CHEMISTRY

RESONANCE ENGLISH

STRUCTURAL IDENTIFICATION & PRACTICAL ORGANIC CHEMISTRY

Exercise 1 Subjective Question

1. Calculate the DU of following compounds :

(i) C_6H_6ClBrO , (ii) C_5H_9N

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Section A

1. How many structural isomeric alkenes on hydrogenation give $-n$-Pentane.

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2. On catalytic hydrogenation how many isomeric alkene will give 2 methyl butane.

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3. How many isomeric alkyne of hydrogenation gives 3,3 - Dimethylhexane.

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4. Which of the following hydrocarbons give same product on hydrogenation :

A. 2-methyl hex-1-ene & 3-Methyl hex-3 -ene

B. 3-Ethyl hex-1-en-4-yne & 2-Methylhept 3-ene-4-eyn

C. 3-Ethylcylcoprop-1-ene & 1,2-Dimethylcycloprop-1-ene

D. 2-Methylbut-2-ene & 1,2-Dimethylcycloprop -1-ene

Answer: D

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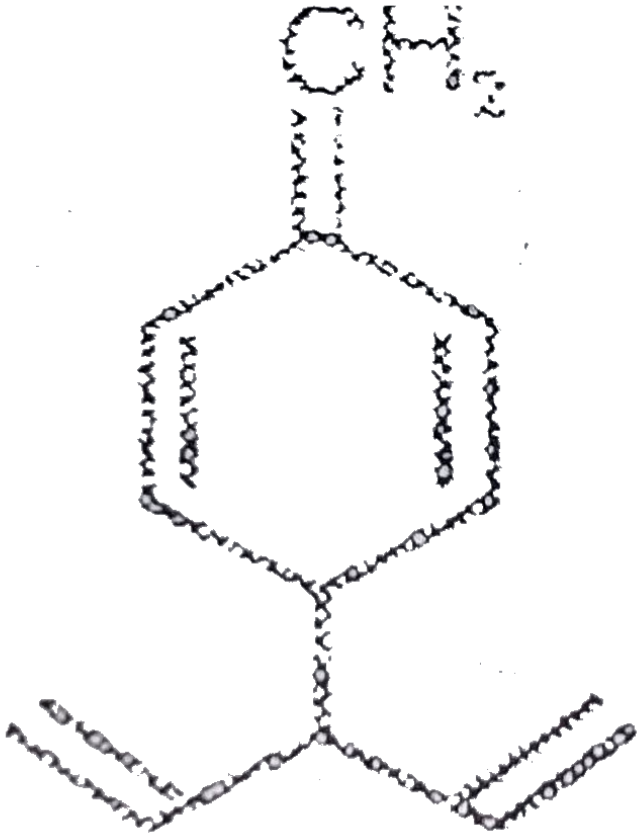
5. Number of moles of hydrogen will required for complete hydrogenation of one mole of following compounds :



A. 6

B. 7

C. 5

D. 3

Answer: C

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6. How many alkene on catalytic hydrogenation given isopentane as a product?

A. 2

B. 3

C. 4

D. 5

Answer: B

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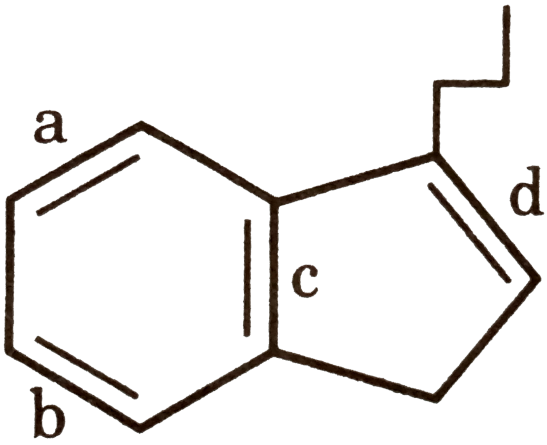
7. If 1 mole H_2 is reacted with 1 mole of the following compound.



Which double bond will be hydrogenated?

A. c

B. b

C. a

D. d

Answer: D

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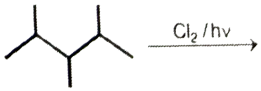
Section B

1. Number of monochloro structural isomers of :

(i) 

(ii) 

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2. Write the product of following reactions :

(a) $CH_3 - \overset{H_3C}{\underset{|}{C}} = \overset{CH_3}{\underset{|}{C}} - CH_3 \xrightarrow[Zn\,/\,H_2O]{O_3}$, (b)

$CH_3 - C \equiv C - CH_3 \xrightarrow[Zn\,/\,H_2O]{O_3}$

(c) $CH_3 - C \equiv C - CH_3 \xrightarrow{O_3\,/\,H_2O_2}$, (d)

$CH_3 - \overset{CH_3}{\underset{|}{C}} = CH - CH_3 \xrightarrow{O_3\,/\,H_2O_2}$

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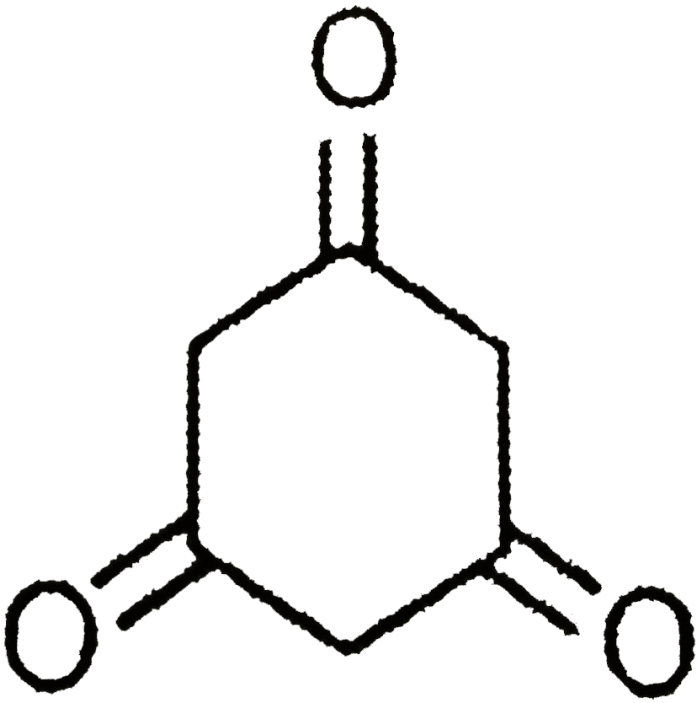

3.

Write theIUPAC name of the compound

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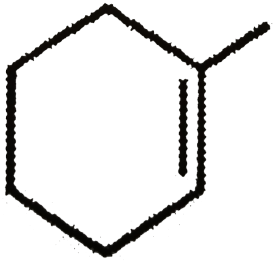
4. Write the product of following reactions.

(ii)  $\xrightarrow{O_3/H_2O_2}$

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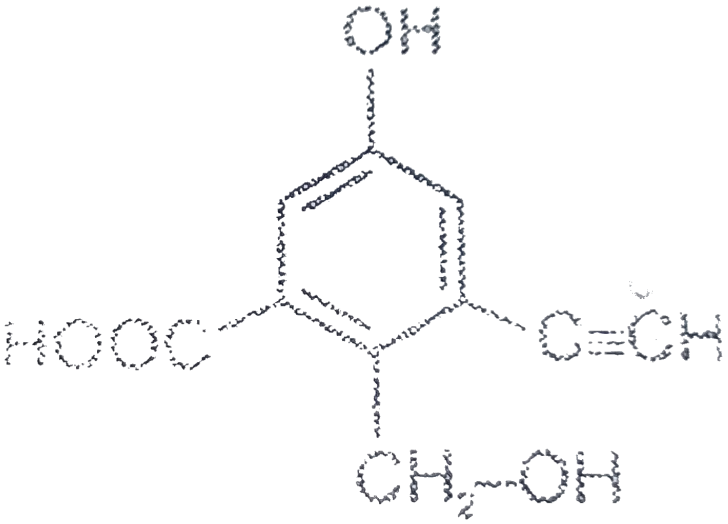
Section C

1. No. of moles of H_2 gas evolved when one mole of the following compound reacts with sodium.



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2. Molecular formula C_4H_6 have two position isomers A and B. both A and B isomer decolourised the bromine water. B release H_2 gas with sodium metal but isomer a does not release H_2 gas. Write IUPAC name of A and B

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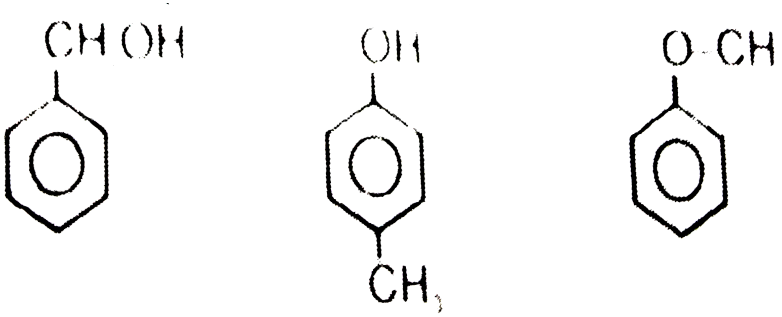
Section D

1. Write suitable regent to distinguish the following compounds.



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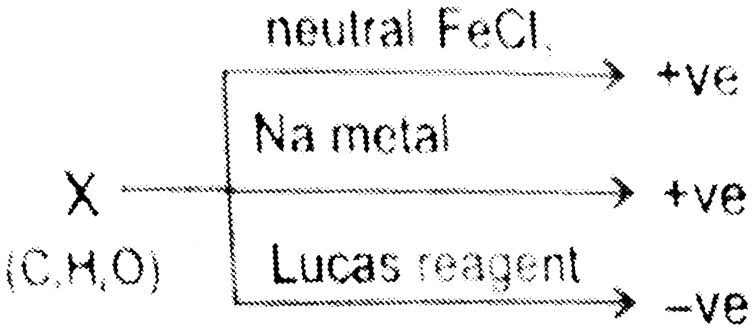
2.



Identify the structure of X :

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3. A compound $X(C_5H_{10}O)$ reacts with 2, 4-DNP but does not give silver mirror test and Iodoform reaction. The possible structure for X is :

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4. Which of the following compounds will not give positive iodoform test.

Acetophenone, Benzophenone, 2-Pentanone, 3-Pentanone, Acetaldehyde, $CH_3COCH_3, (CH_3)_2CHOH, (CH_3CH_2)_2CH-OH, CH_3COOH, CH_3C$

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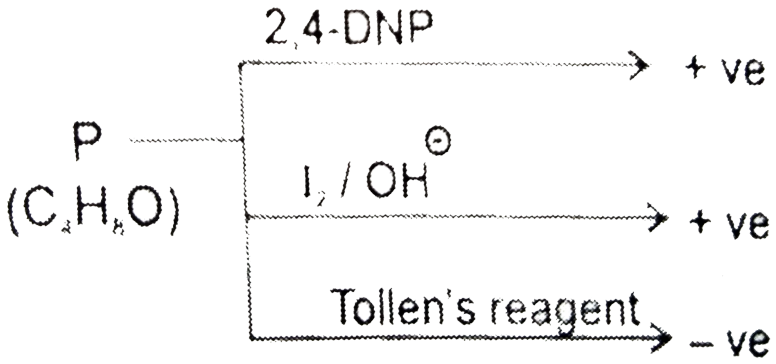
5.



Identify the structure of P :

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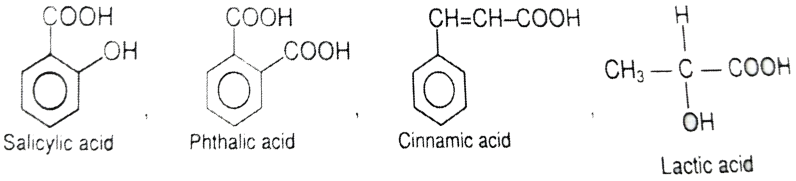
6. Which of the following compound will gives positive test with $NaHCO_3$?



