{\oplus}{C}H-C_6H_5$

B. 

C. 

D. 

Answer: D

Watch Video Solution

164. Cyclopentadiene is much more acidic than cyclopentane. The reason is that :

A. cyclopentadiene has conjugated double bonds

B. cyclopentadiene has both sp^2 and sp^3 hybridized carbon atoms

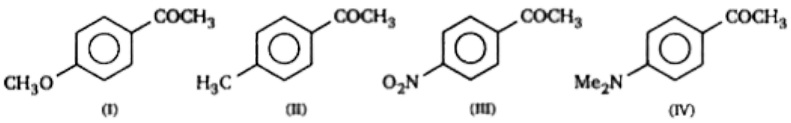
C. cyclopentadiene is a strain-free cyclic system

D. cyclopentadienide ion, the conjugate base of cyclopentadiene, is an aromatic species and hence has higher stability

Answer: D

Watch Video Solution

165.



Friedel-Crafts acylation reaction can be used to obtain the compounds

A. II, III and IV

B. I, III and IV

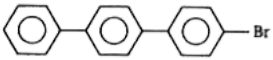
C. I and II

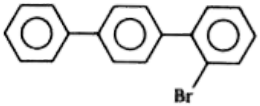
D. II and III.

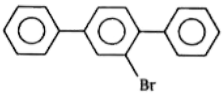
Answer: C

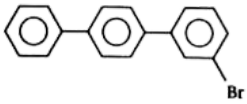
Watch Video Solution

166. The major product of the reaction is :

A. 

B. 

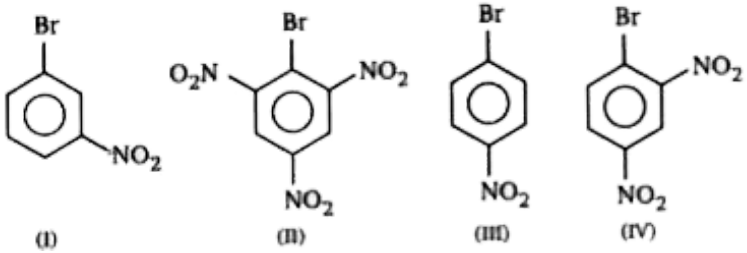
C. 

D. 

Answer: C

Watch Video Solution

167. The decreasing order of reactivity of given compound towards nucleophilic substitution with aqueous NaOH is :



A. I gt II gt III gt IV

B. II gt I gt III gt I

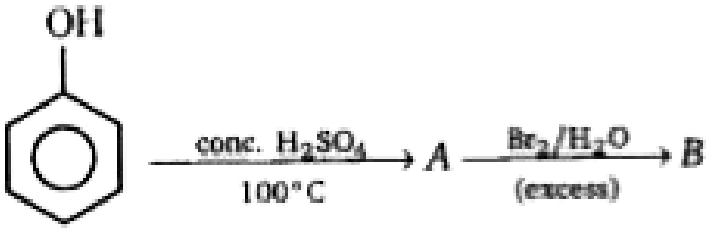
C. IV gt II gt III gt I

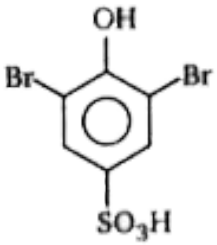
D. II gt IV gt I gt III

Answer: B

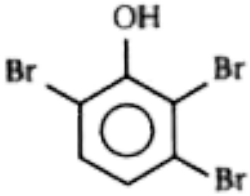
Watch Video Solution

168. Identify the end product (B) of the following sequence of reactions.

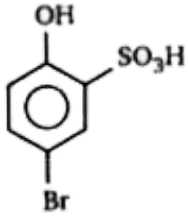




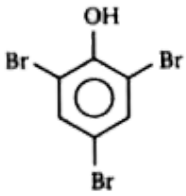
A.



B.



C.

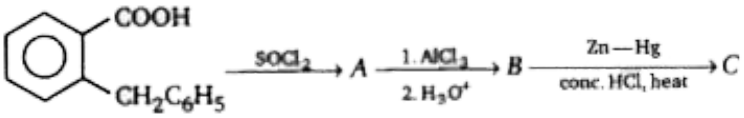


D.

Answer: D

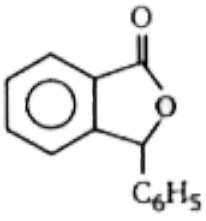
Watch Video Solution

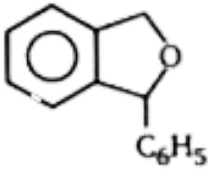
169. Consider the following sequence of reactions :

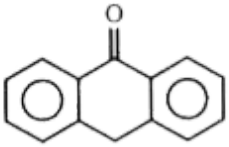


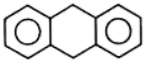
The end product (C) is :

A.



B. 

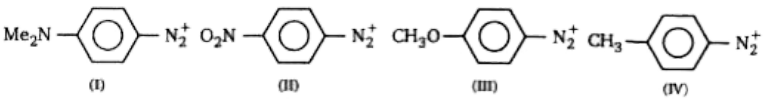
C. 

D. 

Answer: D

Watch Video Solution

170. For the diazonium ions the order of reactivity towards diazo-coupling with phenol in the presence of dilute NaOH is :



A. I lt IV lt II lt III

B. I lt III lt IV lt II

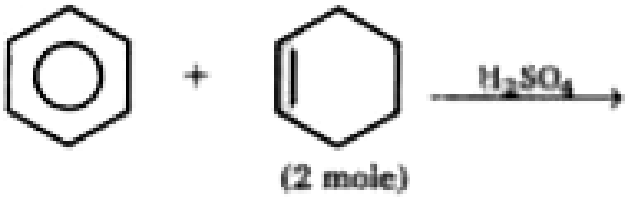
C. III lt I lt II lt IV

D. III lt I lt IV lt II

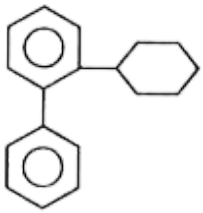
Answer: B

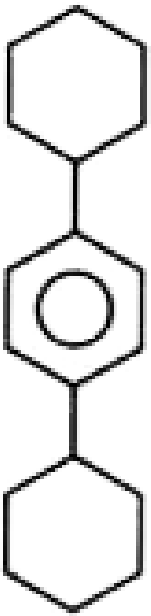
Watch Video Solution

171. Major product obtained in given reaction is :

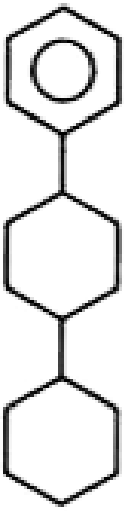


A.





B.

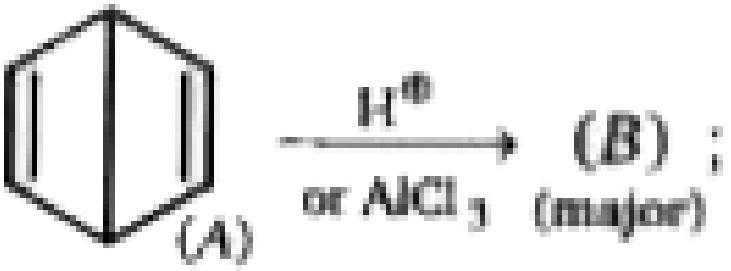


C.

D.

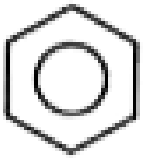
Answer: B

Watch Video Solution

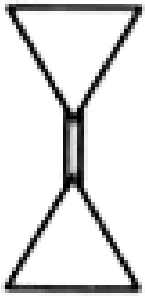


172. (A) & (B) are isomers. Product (B) is :

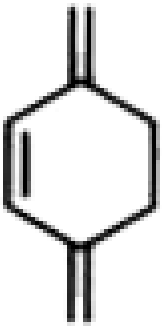
A.

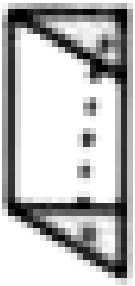


B.



C.



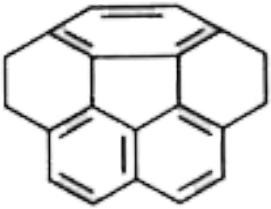


D.

Answer: A

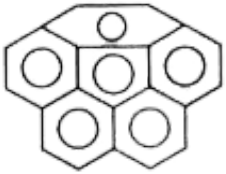
Watch Video Solution

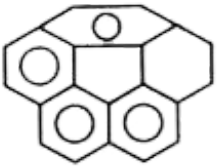
173. The step shown below is a recent synthesis of corannulene.

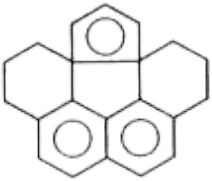


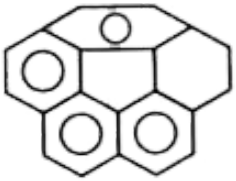
$\xrightarrow[(\Delta)]{Pd/C} (A)\ C_{20}H_{10}$ Corannulene

Product (A) is :

A. 

