# CHEMISTRY

## PHYSICAL, INORGANIC, AND ORGANIC CHEMISTRY

## STRUCTURAL IDENTIFICATION

**Board Level Exercise**

**1.** An alkane $C_6H_{14}$ gives onlt two monochloroalkanes on chlorination. What is the structure of the original alkane ?

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**2.** Which alkene on reductive ozonolysis will produce Acetaldehyde only ?

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**3.** An alkyne ob ozonolysis produces $2,3$-Butanedione. What is its possible structure?

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**4.** On ozonolysis a hydrocarbon of molecular formula $C_4H_6$ gives succinin acid only. What is the structure of hydrocarbon ?

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**5.** Distinguish between$1-$ Propanol and 2-Methyl-2-Methyl-2-propanol by suitable chemical test.

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**6.** How can phenol be distinguished from carboxylic acid ?

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**7.** Distinguish between Aniline and Benzyl amine by suitable chemical test.

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**8.** Write the structure and give $IUPAC$ name of the alkane which gives only Pentan-2-one on reductive ozonolysis,

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**9.** A hydrocarbon of formula $C_6H_8$ absorbs two mole of $H_2$ upon hydrogenation. On ozonolysis, it yields Propanedial. What is hydrocarbon ?

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**10.** A hydrocarbon of formula $C_{10}H_{16}$ absorbs only one mole of $H_2$ upon hydrogenation. On ozonolysis, it yields $1, 6$-Cyclodecanedione. What is the

structure of the hydrocarbon ?

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**11.** Alkynes $(A)$ and $(B)$ hav ethe molecular formula $C_8H_{14}$ giving following reactions:

(A) or (B) $\xrightarrow{H_2/Pt}$ n-Octane .

$(A) \xrightarrow{O_3/H_2O} CH_3CH_2CH_2CO_2H$

(B) $\xrightarrow{Ag(NH_3)_2OH}$ silver containing white ppt.

Write the structure of $(A)$ and $(B)$.

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**12.** Which one gives idoform test in Ethanol and $n$-Propanol and why does the other one not so?

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**13.** From each of the following pairs of compounds, selects the one-which give positive iodoform test

(a) Sec-butyl alcohol and Tert-butyl alcohol

(b) Formaldehyde and Acetaldehyde

( c) Acetaone and Methyl alcohol

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**14.** An organic compound $'A'$ having molecular formula $C_2H_7N$ on treatment with $HNO_2$ gives an oily yellow substance. Identify $(A)$

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**15.** Draw the structure of compound $(A)$ having molecular formula $C_5H_{10}O$ on the basis of following characteristics:

(a) If $(A)$ gives iodoform test and forms isobutyric acid salt and iodoform.

(b) If $(A)$ does not reduce Tollen's reagent but gives iodoform test and forms salt of $n$-Butyric acid.

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**16.** On ozonolysis, an organic compound (A) $C_6H_{10}$ gives two aldehyde (B) $C_2H_4O$ and (C ) $C_2H_2O_2$. Determine the structure of $A$, $B$ and $C$.

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**17.** How will you distinguish between :

(i) Diethyl ether and Propanol. (ii) Formic acid Acetic acid (iii) Formaldehyde and Acetaldehyde

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**18.** Write all the monochlorination products of the followings-

(i) Cyclopentane , (ii) $1-2$, Dimathylcyclopentane , (iii) Ethyl benzene

(iv) Neopentane , (v) Butane

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## Exercise 1 Part I

**1.** Calculate the $DU$ of following compounds :

(i) $C_6H_6ClBrO$ , (ii) $C_5H_9N$

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

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**3.** On catalytic hydorgenation how many isomeric alkene will give 2-Methyl butane.

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**4.** How many isomeric alkyne on hydrogenation gives $3,3$-Dimethylhexane.

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**5.** A cycloalkane having molecular mass $84$ and four secondary carbon atoms will forms monochloro structure isomers on chlorination. Identify the structure of cycloalkane.