Salicylic acid, Phthalic acid, Cinnamic acid, Lactic acid

$CH_3COOH, PhSO_3, PhOH$

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7. Molecular formula $C_3H_6O_2$ have two structure A and B . Structure A releases CO_2 gas with $NaHCO_3$ but B does not. Compound B is fruily smelling liquid. Write the structure & IUPAC name of A and B

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8. A symmetrical organic compound of $C_4H_{11}N$ give yellow oily layer on treatment with HNO_2 then find the structure of the compound.

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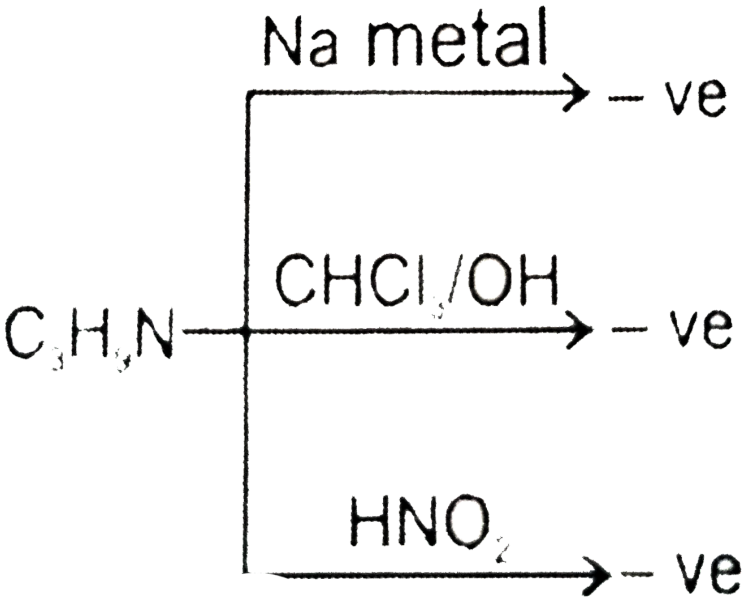
9.



Identify the structure of amine.

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Section E

1. When Lassiange extract of Methylamine react with $FeSO_4$ / diluteH_2SO_4 what happened ?

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2. Explain the reason for the fusion of an organic compound with metallic sodium for testing nitrogen, sulphur and halogens.

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3. What will happen during lassaigne's test for nitrogen if the compound also contains sulphur ?

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4. In the Lassaigne's test , one of the organic compound gave red colour with $FeCl_3$.Ccompound can be:

A. Na_2S

B. NH_2CSNH_2

C. C_6H_5Cl

D. NaCN

Answer: B

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5. Lassaigne's test is used in the qualitative analysis to detect

A. Nitrogen

B. sulphur

C. chlorine

D. all of these

Answer: D

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6. The compound that does not give a blue colour in Lassaigne's test is:

A. $C_6H_5 - NH_2$

B. CH_3CONH_2

C. $NH_2 - NH_2$

D. $C_6H_5 - NO_2$

Answer: C

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7. Nitrogen containing organic compound when fused with sodium metal forms :

A. $NaNO_2$

B. NaCN

C. $NaNH_2$

D. NaNC

Answer: B

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8. The sodium extract on acidification with acetric acid and then adding lead acetate solution gives a black precipitate. The organic compound contains.

A. Nitrogen

B. Halogen

C. Sulphur

D. Phosphorus

Answer: C

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Part Ii Only One Correct Option Type

1. The degree of unsaturation of following compound $C_8H_{12}O$, C_3H_5N, C_4H_8O are respectively :

A. 4,3,2

B. 3,2,1

C. 2,1,3

D. 2,2,3

Answer: B

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Sectionb

1. Only two isomeric monochloro derivatives are possible for

A. n-Pentane

B. 2,4 -Dimethyl pentane

C. Tollune

D. 2,3-Dimethyl butane

Answer: D

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2. The number of possible monochloro derivatives of $2, 2, 3, 3$-Tetramethylbutane is -

A. 2

B. 3

C. 4

D. 1

Answer: D

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3. Which of the following alkene gives four monochloro (structural isomer) products after hydrogenation ?

A. Pent-2-ene

B. 2-Methylbut-2-ene

C. 3-Methylhex-2-ene

D. 2,3-dimethyl-but-2-ene

Answer: B

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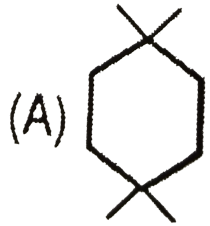
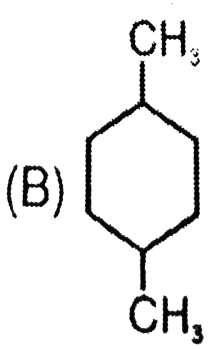
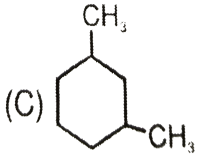
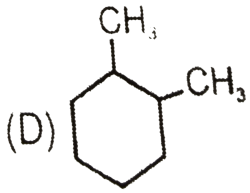
4. Which of the following compound will give four monochloro (structural) product on monochlorination.

A. 

B. 

C. 

D. 

Answer: D

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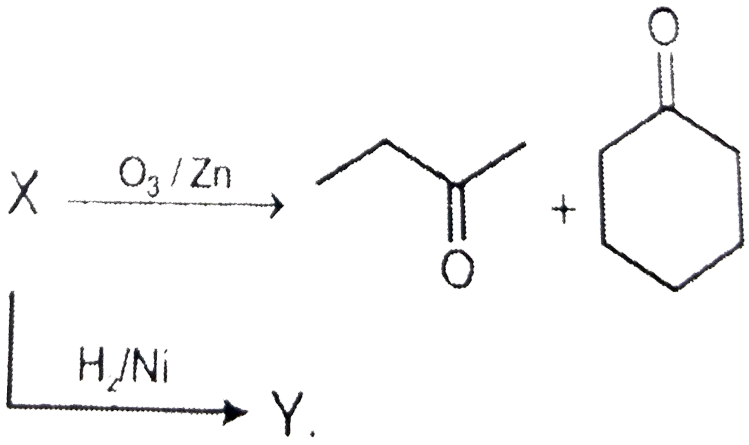
5. 

The IUPAC name of compound Y is :

A. 2-Cyclohexybutane

B. 1-Methylpropylcyclohexane

C. Butylcyclohexane

D. 1-Cyclohexylbutane

Answer: B

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6. An alkene give two moles of $HCHO$, one mole of CO_2 and one mole of $CH_3 - \underset{\underset{O}{||}}{C} - CHO$ on ozonolysis. What is its structure ?

A. $CH_2 = CH - \underset{\underset{CH_3}{|}}{CH} - CH = CH_2$

B. $CH_2 = C = CH - \underset{\underset{CH_2}{||}}{C} - CH_3$

C. $CH_3 - \underset{\underset{CH_3}{|}}{C} = CH - CH = CH_2$

D. $CH_2 = C = CH - \underset{\underset{CH_3}{|}}{CH} - CH = CH_2$

Answer: B

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7. An unknown compound on ozonolysis to give acid $C_3H_6O_2$ and a ketone C_4H_8O. From this information identify structure of unknown compound.

A. $(CH_3)_2C = CHCH_2 - CH_2CH_3$

B. $CH_3CH_2 - \overset{CH_3}{\underset{|}{C}} = CHCH_2CH_3$

C. $(CH_3)_2CHCH = CHCH_2CH_3$

D. $CH_3CH_2CH_2CH = CHCH_2CH_3$

Answer: B

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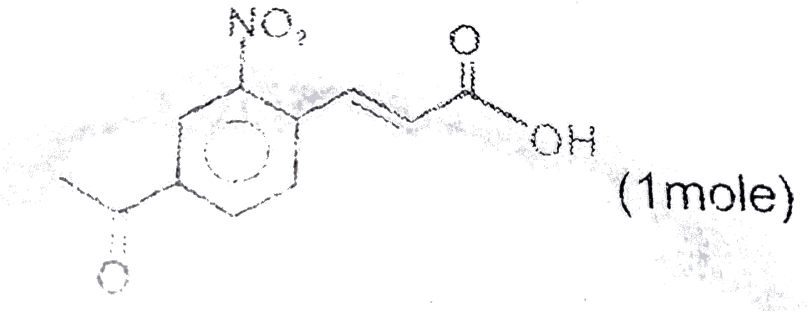
Section C

1. When one mole of the given compond reacts with sodium metal then how many moles of H_2 gas will release ?



A. 1 mole

B. 1.5 mole

C. 2 mole

D. 0.5 mole

Answer: D

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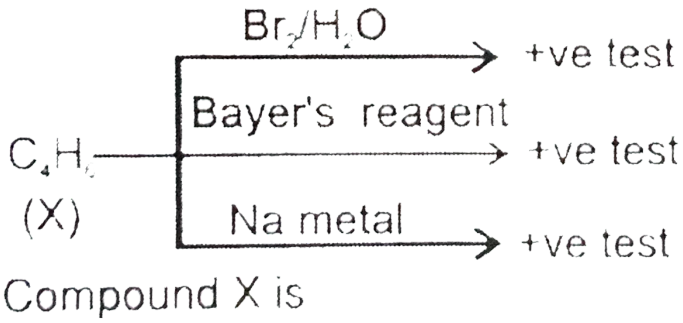
2.



Compound X is

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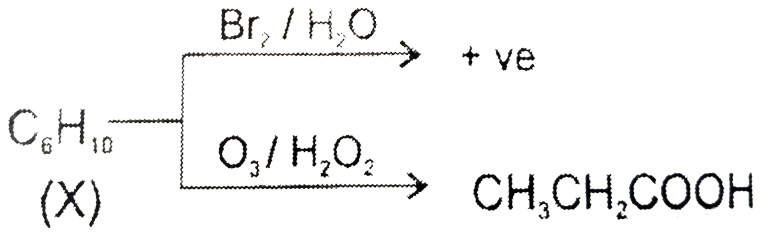
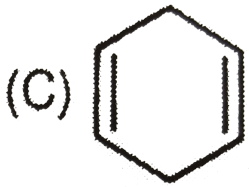
3.

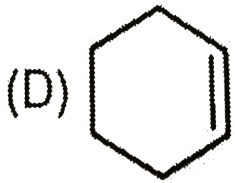


Identify X

A. $CH_3 - CH_2 - C \equiv C - CH_2 - CH_3$

B. $CH_3 - C \equiv C - CH_2 - CH_2 - CH_3$

C. 

D. 

Answer: A

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4. Ammonical $AgNO_3$ gives white ppt after reaction with any compound then this reflects the presence of

A. One-CHO group

B. One triple bond

C. A terminal alkyne

D. Compound is unsaturated

Answer: C

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5. Which of the following compounds gives red ppt with Cu_2Cl_2 / NH_4OH ?

A. $CH_3 - C \equiv C - CH_3$

B. $CH_3 - CH_2 - C \equiv CH$

C. $CH_3 - CH_2 - CH = CH_2$

D. $CH_3 - C \equiv C - CH = CH_2$

Answer: B

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6. Identify the hydrocarbon having molecular formula C_5H_6 which gives white ppt with ammonical $AgNO_3$?

A. 

B. 

C. 

D. 

Answer: A

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Section D

1. The group reagent for the test of alcohols is :

A. Cerric ammonium nitrate

B. Schiff's reagent

C. molisch' reagent

D. Bromine water

Answer: A

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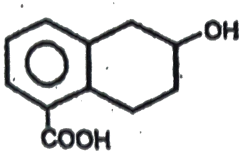
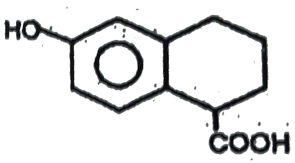
2. The following two compounds I and II can be distinguished by using reagent





(1)$Aq.\ NaHCO_3$, (2)Neutral $FeCl_3(aq.\ )(FeCl_3 + NH_4OH + H_2O)$

(3)Blue litmus solution , (4)Na metal

(5)$HCl + ZnCl_2$(anhydrous)

A. a or c

B. b or e

C. d or e

D. c or d

Answer: B

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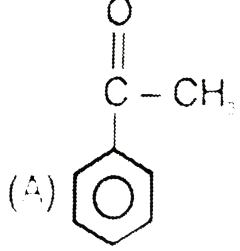
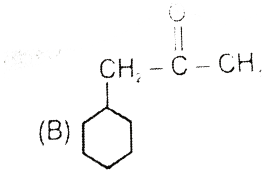
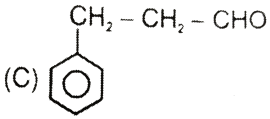
3. Which of the following compound will not react with l_2 / OH^-.