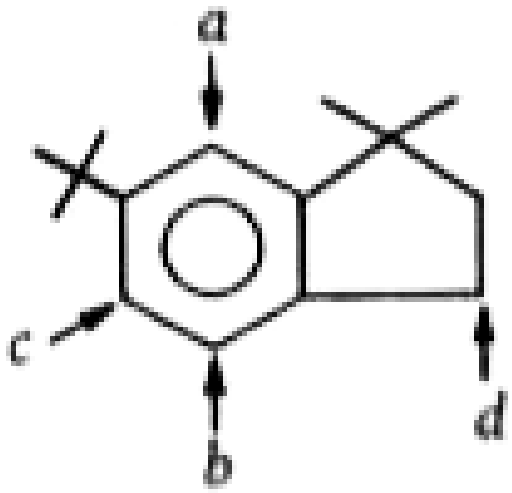
B. 

C. 

D. 

Answer: A

Watch Video Solution



174.

Identify the position where E.A.S. will take place :

A. a

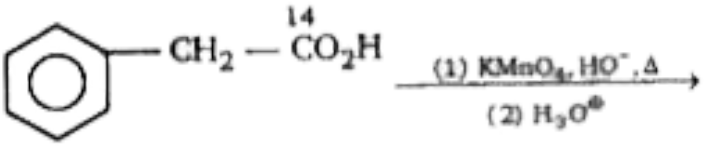
B. b

C. c

D. all the position are identical

Answer: B

Watch Video Solution

175. 

The labelled carbon goes with :

A. $Ph - {}^{14}CO_2H$

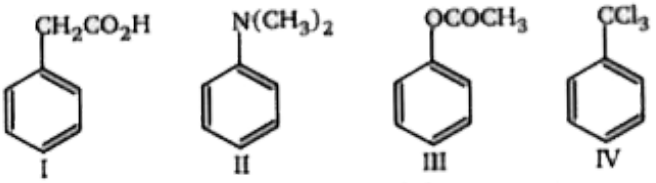
B. ${}^{14}CO_2$

C. $Ph - {}^{14}CH_2 - CO_2H$

D. ${}^{14}CH_6$

Answer: B

Watch Video Solution

176. 

: What is the expected order of reactivity of the following compounds in electrophilic chlorination in the presence of FeCl3.

A. $I > II > III > IV$

B. $IV > III > II > I$

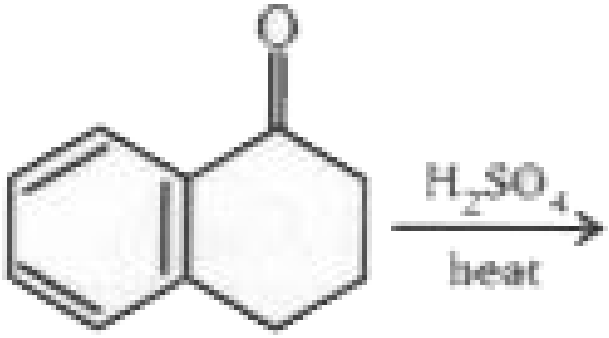
C. $III > I > IV > II$

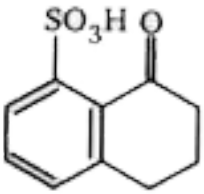
D. $II > III > I > IV$

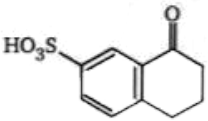
Answer: D

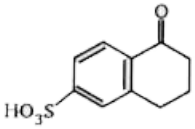
Watch Video Solution

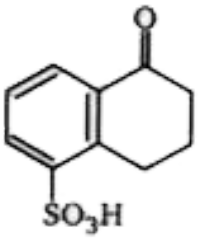
177. Which of the following is the major product from sulfonation of a-tetralone ?



A. 

B. 

C. 

D. 

Answer: B

Watch Video Solution

178. Which of the following procedures would be best for the preparation of phenyl benzyl ether? $C_6H_5OCH_2C_6H_5$

A. $C_6H_5Cl + C_6H_5CH_2O^-Na^+$

B. $C_6H_5O^-Na^+ + C_6H_5CH_2Cl$

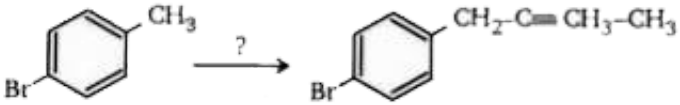
C. $2C_6H_5Cl + Na_2O$

D. $2C_6H_5MgBr + CH_2O$

Answer: B

Watch Video Solution

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



A. KOH and heat (ii) $CH_3C = C - Br$

B. (i) $KMnO_4$ and heat (ii) $CH_3C = C^-Na^+$ (iii) excess H_2O

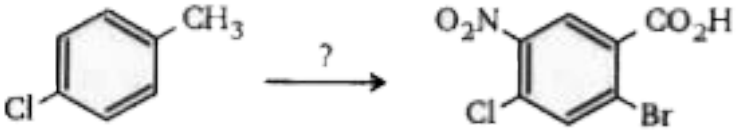
C. (i) NBS in CCl_4 and heat (ii) $CH_3C = C^-Na^+$

D. (i) Mg in ether (ii) $CH_3C = CBr$ (iii) excess H_3PO_4

Answer: C

Watch Video Solution

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



A. (i) $Br_2 + FeBr_3 (ii) KMnO_4$ and heat (iii) HNO_3 and H_2SO_4

B. $(i) KMnO_4$ and heat $(ii) Br_3 + FeBr_3 (iii) HNO_3$ and H_2SO_4

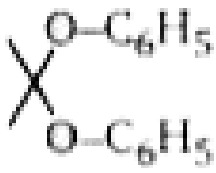
C. (i) NBS in CCl_4 and heat (ii) $KMnO_4$ and heat (iii) HNO_3 and H_2SO_4

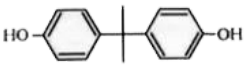
D. (i) NBS in CCl_4 and heat (ii) $NaNO_2$ and heat

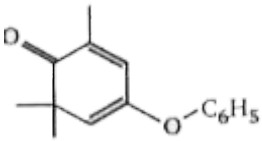
Answer: A

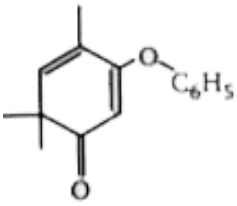
Watch Video Solution

181. Phenol reacts with acetone in the presence of conc. sulphuric acid to form a $C_{15}H_{16}O_2$ product. Which of the following compounds is this product ?

A. 

B. 

C. 

D. 

Answer: B

Watch Video Solution

182. Heating benzene in a large excess of 80% D_2SO_4 in D_2O results in what product ?

A. $C_6H_5SO_3D$

B. C_6H_5OD

C. C_6H_5D

D. C_6D_6

Answer: D

Watch Video Solution

183. A solution of cyclohexene in benzene is stirred at $0^\circ C$ while concentrated sulphuric acid is added. After washing away the acid and removing the excess benzene, what product is isolated?

A. cyclohexylbenzene

B. 1-cyclohexylcyclohexene

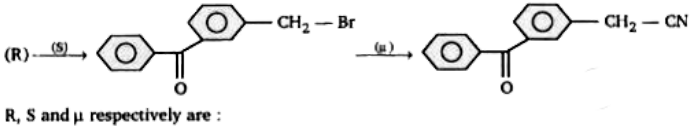
C. trans-1,2-diphenylcyclohexane

D. 1,1-diphenylcyclohexane

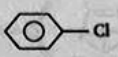
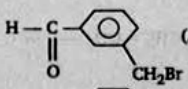
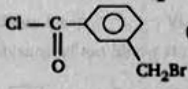
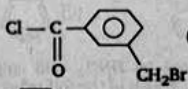
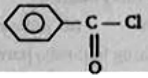
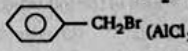
Answer: A

Watch Video Solution

184. Indentify the reagents S and μ in the scheme below in which R is converted to the nitrite V via the benzylic halide T.

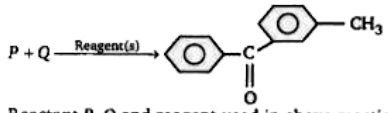


R, S and μ respectively are :

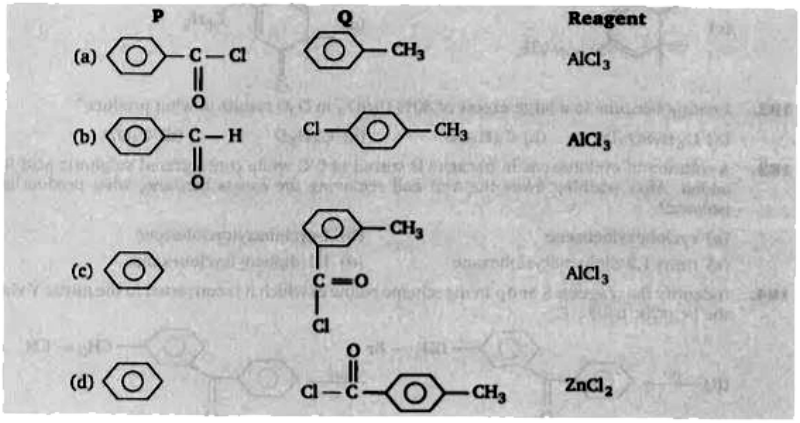
	R	S	μ
(a)			HCN
(b)			HCN
(c)			KCN
(d)			KCN

Watch Video Solution

185. Two aromatic compounds P and Q give product R.

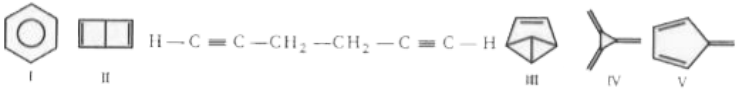


Reactant *P*, *Q* and reagent used in above reaction are :



Watch Video Solution

186. Which of the following C_6H_6 compounds has a single set of structurally equivalent hydrogen atoms?



A. I and II

B. I and IV

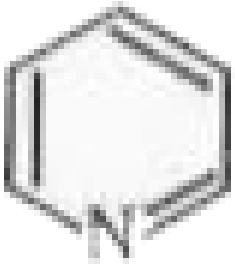
C. I and V

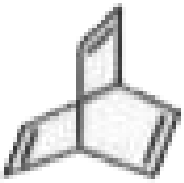
D. I, II and III

Answer: B

Watch Video Solution

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

A. 