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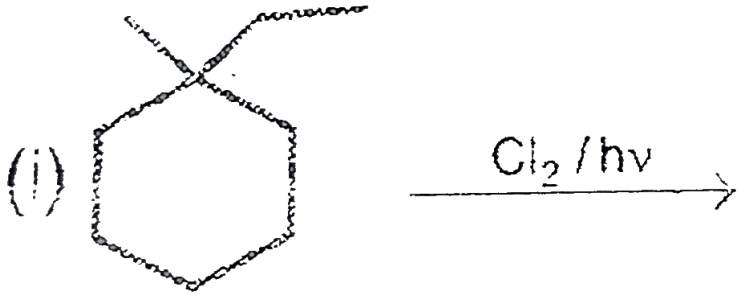
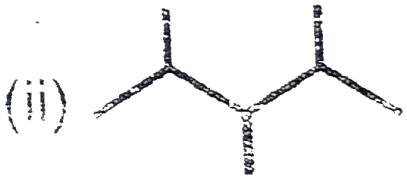
**6.** Number of monocloro structural isomers of :

(i) 


(i) , $\xrightarrow{Cl_2/hv}$ " "

(ii)  $\xrightarrow{Cl_2/hv}$

(ii) , $\xrightarrow{Cl_2/hv}$

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**7.** Write the product of following reactions :

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

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

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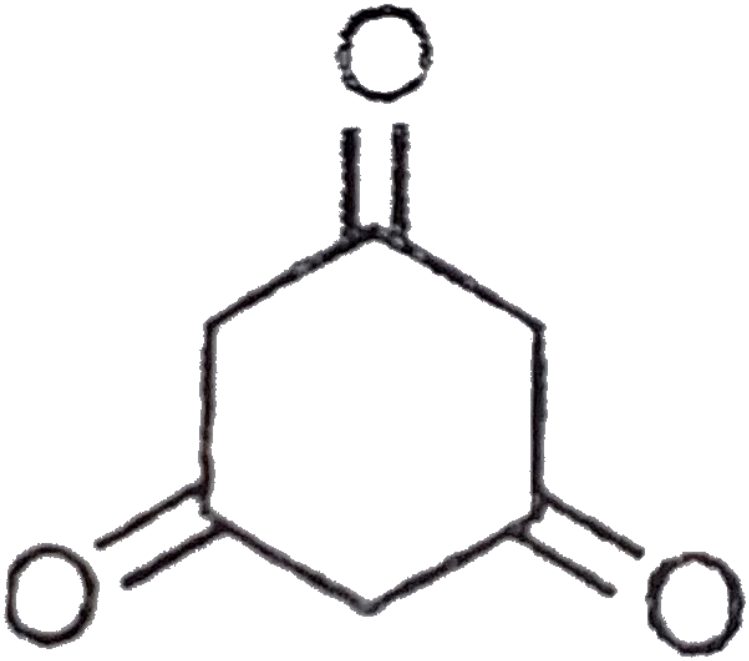
**8.** (i) $P(\text{hydrocarbon}) \xrightarrow[H_2O]{O_3 / Zn}$ ,



$, +CH_2 = O$

, (ii) $Q(C_6H_{10}) \xrightarrow[H_2O]{O_3 / Zn}$ Hexane- 1, 6-dial Write the structure of $P$ and $Q$.

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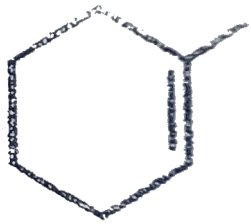
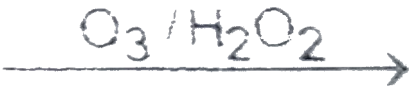
**9.** Write the product of following reactions :

(i) $CH_3 - C \equiv C - CH = CH_2 \xrightarrow{O_3 / H_2O_2}$ , (ii)

(ii)  