A. 

B. 

C. 

D. $CH_3 - CHO$

Answer: C

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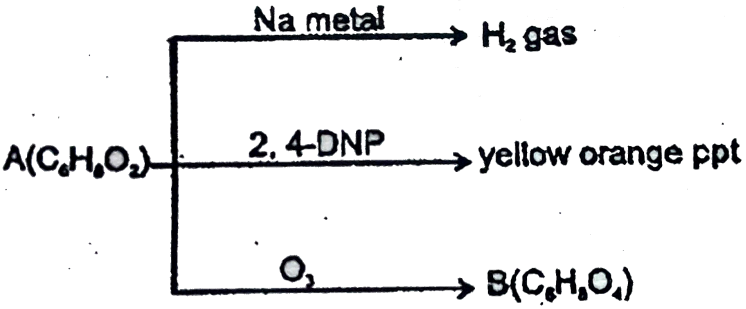
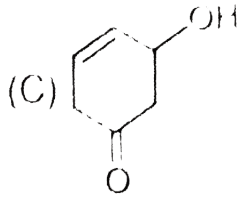
4. A compound A gives following reactions.

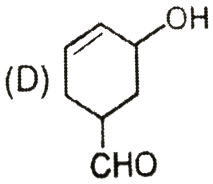


Its structure can be

A. $CH_2 = CH - (CH_2)_2 - \underset{\underset{O}{||}}{C} - CH_2OH$

B. $OHC - (CH_2)_2 - CH = CH - COOH$

C. 

D. 

Answer: C

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5. An organic compound $X(C_4H_8O_2)$ gives positive test with $NaOH$ and Phenopthalein. Structure of X will be:

A. $CH_3 - CH_2 - CH_2 - \underset{\underset{O}{||}}{C} - OH$

B. $CH_3 - \underset{\underset{O}{||}}{C} - \underset{\underset{O}{||}}{C} - CH_3$

C. $CH_3 - \underset{\underset{O}{||}}{C} - O - C_2H_5$

D. $CH_3 - \underset{\underset{O}{||}}{C} - OCH_3$

Answer: C

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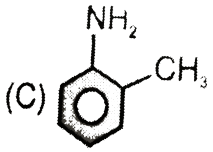
6. Which of the following compound will give smell of NH_3 with conc. $NaOH$.

A. $CH_3 - CH_2 - \underset{\underset{O}{||}}{C} - NH_2$

B. $CH_3 - \underset{\underset{O}{||}}{C} - CH_2 - NH_2$

C. 

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

Answer: A

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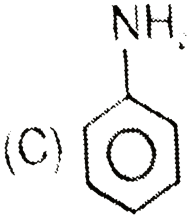
7. Which of the following will not give positive test with $CHCl_3 / KOH$.

A. $CH_3 - CH_2 - NH - CH_3$

B. $CH_3 - CH_2 - CH_2 - NH_2$

C. 

D. $CH_3 - \overset{CH_3}{\overset{|}{C}}H - NH_2$

Answer: A

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8. A positive carbylamine test is shown by :

A. N,N -dimethylaniline

B. 2,4 -dimethylaniline

C. N -methyl-o-methylaniline

D. N-methylaniline

Answer: B

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9. The Hinsberg's method is used for :

A. Preparation of primary amines

B. Preparation of secondary amines

C. Preparation of tertiary amines

D. separation of amine mixtures.

Answer: D

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10. Molisch reagent is used to identify following compound ?

A. Glucose

B. Raffinose

C. Deoxyribose

D. all of the above

Answer: D

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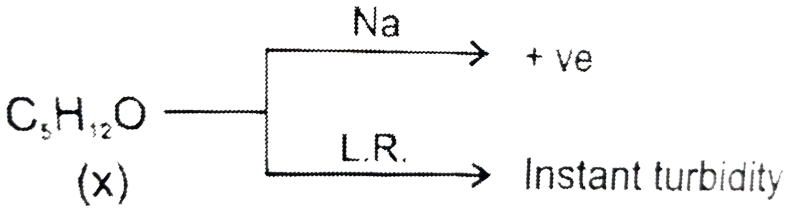
11. 

A. $CH_3-\overset{\overset{CH_3}{|}}{CH}-\underset{\underset{OH}{|}}{CH}-CH_3$

B. $CH_3-\underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_2-CH_3$

C. $CH_3-\overset{\overset{CH_3}{|}}{CH}-CH_2-CH_2-OH$

D. $CH_3-\overset{\overset{OH}{|}}{CH}-CH_2-CH_2-CH_3$

Answer: B

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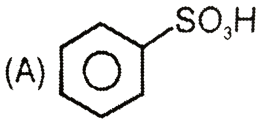
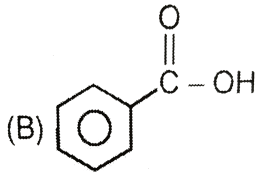
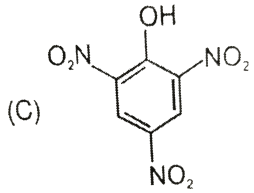
12. Which of the following would produce effervescence with sodium bicarbonate ?

A. 

B. 

C. 

D. All of these

Answer: D

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13. A compound is heated with zinc dust and ammonium chloride followed by addition of the Tollen's reagent. Formation of silver mirror indicates the presence of following group

A. $-CHO$

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

C. $-NO_2$

D. $-NH_2$

Answer: C

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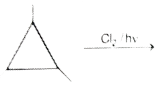
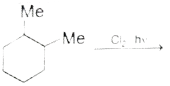
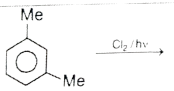
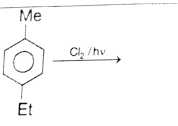
Part Iii Match The Column

1. Match the column :

Column – I (Compound)		Column - II (No. of monochloro structural product)
(A) 	(p)	= 1
(B) 	(q)	= 2
(C) 	(r)	= 3
(D) 	(s)	= 4

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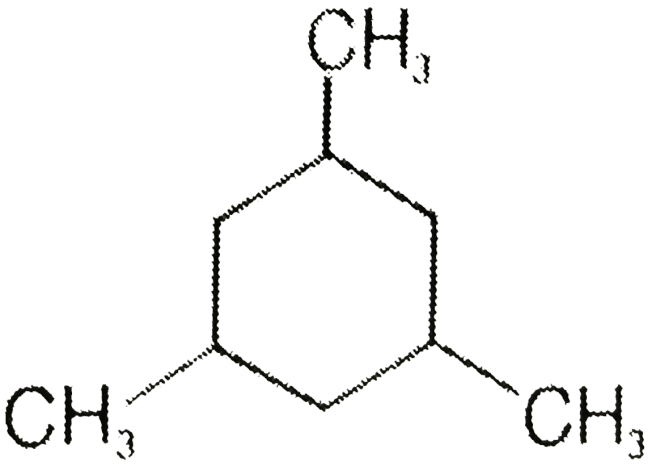
Exercise 2 Only One Option Correct

1. How many products (structural isomers only) are formed by monochlorination of given compound.



A. 4

B. 3

C. 5

D. 6

Answer: B

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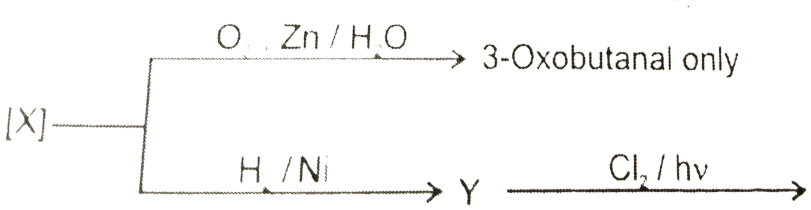
2.



Compound 'X' is

A. 1-Methylcyclopropane

B. 1,4-Dimethylcyclohexa-1,4-diene

C. 1,4-Dimethylcyclohexa-1,3-diene

D. 1,2-Dimethylcyclohexa-1,4-diene

Answer: D

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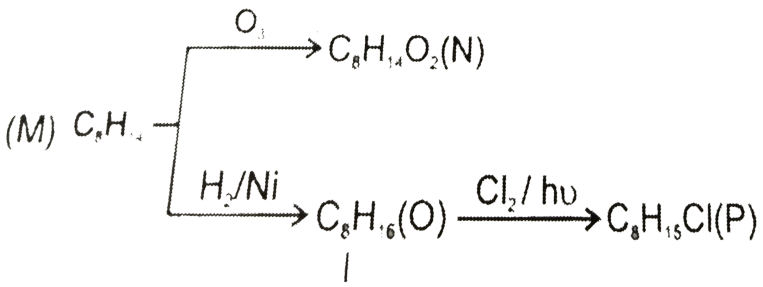
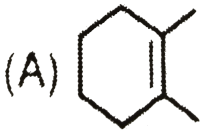
3. The chemical reaction of an unsaturated compound 'M' are given below.

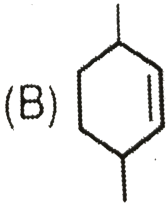
Determine the possible structural formula of 'M'



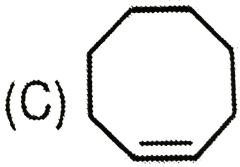
A.



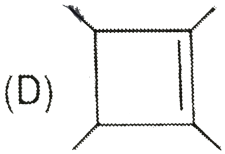
B.



C.



D.



Answer: C

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4. Red precipitate $\xleftarrow[NH_4OH]{Cu_2Cl_2} P(C_5H_8) \xrightarrow{\text{Ozonolysis}}$ 2-Methylpropanoic acid $+$ compound (Q) structure of P can be-

A. $CH_3 - CH_2 - CH_2 - C \equiv CH$

B. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - C \equiv CH$

C. $CH_3C \equiv C - CH_2 - CH_3$

D. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH = CH_2$

Answer: B

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5. Compound $A(C_3H_5N)$ gives precipitate with Tollen's reagent and H_2 gas is also evolved on addition of Li metal. Compound A can be :

A. $CH_3 - CH_2 - C \equiv N$

B. $H - C \equiv C - NH - CH_3$

C. $CH_3 - CH_2 - N \overrightarrow{=} C$

D. $CH_2 = C = N - CH_3$

Answer: B

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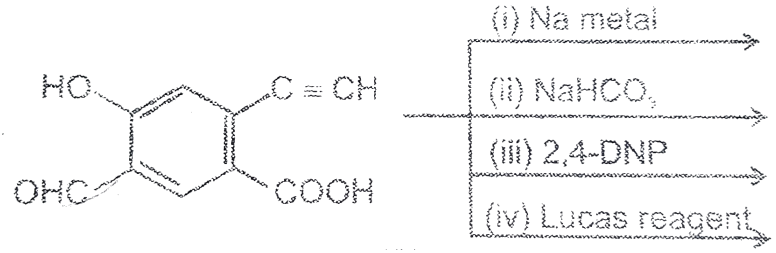
6. Observe the following compound and select $+ve$ & $-ve$ test respectively.



A. $+ + + -$

B. $+ + + +$

C. $+ - + -$

D. $+ - - +$

Answer: A

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7. Which of the following amines does not react with Hinsberg's reagent?

A. $CH_3CH_2NH_2$

B. $(CH_3CH_2)_2NH$

C. $(CH_3CH_2)_3N$

D. All of these

Answer: C

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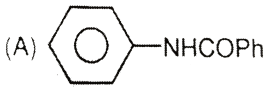
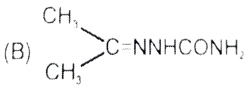
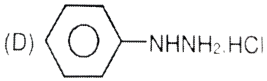
8. Lassaigne's test for the detection of nitrogen will fail in the case of

A. 

B. 

C. $NH_2 - NH_2 . HCl$

D. 