B. 

C. 

D. 

Answer: B

Watch Video Solution

188. A C_8H_{10} hydrocarbon is nitrated by HNO_3 and sulphuric acid. Two, and only two, $C_8H_9NO_2$ isomers are obtained. Which of the following fits this evidence ?

A. ethyl benzene

B. ortho-xylene

C. meta-xylene

D. para-xylene

Answer: B

Watch Video Solution

189. Which of the following benzene ring substituents is deactivating but ortho-para directing ?

A. $-N=O$

B. $-OCH_3$

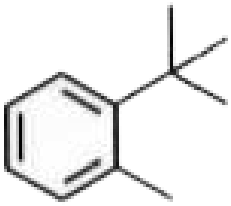
C. $-COCH_3$

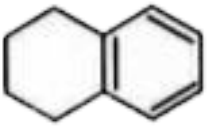
D. $-NO_2$

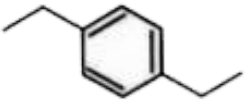
Answer: A

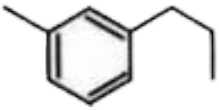
Watch Video Solution

190. Which of the following compounds forms ortho- benzenedicarboxylic acid when oxidized by hot aqueous potassium permanganate ?

A. 

B. 

C. 

D. 

Answer: B

Watch Video Solution

191. Which of the following organic chlorides will not give a Friedel-Craft alkylation product when heated with benzene and $AlCl_3$?

A. $(CH_3)_3CCl$

B. $CH_2 = CHCH_2Cl$

C. CH_3CH_2Cl

D. $CH_2 = CHCl$

Answer: C

Watch Video Solution

192. Which of the following is aromatic ?

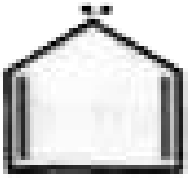
A.

B.

(carbene)

C.

D.



(carbene)

Answer: B

Watch Video Solution

193. Which of the following substance will increase the acidity of phenol ?

A. Dil. H_2SO_4

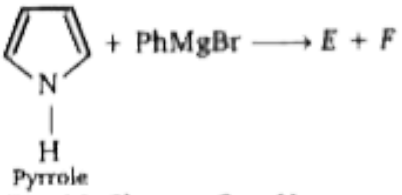
B. Dil. HCl

C. conc. H_2SO_4

D. conc. CH_3COOH

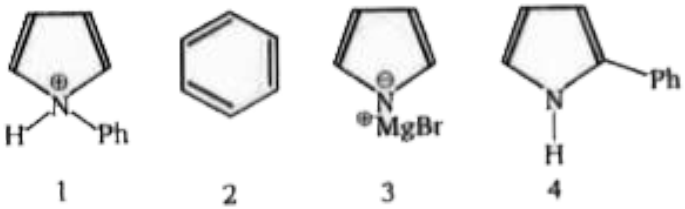
Answer: C

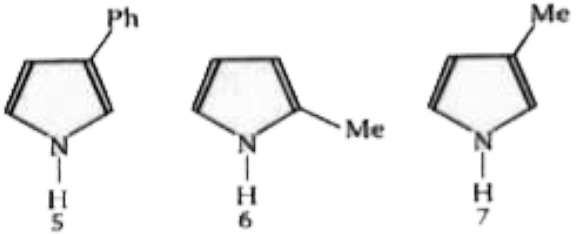
Watch Video Solution



$E + MeCl \longrightarrow G + H$

$F + MeCl \longrightarrow$ no reaction without a catalyst





194.

The structure of products E-H, respectively are

A. 3, 2, 6,7

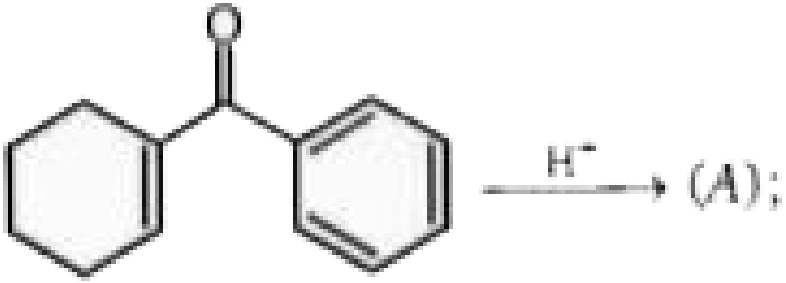
B. 4, 5, 6, 1

C. 3, 4, 5, 2

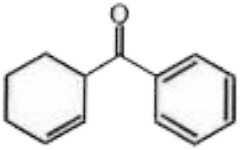
D. 3, 2, 4, 5

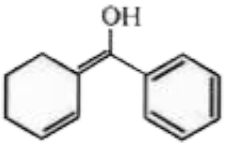
Answer: A

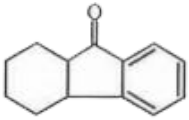
Watch Video Solution



195. Product A is :

A. 

B. 

C. 

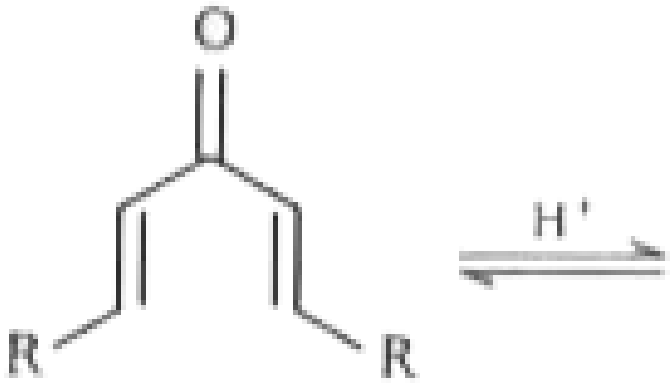
D. none of these

Answer: C

Watch Video Solution

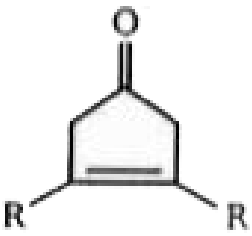
Watch Video Solution

196.

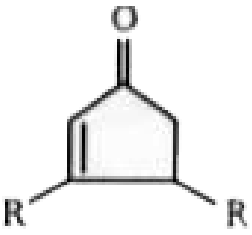


Identify the product of the above rearrangement reaction.

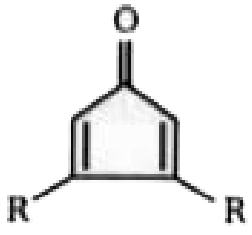
A.

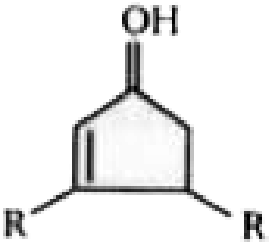


B.



C.

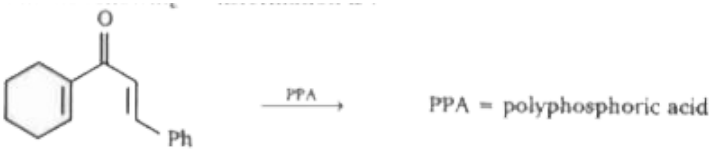


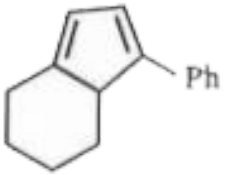
D. 

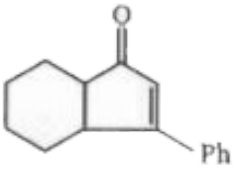
Answer: B

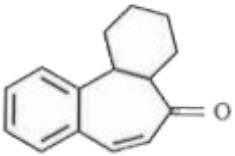
Watch Video Solution

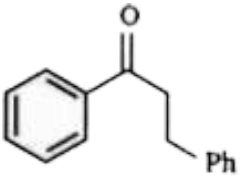
197. Product obtained in the following transformation is :



A. 

B. 

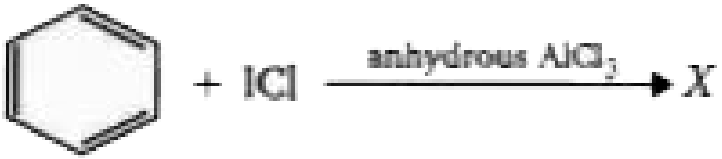
C. 

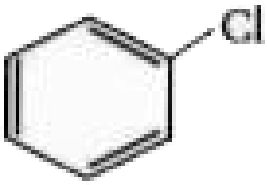
D. 

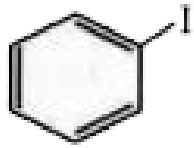
Answer: B

Watch Video Solution

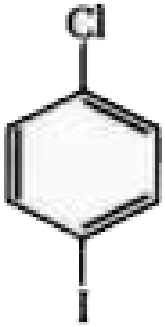
198. The compound X in the reaction.