, $\xrightarrow{O_3 / H_2O_2}$

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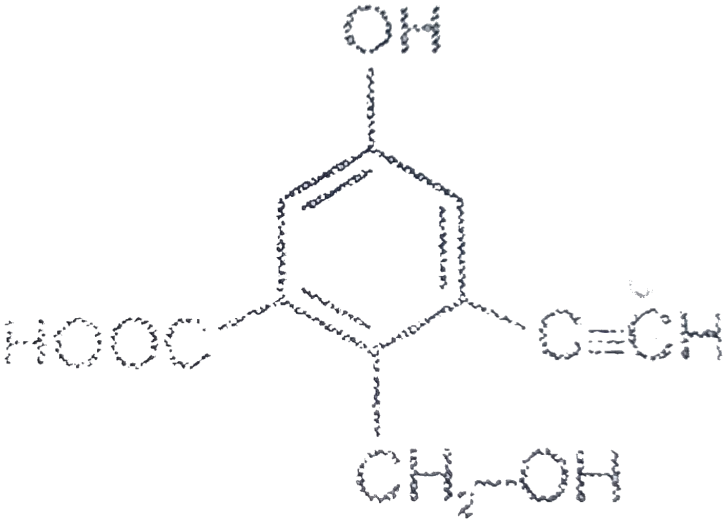
**10.** No. of moles of $H_2O$ gas evolved when one mole of the following compound reacts with sodium.

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**11.** 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 release $H_2$ gas. Write $IUPAC$ name of $A$ and $B$.

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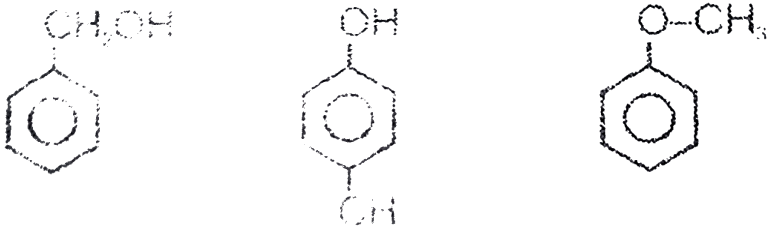
**12.** Write suitable reagent to distiguish the following compounds.



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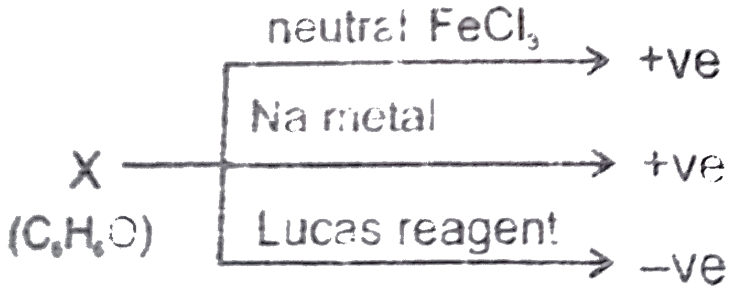


**13.**

Identify the structure of $X$ :

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**14.** 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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**15.** 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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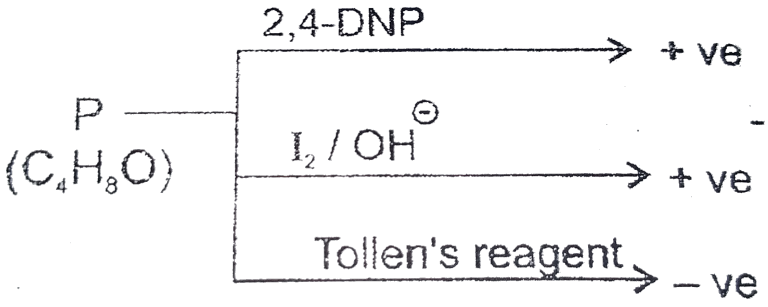
16.