Answer: C

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9. The sodium extract of an organic compound on treatment with $FeSO_4$ solution, $FeCl_3$ and HCl gives red solution. The red colour of

A. $Fe(CN)_3$

B. $K_4\left[Fe(CN)_6\right]_3$

C. $Fe(CNS)_3$

D. Fe_2S

Answer: C

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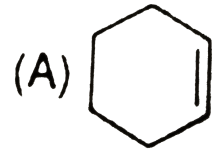
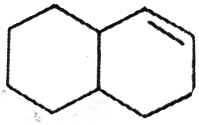
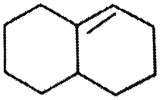
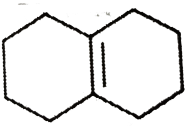
10. A unsaturated hydrocarbons (P) on reductive ozonolysis produce an dicarbonyl compound (Q).(Q) can form precipitate with 2,4-DNP but no with Tollen's reagent. Identify the structure of P

A. (A) 

B. (B) 

C. (C) 

D. (D) 

Answer: D

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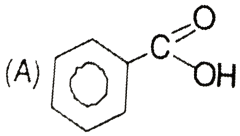
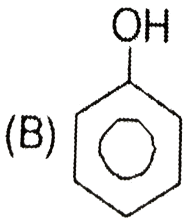
11. An organic compound with 68.9 % of C and 4.92 % of H, is aromatic and gives CO_2 with $NaHCO_3$. The organic compound is

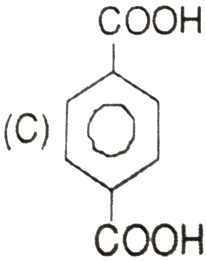
A.



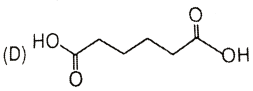
B.



C.



D.



Answer: A

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Part Ii Integer

1. How many isomeric alkynes on catalytic hydrogenation gives 3-Ethyl-4-methylheptane ?

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2. Find the number of structural isomers of fully saturated cycloalkane of molecular formulae C_6H_{12} which give three monochloro structural products.

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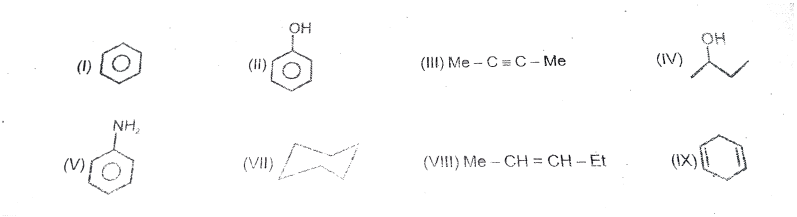
3. How many of the following compounds decolorise Br_2 water solution ?



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4. How many structures possibles for a compound with the molecular formula $C_6H_{12}O$ which can give positive iodoform and $2,4-DNP$ test.

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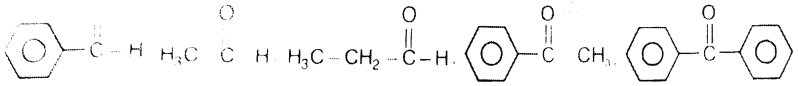
5. Among the following the number of compounds which react with Fehling's solution is :



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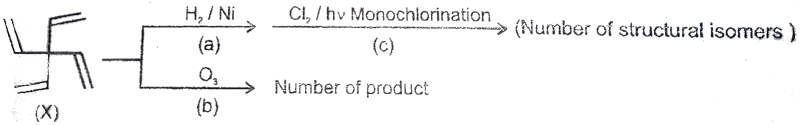
6.



Calculate sum of number of products formed in the reaction a, b and c.

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7. How many no. of active Hydrogen atoms are present in compound (mol. Mass 90) $0.45g$ of which when treated with Na metal liberates $112ml$ of the H_2 gas at STP.

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8. In the Lassaigne's test, one of the organic compound X gives blood red colour with $FeCl_3$. Compound X, when fused with sodium metal forms compound Y. Molecular mass of compound Y is

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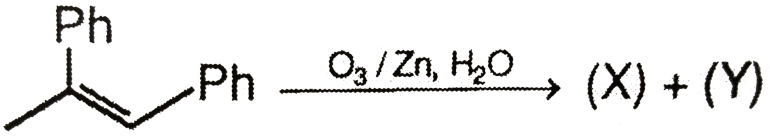
Part Iii

1.



Compound (X) and (Y) can be distinguished by

A. Tollen's reagent

B. Fehling solution

C. Haloform test

D. 2,4 -DNP test

Answer: A::C

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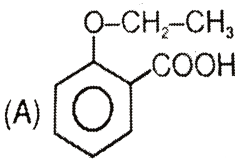
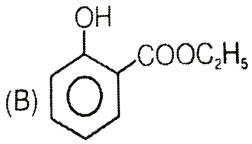
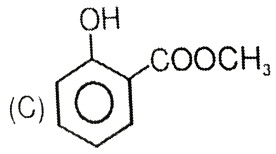
2. A compound (X) gives fruity smell. [X] on hydrolysis gives an acid and alcohol . Acid give violet colour with neutral $FeCl_3$ while alcohol give yellow precipitate on boiling with I_2 and NaOH. (X) can be :

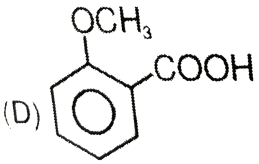
A. 

B. 

C.



D.



Answer: B

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3. Formic acid and Acetaldehyde can be distinguish by

A. $I_2 + NaOH$

B. Tollen's reagent

C. Fehling solution

D. 2,4-DNP test

Answer: A::D

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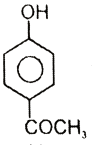
4. Correct statements (s) about 

is /are

A. It gives coloured solution with neutral $FeCl_3$ solution

B. It liberates H_2 gas with Na metal

C. It gives positive iodoform test.

D. It forms sweet smelling compound with alcohols.

Answer: A::B::C

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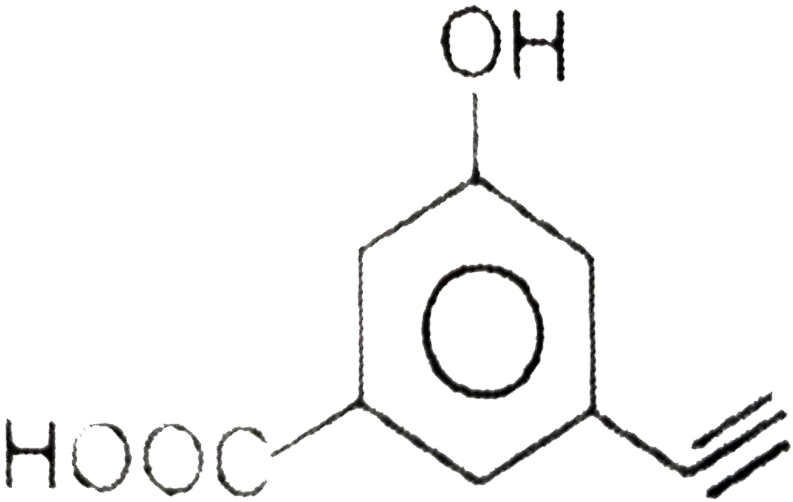
5. Correct statements (s) about



is /are

A. liberate $\frac{3}{2}$ mole of H_2 on treatement with Na.

B. Positive test with $FeCl_3$

C. Positive test with $NaHCO_3$

D. Positive test with tollen's reagent

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

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6. An organic compound "A" of molecular weight 120, gives Tollen's reagent test and 2,4-DNP test but no Iodoform with $\frac{I_2}{O}H^{\Theta}$. The compound "A" may be

A. Benzoic acid

B. Phenyl methyl ketone

C. 2-phenyl ethanal

D. 1-phenyl ethane

Answer: C

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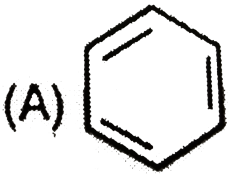
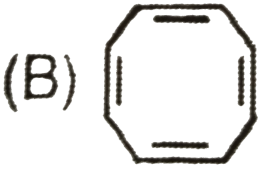
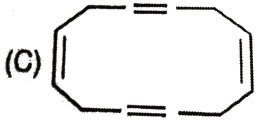
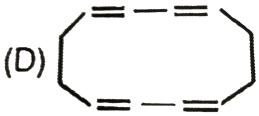
7. A hydrogen on oxidative ozonlysis produces Oxalic acid and Butanedioic acid. Its structrure is

A. 

B. 

C. 

D. 

Answer: D

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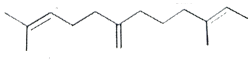
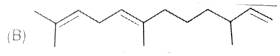
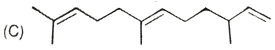
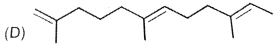
8. Farnesence is a compound found in the waxy coating of apples. On hydrogenation it gives $2, 6, 10$-Trimethyl dodecane. On ozonolysis it gives one mole acetone, one mole of formoaldehyde, one mole of 2-Methylpentanedial and one mole of 4-Oxopentanal. The structure proposed for Farnesence may be

A. 

B. 

C. 

D. 

Answer: C

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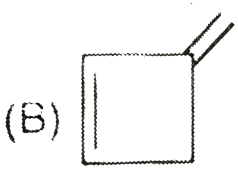
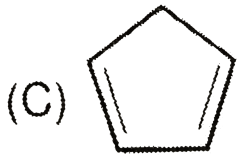
9. A compound $P(C_5H_6)$ gives positive Bayer test and on hydrogentation from a hydrocarbon $B(C_5H_{10})$ which gives only monochloro product. The compound $'P'$ is.

A. 

B. 

C. 

D. $CH \equiv C - CH_2 - CH = CH_2$

Answer: C

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10. X' compound (C_4H_8O) decolorises bromine water react with I_2 & NaOH it give yellow ppt identify 'X'

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

B. $CH_3 - \underset{\underset{OH}{|}}{CH} - CH = CH_2$

C. $CH_3 - \underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_3$

D. $CH_3 - HC = CH - \underset{\underset{OH}{|}}{CH_2}$

Answer: B

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11. Compounds I and II can be distinguished by using reagent.

(I) 4-Hydroxy-4-methypent-2-enoic acid

(II) 5-Hydroxypent-2-ynoic acid

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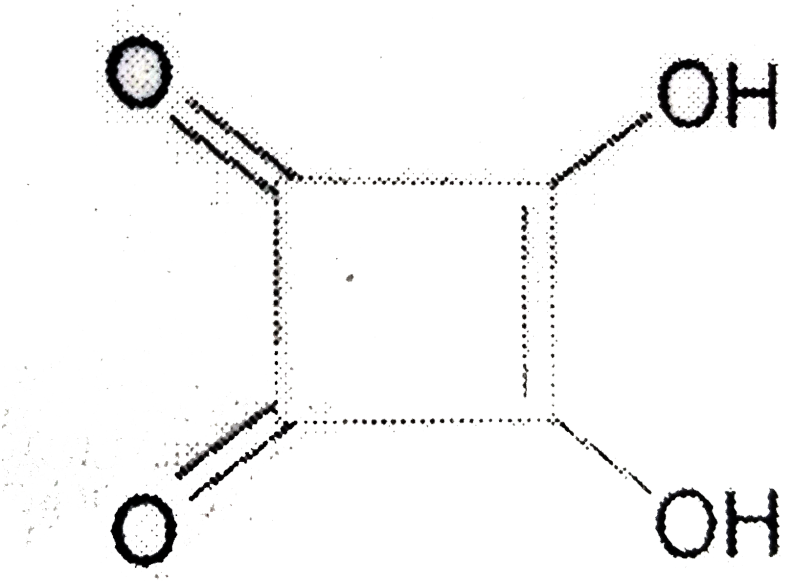
12. Which of the following test will not be given by



(Squaric acid)

A. Br_2 water test

B. 2,4-DNP test

C. Neutral $FeCl_3$

D. Tollen's test

Answer: D

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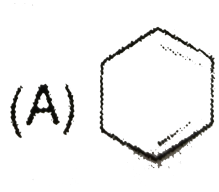
13. Which of the following compounds after complete hydrogenation will form three monochloro structural isomeric products ?

A. 