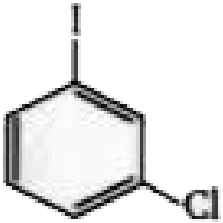
A. 



B.



C.

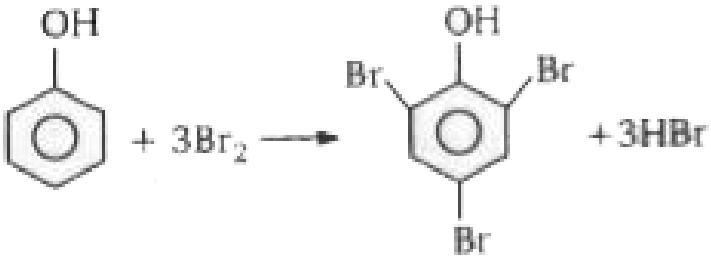


D.

Answer: B

Watch Video Solution

199. Complete the following reaction



A. Nucleophilic addition

B. Nucleophilic substitution

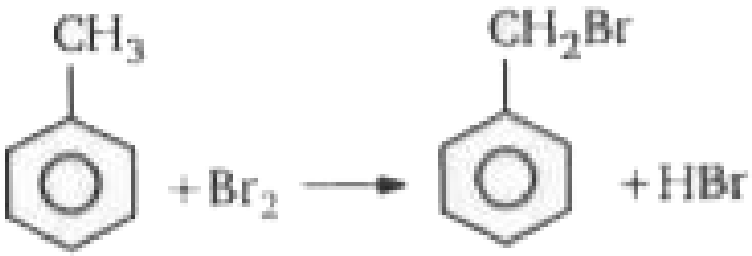
C. Electrophilic addition

D. Electrophilic substitution

Answer: D

Watch Video Solution

200. Complete the following reaction



A. Nucleophilic addition

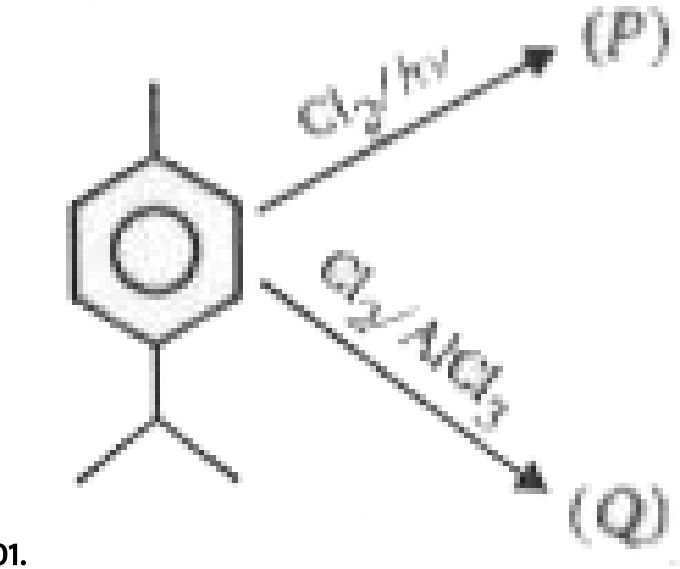
B. Nucleophilic substitution

C. Electrophilic addition

D. free radical substitution.

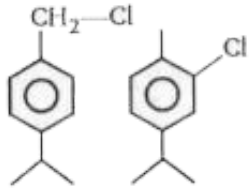
Answer: D

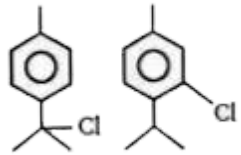
Watch Video Solution

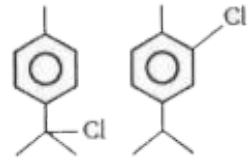


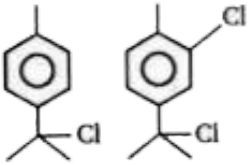
201.

Identify major product of both respectively.

A. 

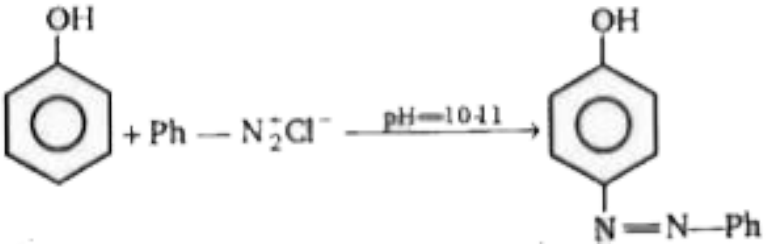
B. 

C. 

D. 

Answer: C

Watch Video Solution

202. 

Characteristics of above reaction is :

A. C-N coupling reaction , Carbocation is intermediate

B. N - N coupling reaction , Carbocation is intermediate

C. C-N coupling reaction , Carbanion is intermediate

D. N - N coupling reaction , Carbanion is intermediate

Answer: C

Watch Video Solution

203. The compound formed on heating chlorobenzene with chloral in the presence of concentrated sulphuric acid, is :

A. Freon

B. DDT

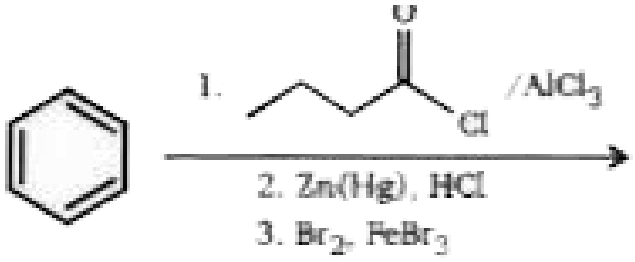
C. Gammexene

D. Hexachloroethane

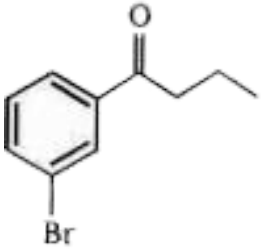
Answer: B

Watch Video Solution

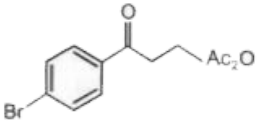
204. Predict the product of the following reaction.



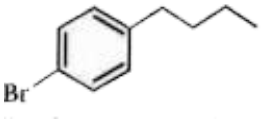
A.



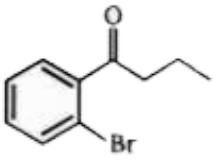
B.



C.



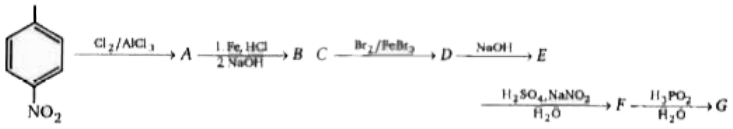
D.



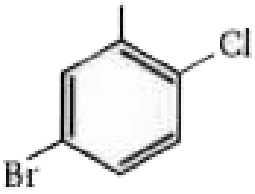
Answer: C

Watch Video Solution

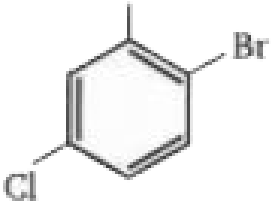
205. Predict the major product of the following reaction sequence.



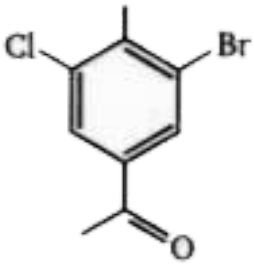
A.



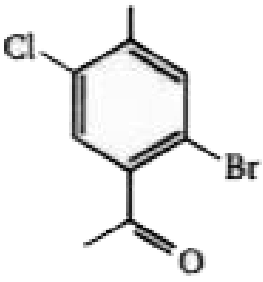
B.



C.



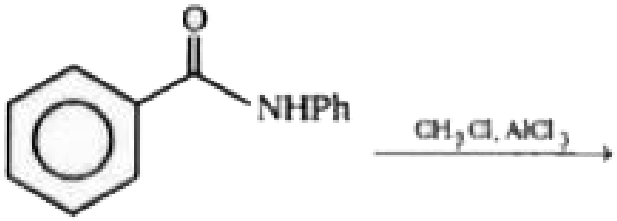
D.



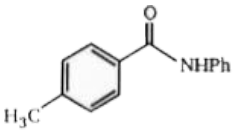
Answer: A

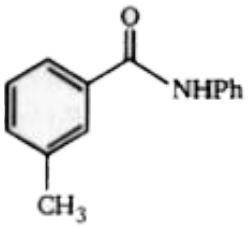
Watch Video Solution

206. Give the major product of the following reaction :

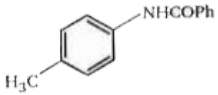


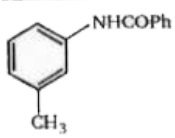
A.





B.

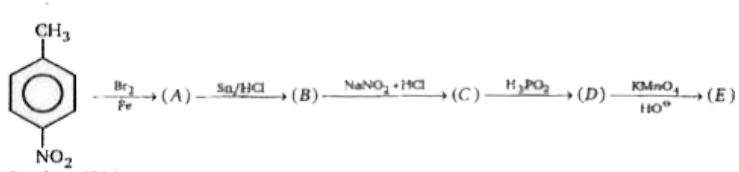
C. 



D.