Identify the structure of $P$ :

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**17.** Which of the following compound will not give positive test with $NaHCO_3$.?

| | | | | |
|---|---|---|---|---|
| Phenol, | $CH_3COOH$, | $CH_3CH_2SO_3H$, | $CH_3C \equiv CH$, | $CH_3CH_2$ |
| Phthalic acid | Salicylic acid, | Cinammic acid | Lactice acid | $P$ – Cres |

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

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**19.** 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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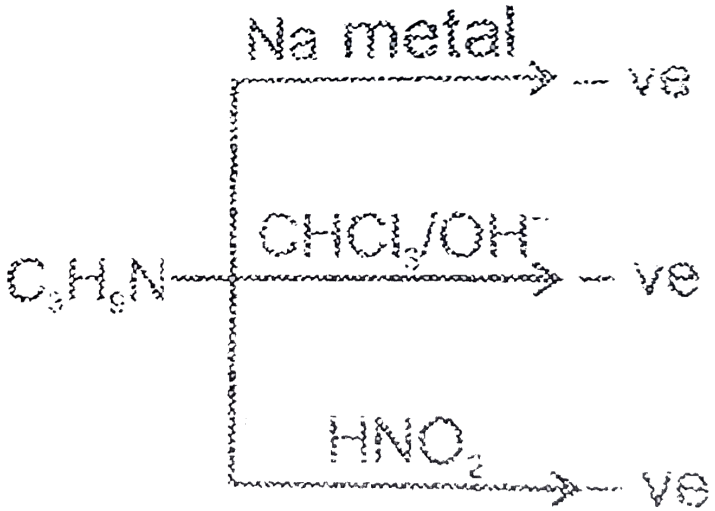


**20.**

Identify the structure of amine.

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**21.** When Lassiange extract of Methylamine react with $FeSO_4$ / dilute$H_2SO_4$ what happened ?

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**22.** Explain the reason for the fusion of an organic compound witt metallic sodium for testing nitrogen, sulphur and halogen.

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

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## Exercise 1 Part Ii

**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: A::B::C**

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**2.** Which of the following hydrocarbons give same product on hydrocarbonation :

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

B. 3-Ethyl hex-1en-4-yne & 2-Methylhpet-2-en-4-yne

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

D. 2-Methylbut-2- ene & 3-Methylbut-1-ene

**Answer: D**

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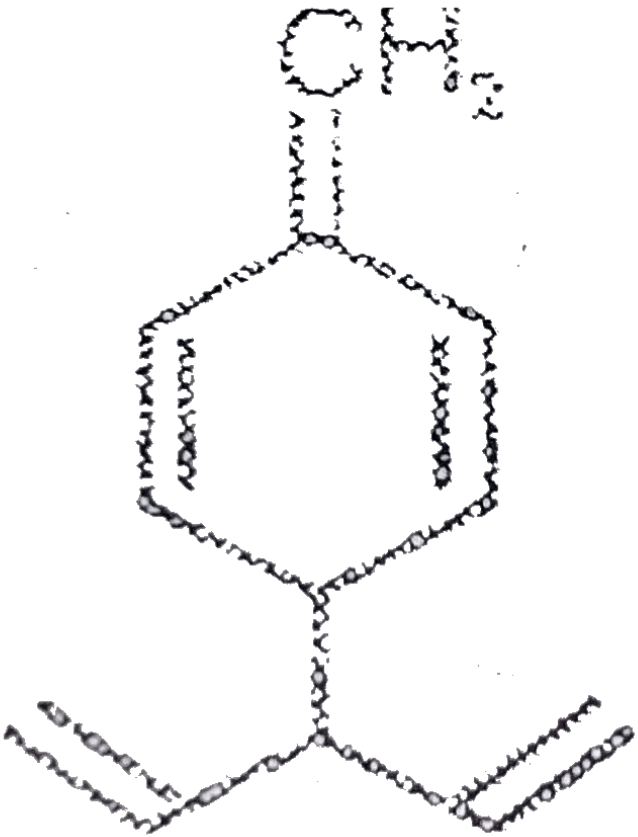
**3.** Number of moles of hydrogen will required for complete hydrogenation of one mole of following compounds :



A. 6

B. 7

C. 5

D. 3

**Answer: C**

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**4.** Hoe many alkenes on catalytic hydrogenation give isopentane as a product (consider only structural isomers) ?