B. $$CH_3 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - \underset{\displaystyle CH_2}{\underset{||}{C}} - CH_3$$

C. 

D.

$$\begin{array}{l} C \equiv CH \\ | \\ HC \equiv C - CH - C \equiv CH \end{array}$$

Answer: C::D

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14. A organic compound having molecular formula C_3H_4, react with sodium metal to give a colourless and odourless gas. Select the correct statements about organic compound.

A. It gives Bromine water test

B. It reacts with Bayer's reagent

C. It reacts with Tollen's reagent

D. It reacts with Ammonical cuprous chloride.

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

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15. Compound P Liberates H_2 gas with Na metal. P gives the precipitate with tollen's reagent, there is no reponse towards Lucas reagent and compound Q gives instant turbidity with anhydrous $ZnCl_2/HCl_1$ and with sodium metal 1 mole of compound Q liberates 11.2 litre H_2 gas at STP. Find the structural formula of compound P and Q.

A. P is $CH_2 = CH - \overset{\overset{O}{||}}{C} - H$

B. Q is $CH_3 - \underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2 - O - CH_3$

C. P is $CH_3 - O \equiv C - H$

D. Q is $CH_3 - \underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}} - \underset{\underset{OH}{|}}{CH} - CH_3$

Answer: B::C

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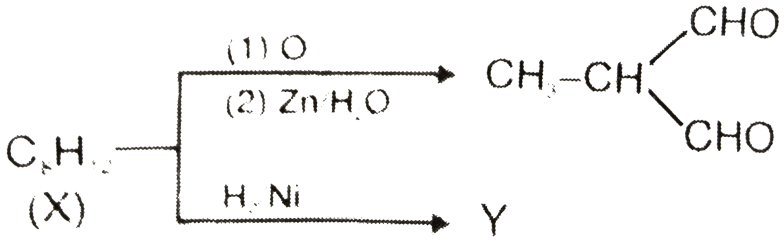
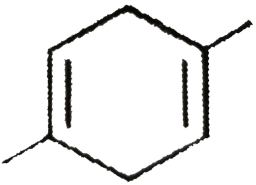
16.

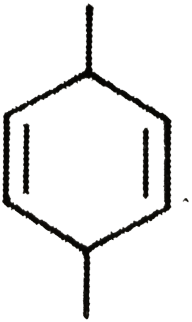


True statements is/are

A. Structure of X is

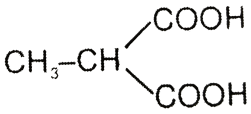


B. Structure of X is



C. Y on monochlorination produce 3 monochloro structural products.

D. Oxidative ozonolysis products X is



Answer: B::C::D

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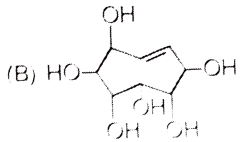
17. $C_6H_{15}O_6(P) \xrightarrow[Zn, H_2O]{O_3} C_4H_8O_4(Q) \xrightarrow[\text{reagent}]{\text{Molish}}$ Violet colour ring

Structure of P connote be :

A. $\underset{OH}{\underset{|}{CH_2}} - \underset{OH}{\underset{|}{CH}} - \underset{OH}{\underset{|}{CH}} - CH = CH - \underset{OH}{\underset{|}{CH}} - \underset{OH}{\underset{|}{CH}} - \underset{OH}{\underset{|}{CH_2}}$

B. 

C. $\underset{OH}{\underset{|}{CH_2}} - \underset{OH}{\underset{|}{CH}} - \underset{OH}{\underset{|}{CH}} - CH = CH - \underset{OH}{\underset{|}{CH}} - \underset{OH}{\underset{|}{CH}} - \underset{OH}{\underset{|}{CH}} - CH = O$

D. $HOOC - CH_2 - \underset{OH}{\underset{|}{CH}} - CH = CH - \underset{OH}{\underset{|}{CH}} - CH_2 - COOH$

Answer: B::C::D

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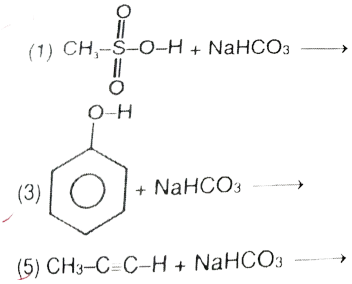
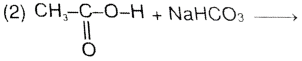
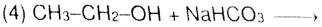
18. In how many reactions CO_2 gas is released out after reaction with $NaHCO_3$







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19. How many alkenes, alkynes and alkadienes can be hydrogenated to form Isopentane (Including all structural isomers)

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20. How many acyclic structural isomeric carbonyl compound having molecular formula $C_6H_{12}O$ can gives haloform test.

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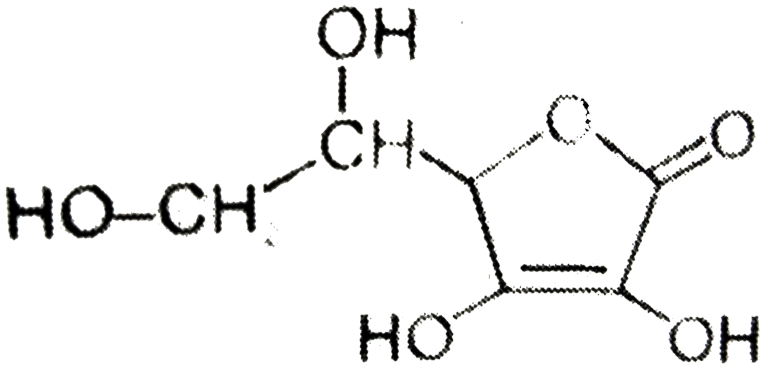
21. Structural of Ascorbic acid is represented as follows



(Ascorbic acid)

How many of the following reagents can gives positive test with ascorbic acid.

$Cu_2Cl_2 + NH_4OH$	$2,4-DNP$	Na Metal	$HCL + ZnCl_2$
(I)	(II)	(III)	(IV)
NAOH+Phenophthalein	$dil.\ KMNO_4$	Br_2 / H_2O	$AgNO_3 + NH_4OH$
(VI)	(VII)	(VIII)	(IX)

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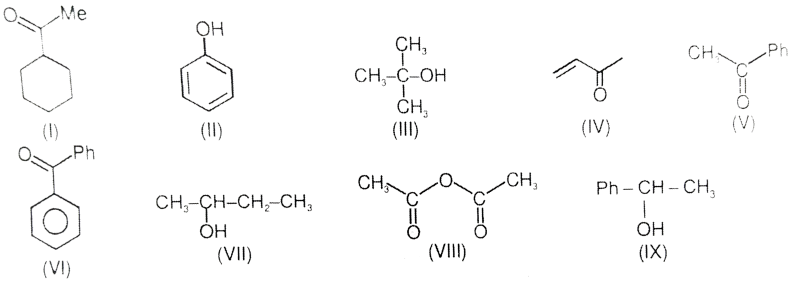
22. Observe the following compounds



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23. n' number of alkenes yields 2,2,3,4,4- pentamethyl-pentane on catalytic hydrogenation and 'm' number of monochloro structural isomers are possible for this compound.report your answer as (n+m)

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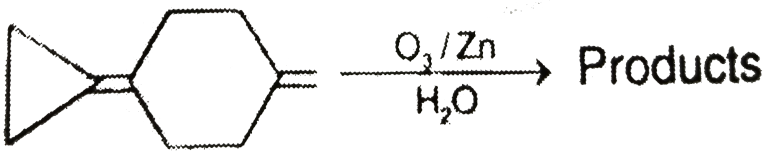
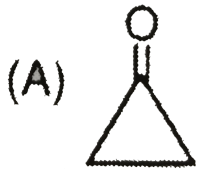
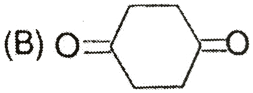
24. Aldehyde and ketones may be prepared by reductive cleavage of carbon-carbon double bonds. A particularly useful reagent for this purpose is ozone under reductive condition in the formation of carbonyl compounds.



products

Which of the following products is not formed in above reaction.

A. 

B. 

C. $H - \underset{\underset{O}{||}}{C} - H$

D. $CH_3 - \underset{\underset{O}{||}}{C} - H$

Answer: D

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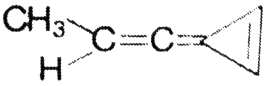
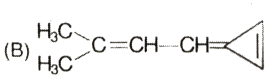
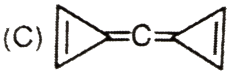
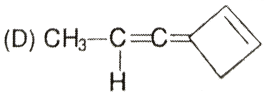
25. $(X) \xrightarrow[H_2O]{O_3 / Zn} CO_2 + CH_3 - \underset{\underset{O}{||}}{C} - H + OHC - \underset{\underset{O}{||}}{C} - CHO$

X is

A. 

B. 

C. 

D. 

Answer: A

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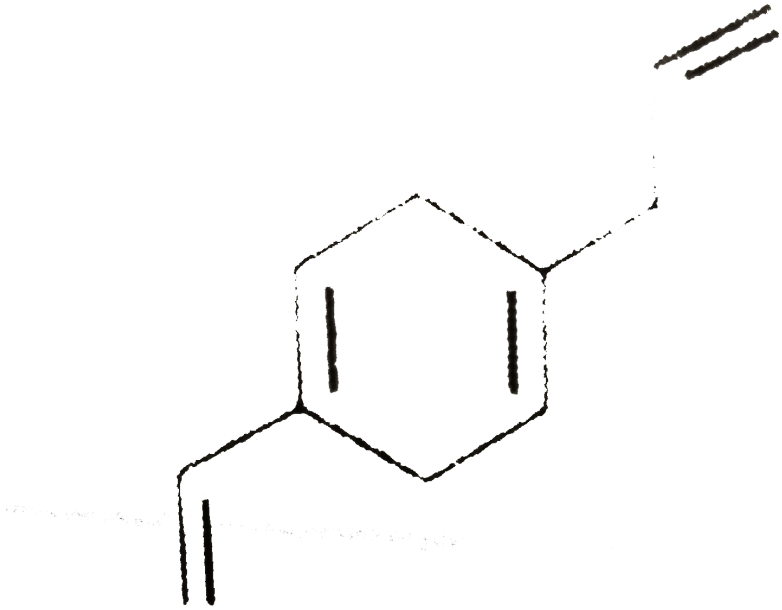

26.

which of the following products is not formed in above reaction : products are

A. $H-\underset{\underset{O}{||}}{C}-H$

B. $OHC-\underset{\underset{O}{||}}{C}-CH_2-CHO$

C. $OHC-CH_2-\underset{\underset{O}{C}}{-}-CH_2-CHO$

D. $H-\underset{\underset{O}{||}}{C}-\underset{\underset{O}{||}}{C}-H$

Answer: D

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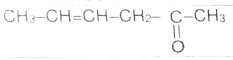
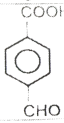
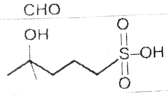
27. Match the column :

Column-I		Column-II	
(P)		(1)	Bromine water solution decolourised
(Q)		(2)	Precipitate obtained with $AgNO_3 + NH_4OH$
(R)		(3)	CO_2 gas liberated by $NaHCO_3$
(S)		(4)	Yellow precipitate by 2, 4-DNP

A. $\begin{matrix}(P) & (Q) & (R) & (S)\\ 1 & 1,2 & 4 & 3\end{matrix}$

B. $\begin{matrix}(P) & (Q) & (R) & (S)\\ 1,4 & 1,2 & 2,3,4 & 3\end{matrix}$

C. $\begin{matrix}(P) & (Q) & (R) & (S)\\ 1 & 2 & 4 & 3\end{matrix}$

D. $\begin{matrix}(P) & (Q) & (R) & (S)\\ 1,4 & 1,2,3 & 2,3,4 & 3\end{matrix}$

Answer: B

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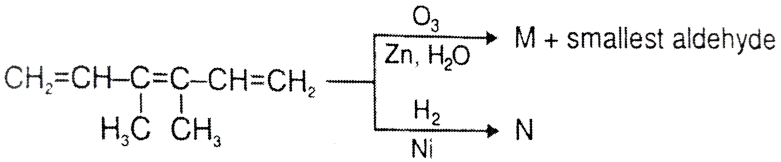
Comprehension

1.