Answer: C

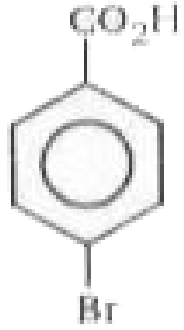
Watch Video Solution



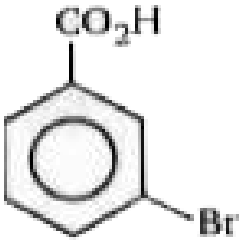
207. Product (E) is :

Product (E) is :

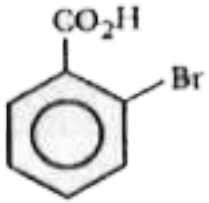
A.

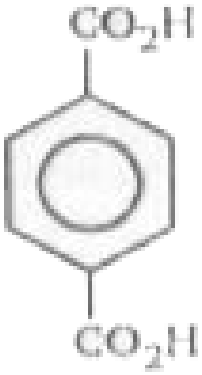


B.



C.



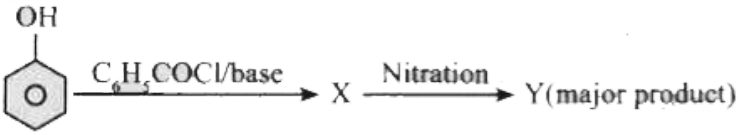


D.

Answer: C

Watch Video Solution

208.



Y is

A. Product A is 2, 4-DNP

B. A to B dehydration reaction

C. A to B, geometrical isomersm will obtained as a product

D. B is known as oxime

Answer: D

Watch Video Solution

209. (i) chlorobenzene is mono-nitrated to M (ii) nitrobenezene is mono-chlorinated to N (iii) anisole is mono-nitrated to P (iv) 2-nitrochlorobenzene is mono-nitrated to Q.

Out of M, N, P and Q the compound that undergoes reaction with aq. NaOH fastest is

A. M

B. N

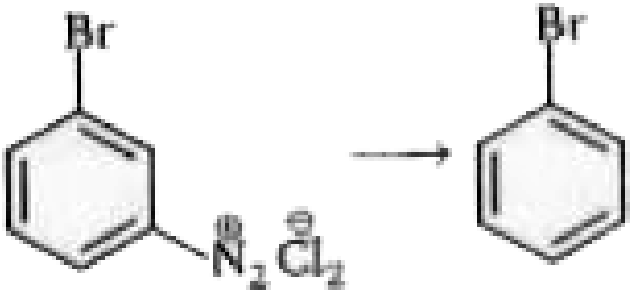
C. P

D. Q

Answer: D

Watch Video Solution

210. For the transformation the reagent used is



A. $LiAlH_4$

B. H_3PO_2

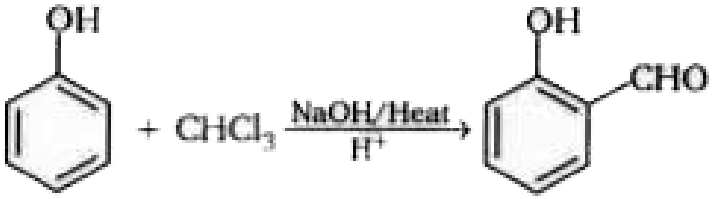
C. H_3O^+

D. H_2 / Pt

Answer: A

Watch Video Solution

211. The reaction



is known as

A. Perkin reaction

B. Sandmeyer reaction

C. Reimer-Tiemann reaction

D. Cannizzaro reaction

Answer: C

Watch Video Solution

212. A compound X formed after heating coke with lime react with water to give Y which on passing over redhot iron at 873 produces Z. The compound Z is

A. 

B. 

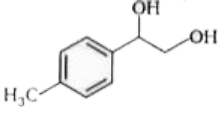
C. 

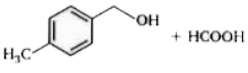
D. 

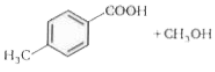
Answer: A

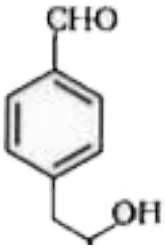
Watch Video Solution

213. The reaction of 50% aq KOH on an equimolar mixture of 4-methylbenzaldehyde and formaldehyde followed by acidification gives :

A. 

B. 

C. 

D. 

Answer: B

Watch Video Solution

214. Which isomer of xylene can give three different monochloroderivatives?

A. o-xylene

B. m-xylene

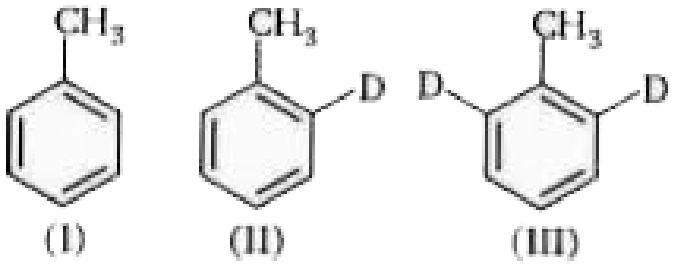
C. p-xylene

D. xylene cannot give a monochloro derivative

Answer: B

Watch Video Solution

215.



The rate of o-nitration of the above compounds, (I) toluene, (II) 2-D-toluene and (III) 2, 6 D_2 -toluene is in the following order

A. I gt II gt III

B. II gt I gt III

C. III gt I gt II

D. The rate is the same for all the three compounds

Answer: D

Watch Video Solution

216. Cyclooctatetraene is expected to have :

A. a planar structure

B. a tub-shaped structure

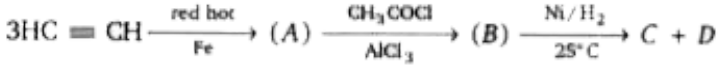
C. open chain isomeric structure

D. tatutomeric bicyclic structure

Answer: B

Watch Video Solution

217.



Relation between C and D.

A. Identical

B. enantiomer

C. diastereomer

D. position

Answer: B

Watch Video Solution

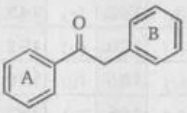
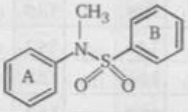
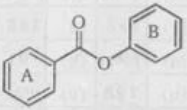
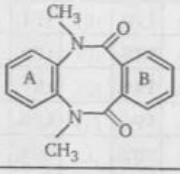
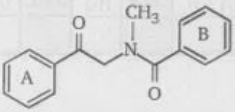
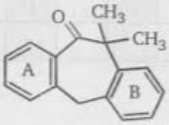
Level 2

1. Each of the six compounds shown at the bottom of the page has two aromatic (benzene) rings. In each case the two rings are different and are labeled A & B. If an electrophilic substitution, such as nitration or bromination, is carried out on each compound, then identify which ring (A or B) will be preferentially attacked, and indicate the orientation of the

substitution (ortho/para, meta or all sites).

Compound	Reactivity		Substitution	
1.	A		ortho/para	
	B		meta	
			all sites	
3.	A		ortho/para	
	B		meta	
			all sites	
5.	A		ortho/para	
	B		meta	
			all sites	

Compound	Reactivity		Substitution	
2.	A		ortho/para	
	B		meta	
			all sites	
4.	A		ortho/para	
	B		meta	
			all sites	
6.	A		ortho/para	
	B		meta	
			all sites	

Compound		Compound	
1.		2.	
3.		4.	
5.		6.	

Watch Video Solution

2. When given substituents on a benzene ring, as activating or de-activating and as ortho-para or meta directing for elctrophilic aromatic substitution fill the following by appropriate $(righttick)$ right or (x) wrong.

	Substituent	Activating	De-activating	Ortho/para	Meta
1.	$-OCH_3$				
2.	$-\overset{\overset{O}{\|}}{C}-O-CH_3$				
3.	$-O-\overset{\overset{O}{\|}}{C}-CH_3$				
4.	$-CH_3$				
5.	$-F$				
6.	$-Ph$				
7.	$-NH-\overset{\overset{O}{\|}}{C}-CH_3$				
8.	$-\overset{\overset{O}{\|}}{C}-NH-CH_3$				
9.	$-Br$				
10.	$-CN$				
11.	$-CF_3$				
12.	$-\overset{\overset{O}{\|}}{C}-NH_2$				
13.	$-\overset{\overset{O}{\|}}{C}-OH$				
14.	$-CH=CH_2$				

15.	$-CH=CH-\overset{\overset{O}{\|}}{C}-OH$				
16.	$-CH=CH-\overset{\overset{O}{\|}}{C}-H$				
17.	$-S-Et$				
18.	$-\overset{\overset{O}{\|}}{S}-Et$				
19.	$-\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}-Et$				
20.	$-N=O$				
21.	$-CH_2X$				
22.	$-CHX_2$				

Watch Video Solution

3. Devise a series of reactions to convert benzene into meta - chlorobromobenzene. Select reagents and conditions from the following table, listing them in the order of use.