A. 2

B. 3

C. 4

D. 5

**Answer: B**

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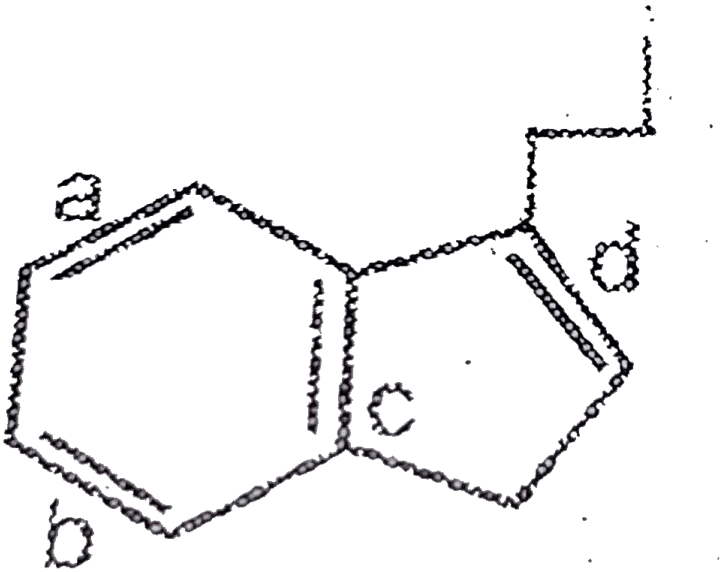
**5.** If 1 mole $H_2$ is reacted with 1 mole of the following compound.




Which double bond will be hydrogenated ?

A. $c$

B. $b$

C. $a$

D. $d$

**Answer: D**

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**6.** Only two isomeric monochloro derivatives are possible for :-

A. $n$-Pentane

B. $2, 4$-Dimethyl pentane

C. Toluene

D. $2, 3$-Dimethyl butane

**Answer: D**

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**7.** 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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**8.** 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-Dimethylbut-2-ene

**Answer: B**

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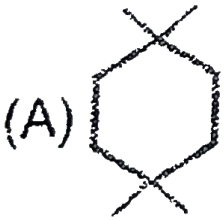
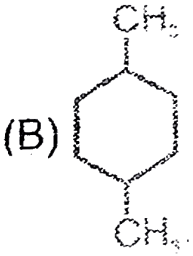
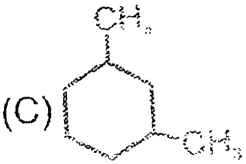
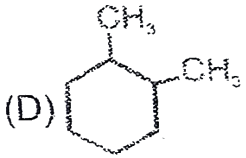
**9.** Which of the following compound will give four monochloro (structural) product on monochlorination.

A. 


B. 


C. 


D. 


**Answer: D**

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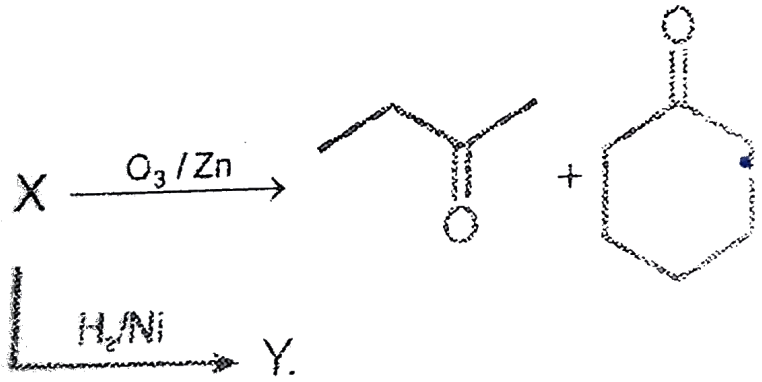
10. $X \xrightarrow{O_3 / Zn}$ ,




The $IUPAC$ name of compound $Y$ is :