How many total monochloro structural isomers obtained on chlorination of product (N)

A. 2

B. 4

C. 6

D. 8

Answer: B

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Different reagents used for the identification of different functional groups.
eg. (i) Tollens reagent used for the identification of –CHO.
(ii) cerric ammonium nitrate (CAN) used for alcohol.

Column-1	Column-2	Column-3
(I) Benzaldehyde	(i) I_2 + NaOH (aq.)	(P) Yellow crystals is formed
(II) Butan-1-ol	(ii) $AgNO_3$ (aq.) + NH_4OH	(Q) White ppt is formed
(III) Formic acid	(iii) anhy. $ZnCl_2$ + conc. HCl	(R) Silver mirror is formed
(IV) Acetophenone	(iv) $(NH_4)_2[Ce(NO_3)_6]$	(S) Wine red colouration

2.

The only correct combination in which the reaction does not proceed through redox mechanism.

A. (I),(ii),(R)

B. (IV),(i),(P)

C. (II),(iv),(S)

D. (II),(ii),(R)

Answer: C

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Different reagents used for the identification of different functional groups.
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(IV) Acetophenone	(iv) $(NH_4)_2[Ce(NO_3)_6]$	(S) Wine red colouration

3.

For the formation of two different organic compounds the only correct combination is

A. (I),(ii),(R)

B. (IV),(i),(P)

C. (II),(iii),(Q)

D. (IV),(ii),(R)

Answer: B

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Some of reagents used for the identification of different functional groups.
eg: (i) Tollens reagent used for the identification of –CHO.
(ii) ceric ammonium nitrate (CAN) used for alcohol.

Column-1	Column-2	Column-3
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(III) Formic acid	(iii) anhy. $ZnCl_2$ + conc. HCl	(R) Silver mirror is formed
(IV) Acetophenone	(iv) $(NH_4)_2[Ce(NO_3)_6]$	(S) Wine red colouration

4.

For the formation of silver mirror the only correct combination is :

A. (IV), (ii) ,(R)

B. (II),(ii),(R)

C. (III),(i),(R)

D. (I),(ii),(R)

Answer: D

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Exercise 3

1. Identify a reagent from the following list which can easily distinguish between 1-butyne and 2-butyne.

A. bromine CCl_4

B. H_2, Lindlar catalyst

C. dilute H_2SO_4, $HgSO_4$

D. ammonical Cu_2Cl_2 solution

Answer: D

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2. Five isomeric para-disubsituted atomatic compounds (A) to (E) with molecular formula $C_8H_8O_2$ were given for identification. Based on the following observations give structures of the compounds.

(i) Both (A) and (B) form silver mirror with Tollens reagent. Further, (B) gives a positive test with $FeCl_3$ solution.

(ii) (C) gives positive iodoform test.

(iii) (D) is readily extracted in aqueous $NaHCO_3$ solution.

(iv) (E) on acid hydrolysis gives $1, 4-$ dihydroxy benzene.

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3. Which of the reagent is used to convert 2-Butanone into propanoic acid-

A. NaOH,NaI/$H^{\oplus}$

B. Fehling solution

C. $NaOH, I_2 / H^{\oplus}$

D. Tollen's reagent

Answer: C

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Part Ii

1. On warming a certain alkane with chlorine and irridiating it with UV light, it forms only one monochloroalkane . This alkane could be:

A. Propane

B. pentane

C. isopetane

D. neopentane

Answer: D

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2. The prussian blue colour obtained during the test of nitrogen by lassaigne's test is due to the formation of:

A. $Fe_4\left[Fe(CN)_6\right]_3$

B. $Na_3\left[Fe(CN)_6\right]$

C. $Fe(CN)_3$

D. $Na_4\left[Fe(CN)_5NOS\right]$

Answer: A

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3. Of the five isomeric hexanes, the isomer which can give two monochlorinated compounds is

2-methylpentane

2,2-dimethylbutane

2,3-dimethylbutane

n-hexane.

A. n-Hexane

B. 2,3-Dimethyl butane

C. 2,2-Dimethylbutane

D. 2-Methylpentane

Answer: B

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4. Among the following the one that gives positive iodoform test upon reaction with I_2 and $NaOH$ is \

A. $CH_3CH_2CH(OH)CH_2CH_3$

B. $C_6H_5CH_2CH_2OH$

C. $\begin{array}{l} CH_3-CH-CH_3 \\ \qquad\quad | \\ \qquad CH_2-OH \end{array}$

D. $PhCHOHCH_3$

Answer: D

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5. In the following sequence of reactions, the alkene affords the compound 'B'

$$CH_3CH=CHCH_3 \xrightarrow{O_3} A \xrightarrow[Zn]{H_2O} B$$

The compound B is :

A. CH_3CH_3CHO

B. CH_3COCH_3

C. $CH_3CH_2COCH_3$

D. CH_3CHO

Answer: D

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6. Which of the following reagents may by used to distinguish between phenol and benzoic acid

A. Aqueous NaOH

B. Tollen's reagent

C. molisch' reagent

D. Neutral $FeCl_3$

Answer: D

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7. Silver Mirror test is given by which one of the following compounds ?

A. Acetaldehyde

B. Acetone

C. Formaldehyde

D. Benzophenone

Answer: A::C

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8. Ozonolysis of an organic compound A produces acetone and propionaldehyde in equimolar mixture. Identify A from the following compounds.

A. 1-Pentne

B. 2-Pentene

C. 2-Methyl -2-pentene

D. 2-Methyl-1-pentene

Answer: C

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9. Which of the following compounds can be detected by Molisch's test?

A. Nitro compounds

B. Sugars

C. Amines

D. Primary alcohols.

Answer: B

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10. Which branched chain isomer of the hydrocarbon with molecular mass $72u$ gives only one isomer of mono substituted alkyl halide ?

A. Tertiary butyl chloride

B. Neopentane

C. Isohexane

D. Neohexane

Answer: B

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11. Iodoform can be prepared from all except

A. Ethyl methyl keton

B. Isopropyl alcohol

C. 3-methyl -2-butanone

D. isobutyl alcohol

Answer: D

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12. On heating an aliphatic primary amine with chloroform and ethanolic potassium hydroxide, the organic compound formed is:

A. an alkanol

B. an alkanediol

C. an alkyl cyanide

D. an alkyl isocyanide

Answer: D

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13. For the estimation of nitrogen $1.4g$ of organic compound was diagest by Kjedahl method an the evolved ammonia was absorbed in $60mL$ of

$\frac{M}{10}$ sulphuric acid. The unreacted acid required 20 ml of $\frac{M}{10}$ sodium hydroxide for complete neutralization. The percentage of nitrogen in the compound is :

A. 0.06

B. 0.1

C. 0.03

D. 0.05

Answer: B

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14. In Carius method of estimation of halogens, 250 mg of an organic compound gave 141 mg of $AgBr$. The percentage of bromine in the compound is: (at. Mass Ag = 108, Br = 80)

A. 24

B. 36

C. 48

D. 60

Answer: A

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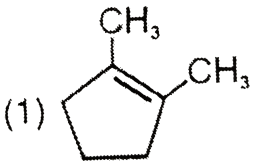
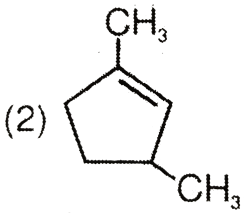
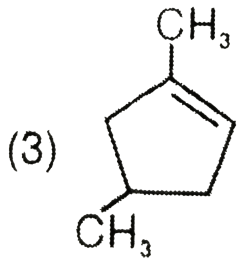
15. Which compound will yield 5-keto -2 methyl hexanal upon treatment with O_3?

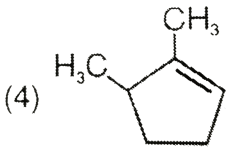
A.



B.



C. (3) 

D. (4) 

Answer: B

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16. The distillation technique most suited for separating glycerol from spent-lye in the soap industry is :

A. Fractional distillation

B. Steam distillation

C. Distillation under reduced pressure

D. Simple distillation.

Answer: C

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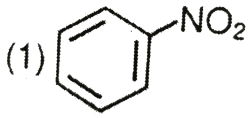
17. Which of the following compounds will be suitable for Kjeldahl's method for nitrogen estimation?

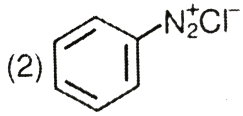
(a)

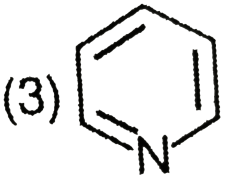
(b)

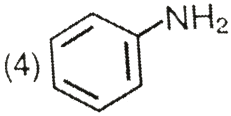
(c)

(d)

A. 

B. 

C. 

D. 

Answer: D

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18. What simple laboratory test could be performed to distinguish between 1-pentyne and 2-pentyne?

A. the addition of Ag^+ in ammonia

B. the addition of H_2SO_4 in Hg^{+2}

C. the addition of Br_2 in CCl_4

D. the addition of H_2 on a Pt catalyst

Answer: A

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19. Which of the following compound can form during the free radical chlorination of methane?

A. 2,2-dimethylbutane

B. Pentane

C. 2,2-dimethylpropane

D. 2-methylbutane

Answer: D

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20. Which of the following tests could be performed to distinguish between 1-butyne and 2-butyne. ?

A. Ag^{+} / NH_3

B. Br_2 / CCl_4

C. H_2 / Pt

D. Hg^{+2} / H_2SO_4

Answer: A

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21. Which of the following compounds will give a positive iodoform test ?

A. Methanol

B. 2,3 -dimethyl ethanol

C. α-haloethanol

D. methanal

Answer: C

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22. Lucas reagent is ,

A. anhydrous $CaCl_2$ and conc. HCl

B. anhydrous $ZnCl_2$ and conc. HCl

C. anhydrous $AlCl_3$ and conc. HCl

D. anhydrous $PdCl_2$ and conc. HCl

Answer: B

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23. The percentage composition of the elements of C_8H_9ON is

A. 8:9:1:1

B. 76.8:7.2:12.8:11.2

C. 12:1:16:14

D. none of these

Answer: B

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24. The percentage of nitrogen in a compound is determined by

A. Nessler's method

B. Kjeldhahl's method

C. Carius method

D. Taking the difference between total percentage and the sum of percentages of all other elements present.

Answer: B

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25. The percentage of oxygen in a compound is determined by

A. Dumas method

B. Kjeldhl's method

C. Carius method

D. Subtraction the sum of percentage of all other elements present from 100.

Answer: D

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26. In the Dumas method for the estimation of nitrogen , 0.0237 grams of an organic compound gave $2.21mL$ of nitrogen at $754.32mm$ of Hg pressrue at $18^{\circ}C$. (Aquesous tension at $18^{\circ}C$ is $15.4mm$ of Hg). Therefore the percentage of nitrogen in the compound is

A. 0.2067

B. 0.106

C. 0.112

D. 0.139

Answer: B

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27. The reagent which will be suitable to distinguish 1-methoxy-3-methyl-2-butene from isomeric 4-methyl-3-pentene -1-ol is

A. bromine in chloroform

B. alkaline potassium permanganate

C. ammoniacal silver nitrate

D. sodium metal suspended in hexane

Answer: D

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28. which of the following does not reduce Benedict's solution ?