	Compound		Compound		Compound
1.	sulphuric acid (conc.) heat	5.	Mg in ether	9.	$Cu_2Br_2 + HBr$
2.	$Cl_2 + FeCl_3$ and heat	6.	PBr_3	10.	$(CH_3CO)_2O$ + Pyridine
3.	$NaNO_2 + H_3O^{(+)}$ 0°C	7.	H_3PO_2		
4.	H_2 Pt catalyst	8.	HNO_3(conc.) + H_2SO_4 (conc.) and heat		

A. 1 then 2 then 6

B. 2 then 8 then 4 then 3 then

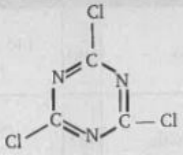
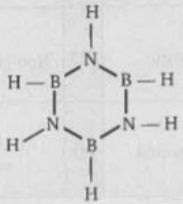
C. 8 then 4 then 10 then 2 then 3 then 9

D. 8 then 2 then 4 then 3 then 9

Answer: D

Watch Video Solution

4. Match the Column (I) and Column (II). (Matrix)

	Column (I)		Column (II)
(a)		(p)	Aromatic
(b)		(q)	$(4n+2)\pi$ electron in a single ring
(c)	$Fe(C_5H_5)_2$	(r)	$4n\pi$ electron in a single ring
(d)	$Cr(C_6H_6)_2$	(s)	Effective atomic number of metal = 36

Watch Video Solution

5. Match the Column (I) and Column (II).

Column (I)		Column (II)	
Compound (Monocyclic)		Number of π - electron	
(a)	$C_4H_4^{-2}$	(p)	$2\pi e$
(b)	$C_4H_4^{+2}$	(q)	$6\pi e$
(c)	$C_9H_9^{+1}$	(r)	$8\pi e$
(d)	$C_9H_9^{-1}$	(s)	$10\pi e$

Watch Video Solution

6. Match the Column (I), Column (II) and Column (III). (Matrix)

Column I		Column II		Column III	
(a)		(p)	Aromatic	(w)	$(4n+2)\pi$ electron. $n = 0, 1, 2, 3$
(b)		(q)	Non-aromatic	(x)	$4n\pi$ electron $n = 1, 2, 3$
(c)		(r)	Anti- aromatic	(y)	Non-planar compound
(d)		(s)	Planar compound	(z)	Readily reacts with active metal

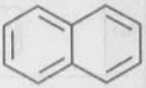
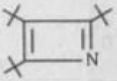
Watch Video Solution

7. Match the Column (I), Column (II) and Column (III). (Matrix)

	Column I		Column II		Column III
(a)		(p)	Readily react with active metal	(w)	Aromatic
(b)		(q)	Readily undergo Dimerization at room temperature	(x)	Anti-aromatic
(c)		(r)	$(4n+2)\pi$ electron $n = 0, 1, 2, 3$	(y)	Non-aromatic
(d)		(s)	$4n\pi$ electron	(z)	High dipole

Watch Video Solution

8. Among the following compound.

	Compound		Compound		Compound
(a)		(b)		(c)	
(d)		(e)		(f)	
(g)	$C_8H_8^{-2}$	(h)	$C_3H_3^+$	(i)	
(j)		(k)		(l)	

A. Number of compounds which are aromatic = P

B. Number of compounds which are anti-aromatic = Q

C. Number of compounds which are non-aromatic = R

D. Number of compounds which readily undergo dimerization at room temperature = S

Answer: P+Q+R+S+T = 18

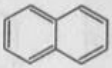
Watch Video Solution

9. Of the following compounds which will react with Br_2 at room temperature in dark.

(a)	Benzene (C_6H_6)	
(b)	Cyclohexene (C_6H_{10})	
(c)	Cyclohexane (C_6H_{12})	
(d)	Propanoic Acid ($C_2H_5CO_2H$)	
(e)	Phenol (C_6H_5OH)	
(f)	Nitrobenzene ($C_6H_5NO_2$)	
(g)	Hexyne (C_6H_{10})	
(h)	2,2-dichloropropane ($C_3H_6Cl_2$)	

Watch Video Solution

10. Among the following compound.

Compound		Compound		Compound	
(a)		(b)	$C_8H_8^{-2}$	(c)	
(d)		(e)		(f)	
(g)		(h)		(i)	$C_3H_3^{+1}$
(j)		(k)		(l)	

A. Number of compounds which are aromatic = w

B. Number of compounds which are non-aromatic = x

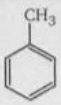
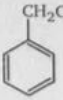
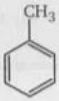
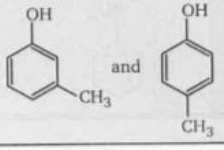
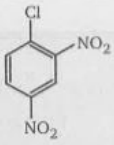
C. Number of compounds which are anti-aromatic = y

D. Number of compounds which readily undergo Dimerization at room temperature = z Sum of w+ x + y + z = ...

Answer:

Watch Video Solution

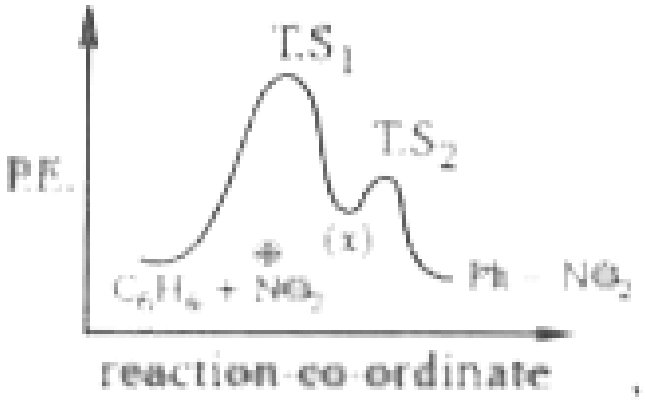
11. Complete the following table.

	Reactant	Reagents(s)/Conditions	Major Organic Products
(a)		(A)	
(b)		1. $NaNO_2$ in dilute H_2SO_4/0 – 5°C 2. heat or boiling	(B)
(c)		SO_3/conc. H_2SO_4	(C)
(d)	(D)	1. NaOH heated at 330°C 2. dilute H_3O^+	
(e)		1. aqueous NaOH heated at 60°C 2. dilute H_3O^+	(E)

Watch Video Solution

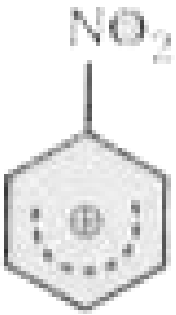
Level 2 Comprehension

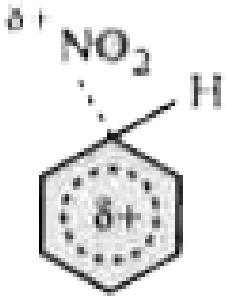
1. Given is the energy profile diagram of nitration of benzene using mixed acid. $(HNO_3 + H_2SO_4)$

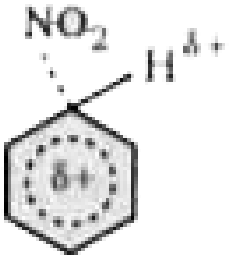


Identify (x) in above reaction :

A.



B. 

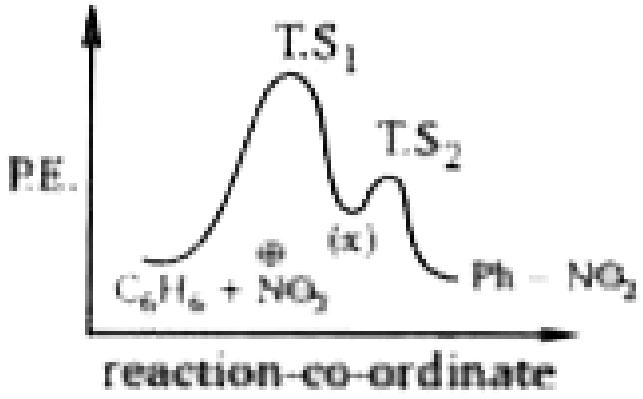
C. 

D. none

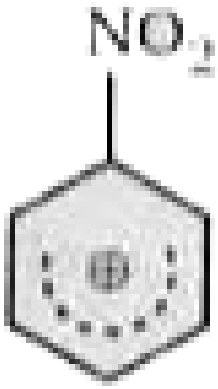
Answer: A

Watch Video Solution

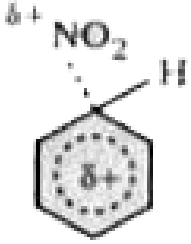
2. Given is the energy profile diagram of nitration of benzene using mixed acid. $(HNO_3 + H_2SO_4)$



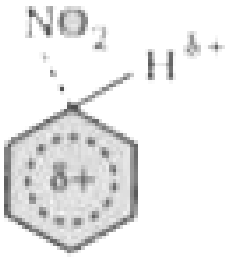
Identify T. S_1 in the above reaction.



A.



B.



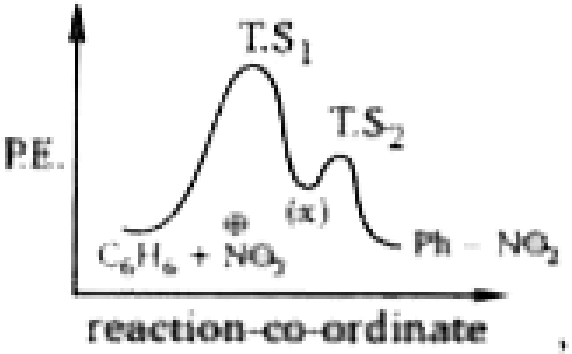
C.

D. none

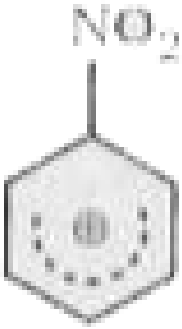
Answer:

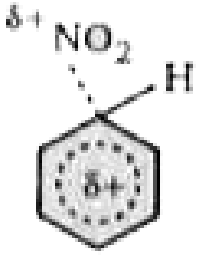
Watch Video Solution

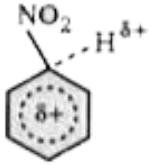
3. Given is the energy profile diagram of nitration of benzene using mixed acid. $(HNO_3 + H_2SO_4)$



Identify T. S_2 in the above reaction :

A. 

B. 

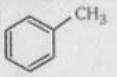
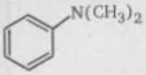
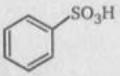
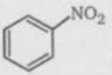
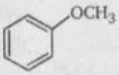
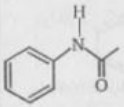
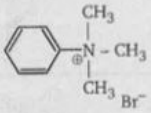
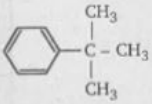
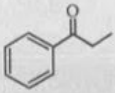
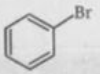
C. 

D. none

Answer:

Watch Video Solution

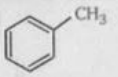
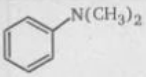
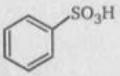
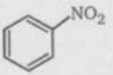
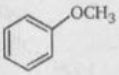
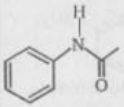
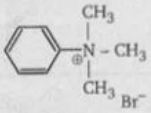
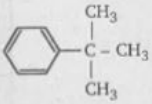
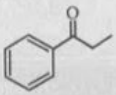
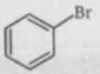
4. Examine the ten structural formulas shown below and select those that satisfy each of the following conditions. Enter one or more letters (a through j) in each answer box, reflecting your choice for each.

	Compound		Compound
a.		b.	
c.		d.	
e.		f.	
g.		h.	
i.		j.	

Which compounds undergo electrophilic nitration more rapidly than benzene ?

Watch Video Solution

5. Examine the ten structural formulas shown below and select those that satisfy each of the following conditions. Enter one or more letters (a through j) in each answer box, reflecting your choice for each.

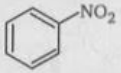
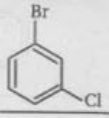
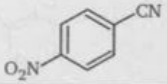
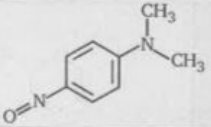
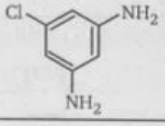
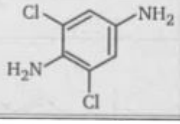
	Compound		Compound
a.		b.	
c.		d.	
e.		f.	
g.		h.	
i.		j.	

Which compounds give meta substitution under electrophilic bromination conditions ?

Watch Video Solution

6. Nitrobenzene is a versatile compound that may be converted into a wide variety of substituted benzenes. Five such synthesis are shown below. In each reaction box above an arrow write letters designating the reagents and conditions, selected from the list at the bottom of the page, that would effect the transformation. The reagents must be written in the answer box in the correct order of their use. You may assume appropriate heating or cooling takes place, and more than one equivalent

of the reagent may be used if needed.

Reactant	Reagent		Product
 nitrobenzene	a. ⟶	v.	
	b. ⟶	w.	
	c. ⟶	x.	
	d. ⟶	y.	
	e. ⟶	z.	

	Reagents		Reagents
A.	H_2, Ni catalyst	F.	Cl_2 & $FeCl_3$
B.	KBr & Cu_2Br_2	G.	NaOH 10% solution
C.	KCN & $Cu_2(CN)_2$	H.	$(CH_3CO)_2O$, pyridine
D.	HNO_2 0°C	I.	HNO_3/H_2SO_4
E.	CH_3I & pyridine		

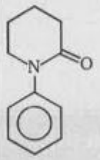
View Text Solution

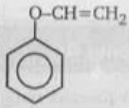
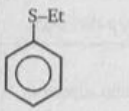
7. Match the column I and II.

Column (I)		Column (II)	
Group		Effect on phenyl ring	
(a)	$-CH=CH-CO_2H$	(p)	o/p-directors
(b)	$-O-\overset{\overset{O}{\|}}{S}-CH_3$	(q)	meta-directors
(c)	$-NH-\overset{\overset{O}{\|}}{C}-CH_3$	(r)	Activating group
(d)	$-\overset{\overset{O}{\|}}{S}-CH_3$	(s)	De-activating group

Watch Video Solution

8. Match the column I and II.

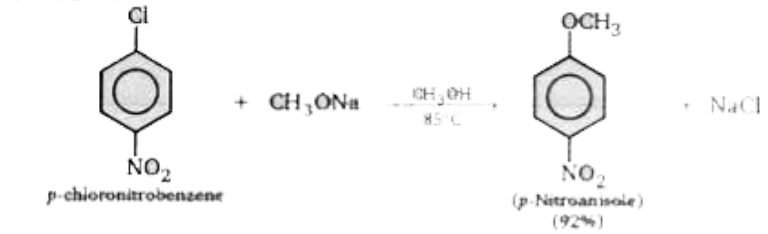
Column (I)		Column (II)	
Group		Effect on phenyl group	
(a)		(p)	Activating group
(b)		(q)	De-activating group

(c)		(r)	o/p-director
(d)		(s)	meta-director

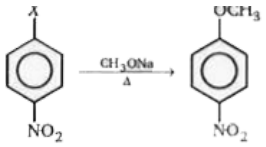
Watch Video Solution

9. Nucleophilic Aromatic substitution (SN_{Ar}) :

A substituted benzene derivative containing-NO_2 and Cl group at p-position is subjected to Nu-substitution.



Match the column I and II :

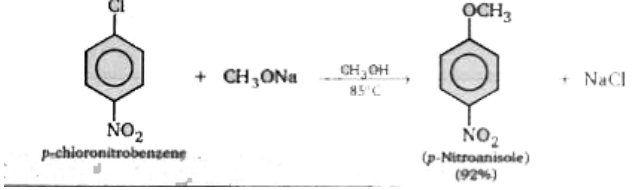


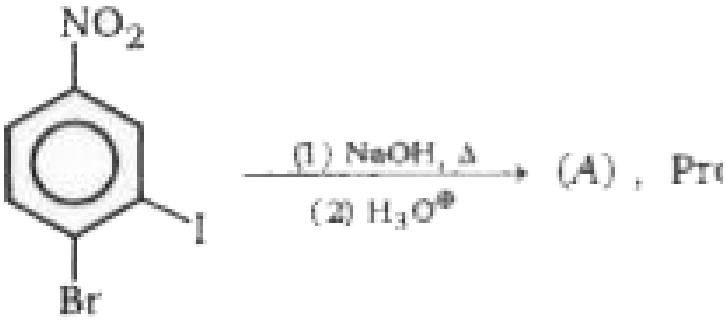
Column (I)		Column (II)	
X = halogen		relative reactivity toward (SN_{Ar}).	
(a)	– F	(p)	312
(b)	– Cl	(q)	1
(c)	– Br	(r)	0.8
(d)	– I	(s)	0.6

Watch Video Solution

10. Nucleophilic Aromatic substitution (SN_{Ar}) :

A substituted benzene derivative containing-NO_2 and Cl group at p-position is subjected to Nu-substitution.





Product (A) is :

A. Fluoride

B. Chloride

C. Bromide

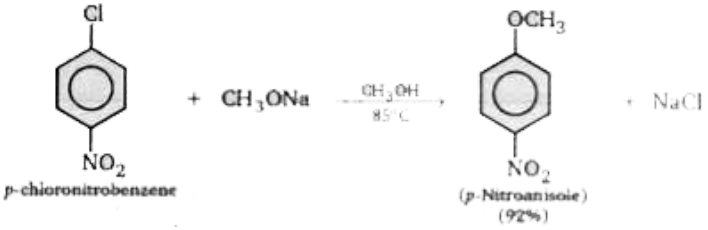
D. Iodide

Answer: D

Watch Video Solution

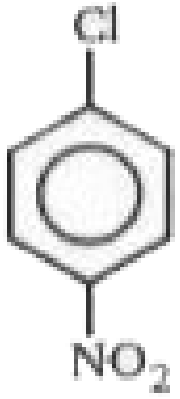
11. Nucleophilic Aromatic substitution (SN_{Ar}) :

A substituted benzene derivative containing-NO_2 and Cl group at p-position is subjected to Nu-substitution.

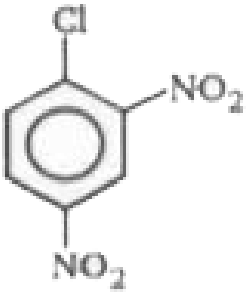


Which of the following is most reactive toward SN_{Ar}

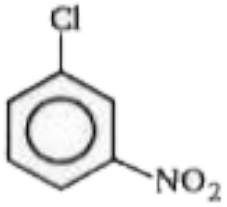
A.



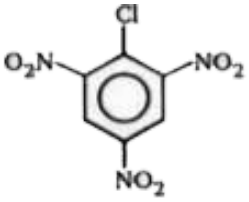
B.



C.



D.