A. Glucose

B. Fructose

C. sucrose

D. Aldehyde

Answer: C

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29. Tollen's reagent is

A. Cu_2O

B. $\left[Cu(OH)_4\right]^{2-}$

C. Ag_2O

D. $\left[Ag(NH_3)^2\right]^+$

Answer: D

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30. The blood red color obtained in the detection of nitrogen and sulphur together in an organic compound in Lassaigne's test is due to

A. $[Fe(CNS)]^+$

B. $\left[Fe(SCN)_2\right]^+$

C. $\left[Fe(CNS)_3\right]^-$

D. $\left[Fe(CNS)_2\right]^{2+}$

Answer: B

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31. Fehling solution is :

A. $AgNO_3$ solution +NaOH solution +NH_4OH

B. Alkaline solution of Cupric ion complexed with citrate ion

C. Copper sulphate + sodium potassium tartarate +NaOH

D. Copper sulphate solution

Answer: C

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32. Match the compounds given in list I with their characterstics reactions in list II

List-I (Compound)		List-II (Reaction)	
1	Tert-butyl amine	a	Liberation of ammonia on heating with aq.NaOH
2	2-methyl-2-pentanol	b	Effervescence with $NaHCO_3$
3	2,4,6-trinitrophenol	c	Foul smell with chloroform in alkaline condition
4	Cyclohexane carboxamide	d	Formation of an water insoluble compound on treatment with conc. HCl and $ZnCl_2$

A. 1-a,2-c,3-d,4-b

B. 1-c,2-d,3-b,4-a

C. 1-a,2-b,3-c,4-d

D. 1-d,2-a,3-b,4-c

Answer: B

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Jee Main

1. In the Victor Meyer's test, the colours given by 1°, 2° and 3° alcohols are respectively :

A. Red,colourless , blue

B. Red,blue, colourless

C. Colourless, red , blue

D. Red blue, violet

Answer: B

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2. Match the organic compound in column -I with the Lassaigne's test results in column -II appropirately.

	Column-I		Column-II
(A)	Aniline	(i)	Red colour with $FeCl_3$
(B)	Benzene sulfonic acid	(ii)	Violet colour with sodium nitroprusside
(C)	Thiourea	(iii)	Blue colour with hot and acidic solution of $FeSO_4$

A. A-(ii),B-(iii),C-(i)

B. A-(iii),(B)-(i),(C)-(ii)

C. A-(iii),(B)-(ii),(C)-(i)

D. A-(ii),(B)-(i),(C)-(iii)

Answer: C

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3. The test to distinguish primary, secondary and tertiary amine is

A. Mustrard oil test

B. $C_6H_5SO_2Cl$

C. Sandmeyer's reaction

D. Carbylamine reaction

Answer: B

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4. Observation of "Rhumann's purple" is a confirmatory test for the presence of

A. Reducing sugar

B. Starch

C. Protein

D. Cupric ion

Answer: C

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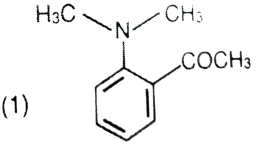
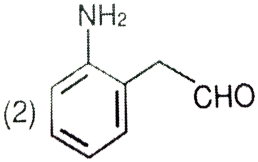
5. The tests performed on compound X and their inferences are :

Test	Inference
(a) 2, 4 - DNP test	Coloured precipitate
(b) Iodoform test	Yellow precipitate
(c) Azo-dye test	No dye formation

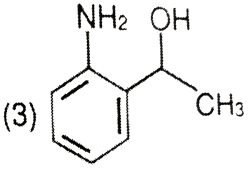
Compound 'X' is :

A. 

(1)

B. 

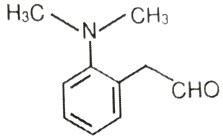
(2)

C. 

(3)

D.

(4)



Answer: A

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6. Which of the following tests cannot be used for identifying amino acids ?

A. Biuret test

B. Barfoed test

C. Ninhydrin test

D. Xanthoproteic test

Answer: B

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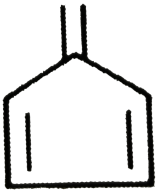
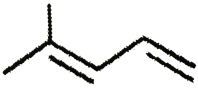
Apsp

1. Which of the following is not a condensation polymer?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: A

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2. How many isomeric structural alkene on catalytic hydrogenation gives 3 -Methyl hexane.

A. 3

B. 4

C. 5

D. 6

Answer: D

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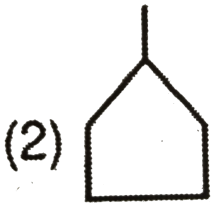
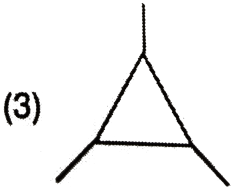
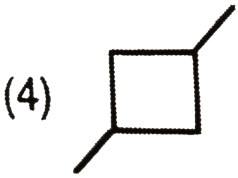
3. Compound $A(C_6H_{12})$ does not absorb H_2 in presence of Ni. It forms two monochloro isomers on photochemical chlorination . Its structure can be

A. (1) 

B. 

C. 

D. 

Answer: C

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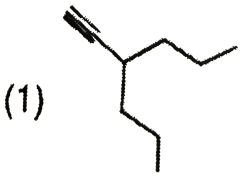
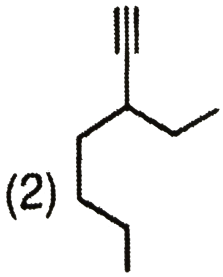
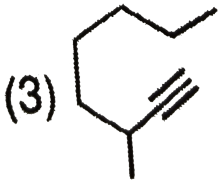
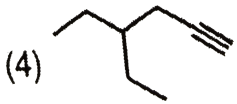
4. Which alkyne will give 3-Ethyl heptane on catalytic hydrogenation.

A. 

B. 

C. 

D. 

Answer: B

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5. Compound $'A'$ gives and precipitate with Cu_2Cl_2 / NH_4OH solution and decolourises bromine water. The compound $'A'$ can be :

A. $CH_2 = CH - \underset{\underset{O}{||}}{C} - CH_3$

B. $CH_2 = CH - \underset{\underset{O}{||}}{C} - H$

C. $CH_3 - C \equiv CH$

D. PhCHO

Answer: C

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6. An organic compound does not react appreciably with Lucas reagent but give white precipitate with Tollen's reagent. Which is the possible structure of compound ?

A. $CH_3 - \underset{\underset{OH}{|}}{CH} - C \equiv CH$

B. $CH_3 - C \equiv C - CH_2 - CH_2 - OH$

C. $HC \equiv C - CH_2 - CH_2 - OH$

D. $CH_2 = C = CH - CH_2 - OH$

Answer: C

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7. Which of the following compounds will give a positive iodoform test ?

A. Methanol

B. 2,2-Diemthylpropanol

C. Ethanol

D. Methanal

Answer: C

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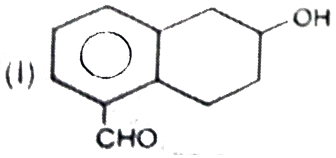
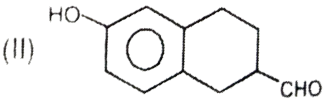
8. The following two compounds I and II can be distinguished by using reagent





(a) aq. $NaHCO_3$, Neutral $FeCl_3$

(b) Blue litmus solution , Na metal

(c) HCl/$ZnCl_2$ anhydrous

A. a or c

B. b or c

C. c or d

D. b or d

Answer: B

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9. which of the compound give iodoform when react with IO^- (hypoiodite)

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10. How many structural isomeric ketones having molecular formula $(C_5H_{10}O)$ give iodoform test?

A. 1

B. 2

C. 3

D. 4

Answer: B

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11. Which of the structural isomeric ketones having molecular formula $(C_5H_{10}O)$ give iodoform test ?

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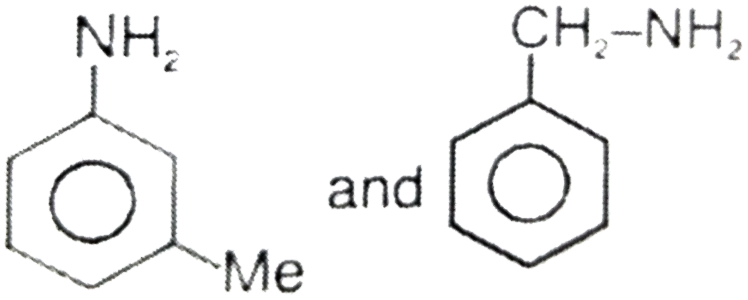
12.  can be distinguish by

A. $CHCl_3 + KOH$

B. $NaNO_2 + HCl$ followed by β-Napthol

C. $CS_2 + HgCl_2$

D. Na metal

Answer: B

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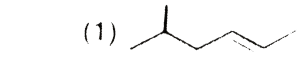
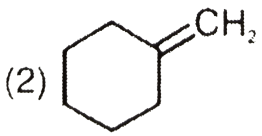
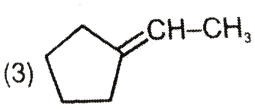
13. $(x)C_7H_{12} \xrightarrow[Me_2S]{O_3} P + Q$

Compound P responds to Tollen's test and iodoform test but Q does not

respond with both the reagents. Structure of compound (x) is :

A. 

B. 

C. 

D. 

Answer: C

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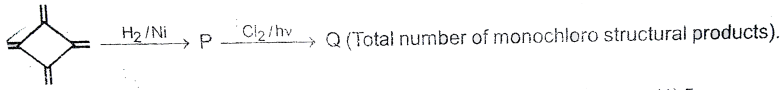
14. 

Total number of monochloro structure products

A. 2

B. 3

C. 4

D. 5

Answer: A

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15. Yellow precipitate obtained during the test of halogen by lassaigne's test is due to the formation of

A. AgF

B. AgCl

C. AgBr

D. None of these

Answer: C

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16. A research scholar get a mixture of three product during an experiment with ammonia. In product I only one H of ammonia is replaced by ethyl group and in II two H atoms of ammonia are replaced by ethyl groups and in III all the H- atoms are replaced by ethyl groups. Which test he should use to distinguish or separate the products :

A. Carbyl amine test

B. Iodoform test

C. Fehling solution test

D. Hinsbert test

Answer: D

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17. How many alcohols give immediate turbidity with Lucas reagent having molecular formula $(C_5H_{12}O)$:

A. 1

B. 2

C. 3

D. 4

Answer: A

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18. Which of the following compound can give test with Tollen's reagent and yellow precipitate with iodine in $NaOH$?

A. $CH_2 = O$

B. $CH_3 - CH = O$

C. $CH_3 - CH_2 - CH = O$

D. $CH_3 - \underset{\underset{O}{||}}{C} - CH_3$

Answer: B

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19. Which is incorrect match with respect to the reagent used for lab test ?

A. carbohydrate $\rightarrow$ α-Naphthol (molish reagent)

B. Nitro ethane $\rightarrow$ Zn, NH_4Cl and $AgNO_3$ (Mulliken Barker test)

C. Phenol $\rightarrow$ Anhydrous $ZnCl_2$+Conc. HCl (Lucus reagent)

D. Benzoic acid $\rightarrow$ $NaHCO_3$

Answer: C

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20. How many hydrocarbons having molecular mass 68 can give white precipitate with Tollen's reagent ?

A. 1

B. 2

C. 3

D. 4

Answer: B

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21. On oxidative ozonolysis of 3-Methylhex-3-ene, two products A & B are formed. A gives CO_2 gas with sodium bicarbonate, but B can not. The structures of A & B rae respectively :

A. $CH_3 - CH_2 - \underset{\underset{O}{||}}{C} - CH_3 \& CH_3 - CH_2 - COOH$

B. $CH_3 - CH_2 - COOH \& CH_3 - CH_2 - CH = O$

C. $CH_3 - CH_2 - COOH \& CH_3 - CH_2 - \underset{\underset{O}{||}}{C} - CH_3$

D. $CH_3 - CH_2 - CH_2 - COOH \& CH_3 - \underset{\underset{O}{||}}{C} - CH_3$

Answer: C

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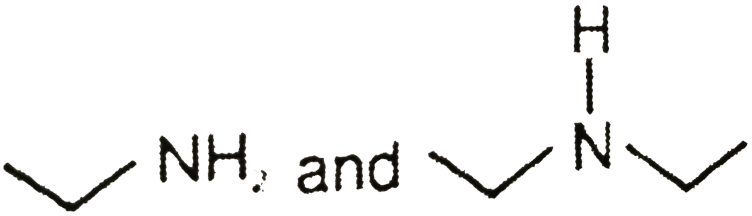
22.  can be differentiated by

A. Carbylamine reaction

B. Iodoform test

C. cold $KMnO_4$

D. $Br_2 - H_2O$

Answer: A

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23. Test to differentiate between ethanol (CH_3CH_2OH) and phenol (Ph-OH) is /are

A. Litmus test

B. Neutral $FeCl_3$

C. Sodium metal test

D. all of these

Answer: B

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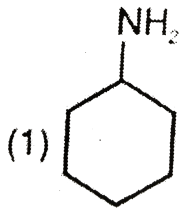
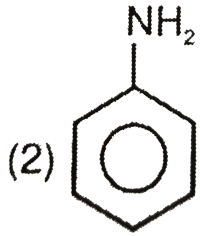
24. Which of the following compounds gives azo dye test ?

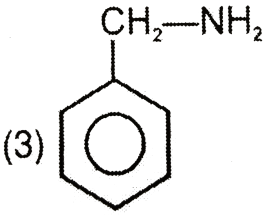


A.

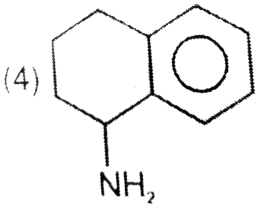
B.



C.



D.



Answer: B

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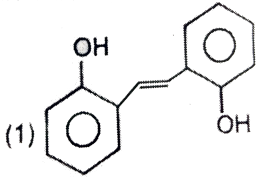
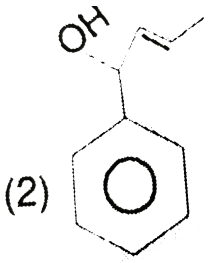
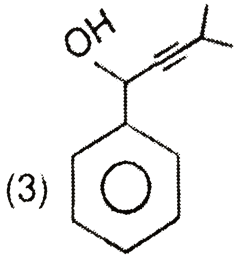
25. A compound (P) , obtained as an ozonolysis product of (Q) gives brisk effervescence with Na, violet coloration with netutral $FeCl_3$ and silver mirror with Tollen's reagent . (Q) may be

A. 

B. 

C. 

D. All of these

Answer: A

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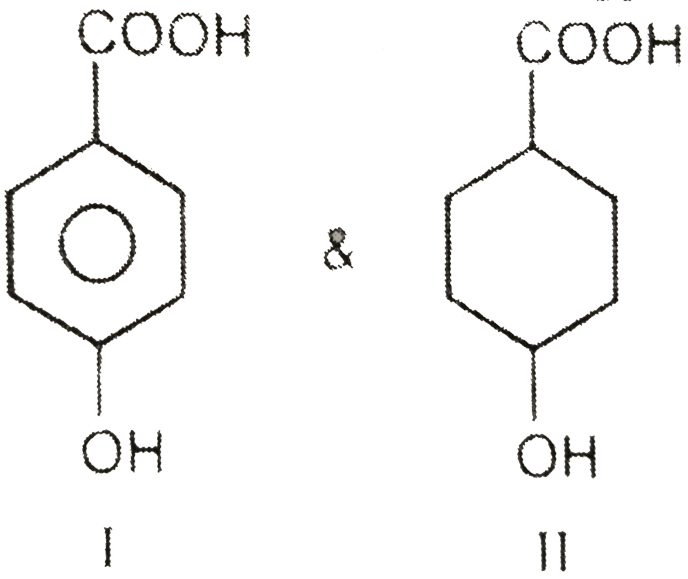
26. Which of the following reagent can distinguish the given compound I and II ?



I II

A. Na Metal

B. $NaHCO_3$

C. Lucas reagent

D. 2,4-D.N.P

Answer: C

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27. A compound (P) on reaction with "Q" in basic medium (KOH) gives a bad smelling compound (CH_3CH_2NC). Compound Q can be prepare by reaction with calcium hypochlorite $\left[Ca(OCl)_2\right]$ P and Q can :

A. $CH_3 - CH_2 - NH_2 \& CHCl_3$

B. $CH_3 - CH_2 - NO_2 \& CH_3Cl$

C. $CH_3 - CH_2 - NH - CH_3 \& COCl_2$

D. $(CH_3 - CH_2)_3N \& Cl_2$

Answer: A

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28. Which of the following can gives hinsberg test

A. $CH_3 - CH_2 - OH$

B. $CH_3 - CH_2 - NO_2$

C. $CH_3 - CH_2 - NH_2$

D. $CH_3 - \underset{\underset{O}{||}}{C} - NH_2$

Answer: C

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29. Identify a reagent from the following list which can easily distinguish between 1-butyne and 2-butyne.

A. bromine CCl_4

B. H_2 / Ni

C. dilute $KMnO_4$

D. ammonical Cu_2Cl_2 solution

Answer: D

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30. Acetaldehyde and Propyne can be distinguish by :

(i) Tollen's reagent " " (ii) $l_2 / NaOH$ " " (iii) Lucas reagent " " (iv) neutral $FeCl_3$

A. (i) ,(ii) & (iii)

B. (ii) & (iii)

C. (i) & (ii)

D. (iii) & (iv)

Answer: C

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Additional Theory

1. 0.378 g of an organic acid gave on combustion 0.264 g of carbon dioxide and 0.162 g of water vapour . Calculate the percentage of C and H.

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2. 0.25 g of an organic compound gave $30cm^3$ of moist dinitrogen at 288 K and 745 mm pressure. Calculate the percentage of nitrogen . (Aq tension of 288 K =12.7 mm)

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3. During estimation of nitrogen present in an organic compound by Kjeldahl's method, the ammonia evolved from 0.5 g of the compound in Kjeldahl's estimation of nitrogen, neutralized 10 mL of 1 M H_2SO_4. Find out the percentage of nitrogen in the compound.

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4. (i) In sulphur estimation , 0.157 g of organic compound gave 0.4813 g of $BaSO_4$. What is the percentage of sulphur in organic compound ?

(ii) 0.092 g of organic compound heating is carius tube and susequent

ignition gave 0.111 g of $Mg_2P_2O_7$. calculate the percentage of phosphorus in organic compound.

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Additional Exercise

1. Chromatography is a valuable method for the separation, isolation, purification and identification of the constituents of a misture and it is based on general principle of

A. Phase rule

B. Phase distribution

C. Interphase separation

D. Distillation

Answer: B

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2. Aniline is usually purified by

A. Chromatographic technique

B. Steam distillation

C. By addition of oxalic acid

D. Fractional crystallisation

Answer: B

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3. The best and latest technique for isolation, purification and separation of organic compounds is

A. chromatography

B. Steam distillation

C. crystallisation

D. vacuum distilation

Answer: A

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4. Steam distillation is applied to those organic compounds which are steam volatile and :

A. Soluble in water

B. insolube in water

C. Sparingly soluble in water

D. insoluble in all solvents

Answer: B

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5. Which method is used to separate sugars?

A. Fractional distillation

B. vaccume distillation

C. chromatography

D. steam distillation

Answer: C

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6. Simple distillation involves all the following process except

A. change of state

B. boiling

C. condensation

D. evaporation

Answer: D

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7. Oils are purified by:

A. Fractional distillation

B. Steam distillation

C. vacuum distilation

D. Simple distillation.

Answer: B

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8. Chromatography technique is used for the separation of :

A. small samples of mixtures

B. plant pigments

C. dye stuffs

D. all of the above

Answer: D

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9. Two volatile and miscible liquids can be separated by fractional distillations into pure components under the condition

A. they have low boiling points

B. the difference in their boiling points is large

C. the boiling points of the liquids are close to each other

D. they do not form azeotropic mixture

Answer: D

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10. A fractional column is used in :

A. sublimation

B. distillation

C. fractional distillation

D. simple distillation.

Answer: C

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11. Glycerol is purified by :

A. Steam distillation

B. vaccume distillation under pressure

C. fractional distillation

D. Simple distillation.

Answer: B

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12. The boiling points of two miscible liquids, which do not form azeotropic mixture, are close to each other. Their separation is best carried out by :

A. Vacuum distillation

B. fractional distillation

C. steam distillation

D. redistillation

Answer: B

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13. Two immiscible liquids are separated by:

A. Separating funnel

B. Fractional distillation

C. chromatography

D. Sublimation

Answer: A

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14. Sublimation is a process in which a solid :

A. Change into another allotropic form

B. Changes into liquid form

C. changes into vapour form directly from solid form

D. None of these

Answer: C

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15. Anthracene is purified by :

A. Filtration

B. distillation

C. crystallisation

D. Sublimation

Answer: D

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Section B

1. In Kjeldahl's method, nitrogen present is estimated as

A. N_2

B. NH_3

C. NO_2

D. none of these

Answer: B

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2. Molecular mass of a volatile substance is determined by :

A. Silver chloride method

B. Platinic chloride method

C. Victor mayer's method

D. Kjeldahl's method

Answer: C

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3. The catalyst used in Kjeldahl's method for the estimation of nitrogen is:

A. Sodium

B. Magnesium

C. Mercury

D. copper

Answer: C

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4. 6 g of the organic compound on heating with NaOH gave NH_3 which is neutralised by 200 mL of 1(N) HCl. Percentage of nitrogen is ?

A. 0.12

B. 0.6

C. 0.4667

D. 0.2667

Answer: C

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5. The desiccants used for absorbing water during Liebig's method for estimation of carbon and hydrogen are

A. $CaCl_2$

B. Na_2SO_4

C. $MgSO_4.7H_2O$

D. $Mg(ClO_4)_2$

Answer: A

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6. 0.16 g of dibasic acid required 25 ml of decinormal NaOH solution for complete neutralisation. The molecular weight of the acid will be

A. 45

B. 90

C. 64

D. 128

Answer: D

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7. 0.28 g of nitrogenous compound was subjected to Kjeldahl's process to produce 0.17 g of NH_3 . The percentage of nitrogen in the organic compound is

A. 5

B. 2

C. 50

D. 80

Answer: C

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8. The equivalent wieght of an acid is equal to

A. Molecular weight x acidity

B. Molecular weight x basicity

C. molecular weight/basicity

D. molecular weight /acidity

Answer: C

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9. 0.30 gm of an organic compound gave 50 ml of nitrogen collected at 300 K and 715 mm pressure in dumas method. Calculate the percentage

of nitrogen in the compound. (Vapour pressure of water or aqueous tension of water at 300 K is 15 mm.)

A. 0.2238 *100

B. 0.1746*100

C. 0.5511*100

D. 0.8274*100

Answer: B

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10. Liebig test is used ot estimate

A. H

B. C

C. C and H both

D. N

Answer: C

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11. Copper wire test is called

A. Liebig's test

B. Lassaigne's test

C. Fussion test

D. Beilstein's test

Answer: D

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12. During estimation of nitrogen present in an organic compound by Kjeldahl's method, the ammonia evolved from 0.5 g of the compound in

Kjeldahl's estimation of nitrogen, neutralized 10 mL of 1 M H_2SO_4. Find out the percentage of nitrogen in the compound.

A. 0.84

B. 0.56

C. 0.72

D. 0.34

Answer: B

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13. In Carius method of estimation of halogen, 0.15 g of an organic compound gave 0.12 g of AgBr. Find out the percentage of bromine in the compound.

A. 0.18

B. 0.94

C. 0.63

D. 0.34

Answer: D

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14. In sulphur estimation, 0.157 g of an organic compound gave 0.4813 g of barium sulphate. What is the percentage of sulphur in the compound?

A. 0.387

B. 0.185

C. 0.421

D. 0.019

Answer: C

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15. An organic compound having molecular mass 60 is found to contain C = 20%, H = 6.67% and N = 46.67% while rest is oxygen. On heating it gives NH3 along with a solid residue. The solid residue gives violet colour with alkaline copper sulphate solution. The compound is?

A. CH_3NCO

B. CH_3CONH_2

C. $(NH_2)_2CO$

D. $CH_3CH_2CONH_2$

Answer: C

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16. A gaseous hydrocarbon has 85% carbon and vapour density of 28. The possible formula of the hydrocarbon will be

A. C_3H_6

B. C_2H_4

C. C_2H_2

D. C_4H_8

Answer: D

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17. Two element X (at . Mass = 75) and Y(at .mass =16) combine to given a compound having 75.8% of X. The formula of the compound is :

A. XY

B. X_2Y

C. X_2Y_2

D. X_2Y_3

Answer: D

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18. Quantitive measurements of nitrogen in an organic compounds is done by the method.

A. Barthelot method

B. Belstein method

C. Lassaigne test

D. Kjheldayhl's method

Answer: D

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