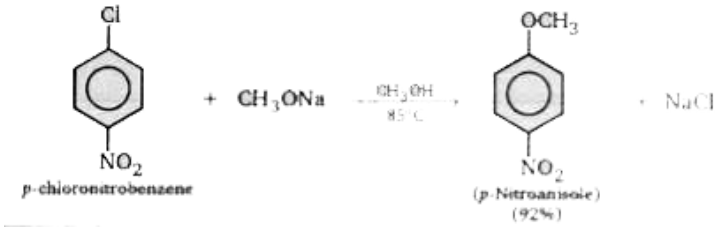


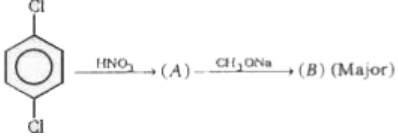
Answer: D

Watch Video Solution

12. Nucleophilic Aromatic substitution (SN_{Ar}) :

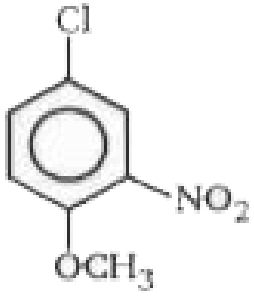
A substituted benzene derivative containing-NO_2 and Cl group at p-position is subjected to Nu-substitution.



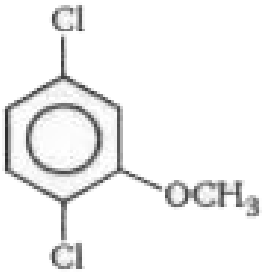


product (B) is :

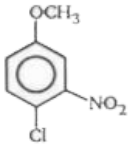
A.

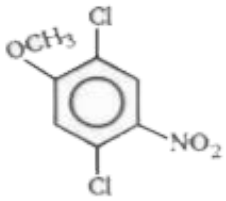


B.



C.





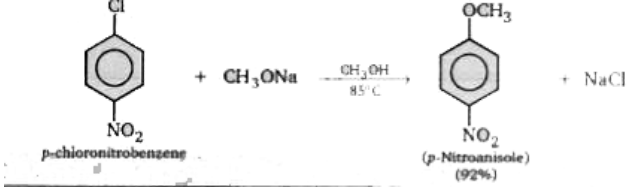
D.

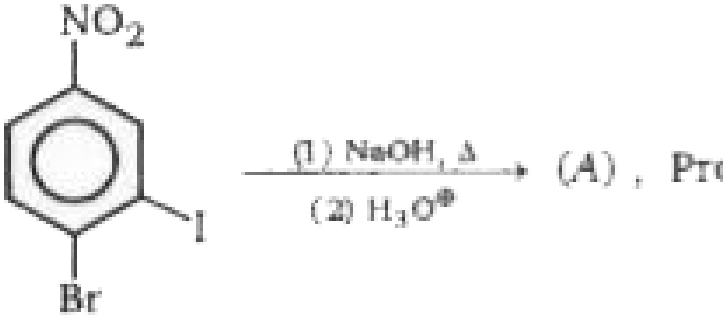
Answer: A

Watch Video Solution

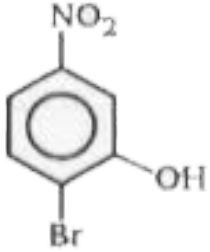
13. Nucleophilic Aromatic substitution (SN_{Ar}) :

A substituted benzene derivative containing-NO_2 and Cl group at p-position is subjected to Nu-substitution.

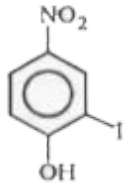




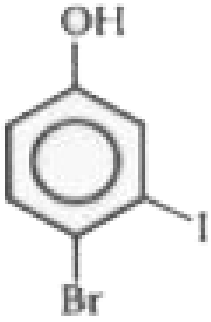
Product (A) is :



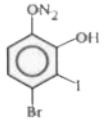
A.



B.



C.



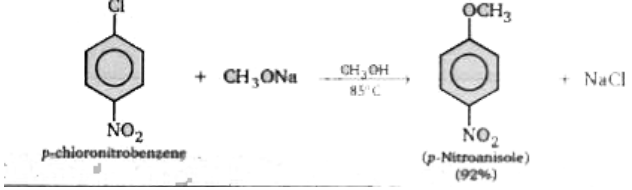
D.

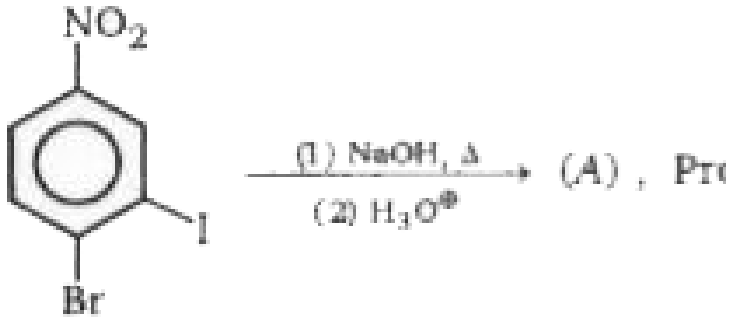
Answer: B

Watch Video Solution

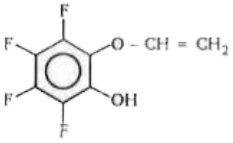
14. Nucleophilic Aromatic substitution (SN_{Ar}) :

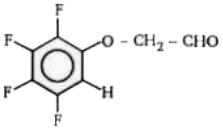
A substituted benzene derivative containing-NO_2 and Cl group at p-position is subjected to Nu-substitution.

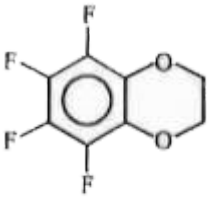


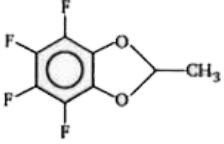


Product (A) is :

A. 

B. 

C. 

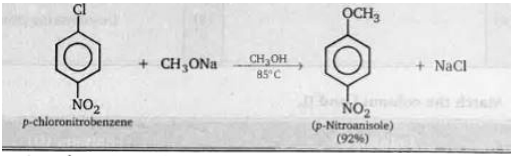
D. 

Answer: C

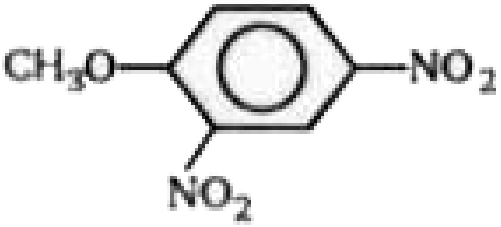
Watch Video Solution

15. Nucleophilic Aromatic substitution (SN_{Ar}) :

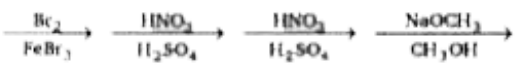
A substituted benzene derivative containing-NO_2 and Cl group at p-position is subjected to Nu-substitution.



Which is the best route for the synthesis of



Starting from benzene of ?

A. 

B. $\xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[FeBr_3]{Br_2} \xrightarrow[CH_3OH]{NaOCH_3}$

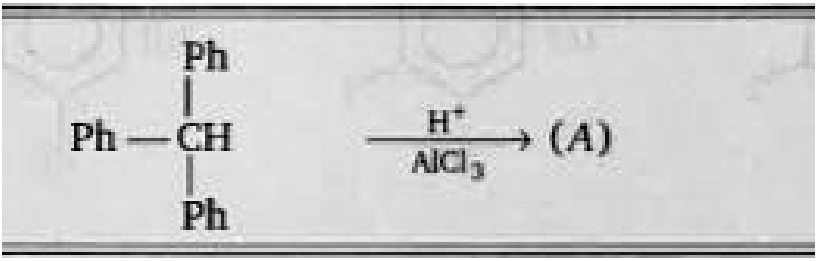
C. $\xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[FeBr_3]{Br_2} \xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[CH_3OH]{NaOCH_3}$

D. $\xrightarrow[H_2SO_4]{HNO_3} \xrightarrow[FeBr_3]{Br_2} \xrightarrow[CH_3OH]{NaOCH_3} \xrightarrow[H_2SO_4]{HNO_3}$

Answer: A

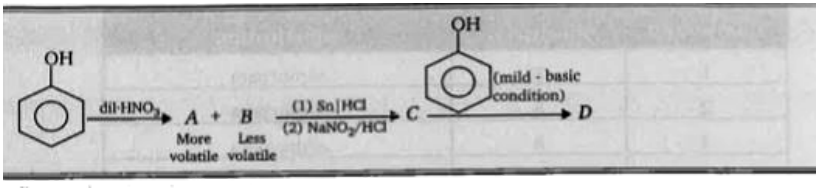
Watch Video Solution

16. Identify product (A) and write its structure.



Watch Video Solution

Level 2 Subjective Problems

1. 

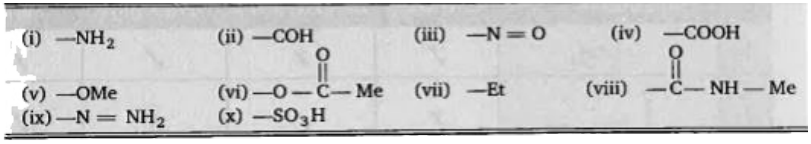
Double bond equivalent of D is :

Watch Video Solution

2. How many isomers 'x' of C_8H_{10} when reacts with hot alkaline $KMnO_4$ give only aromatic dicarboxylic acid ? How many isomers 'y' of C_4H_8 when reacts with hot alkaline $KMnO_4$ give carbondioxide ? Sum of x+y=?

Watch Video Solution

3. How many groups are op director in the electrophilic aromatic substitution ?



Watch Video Solution