A. 2-Cyclohexylbutane

B. 1-Methylpropylcyclohexane

C. Butylcyclohexane

D. 1-Cyclohexylbutane

**Answer: B**

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

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

**Answer: B**

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**12.** 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. $CH_3CH_2CH_2CH=CHCH_2CH_2$

**Answer: B**

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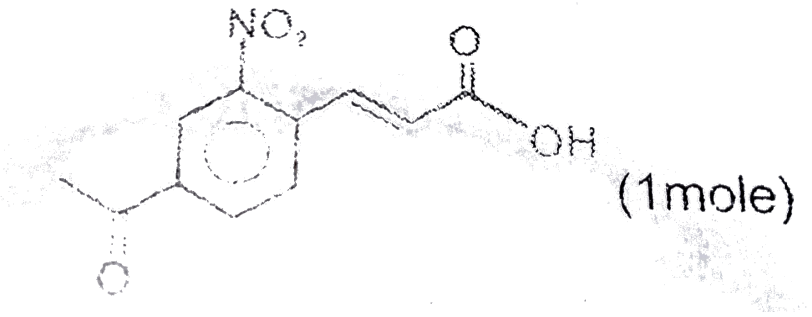
**13.** When one mole of the given compond reacts with sodium metal then how many moles of $H_2$ gas will release ?




A. 1 mole

B. 1.5 mole

C. 2 mole

D. 0.5 mole

**Answer: D**

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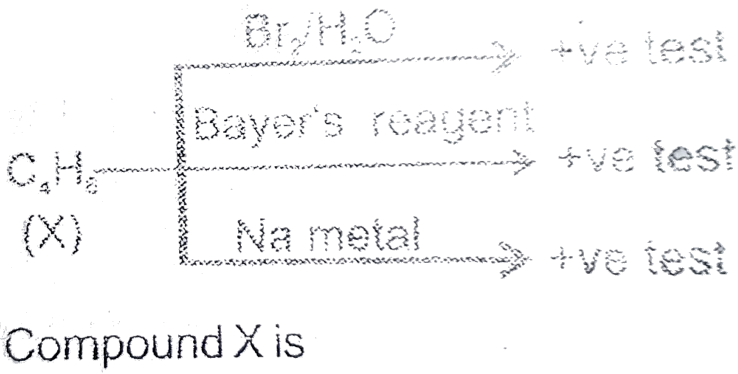


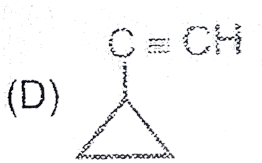

**14.** Compound X is

Compound $X$ is

A. $H_3C - C \equiv C - CH_3$

B. $CH_2 = CH - CH = CH_2$

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




D.

**Answer: C**

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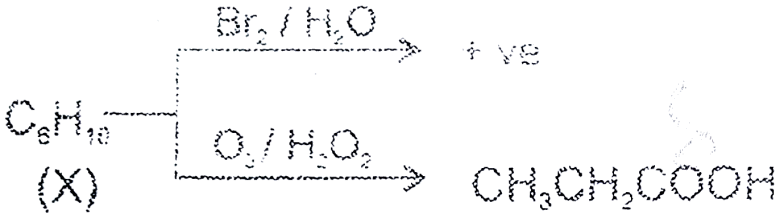
15.



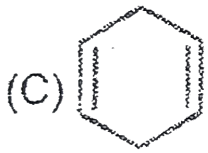

,

$CH_3CH_2COOH$

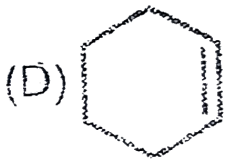
Identify $X$:

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

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




C.

D. 


**Answer: A**

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**16.** Ammonical $AgNO_3$ gives white ppt after 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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**17.** Which will undergo reaction with ammonical $AgNO_3$ :

A. 

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

C. $CH_3 - CH_2 - CH = CH - CH_2 - CH_3$

D. $CH_2 = CH - CH_2 - CH_3$

**Answer: B**

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**18.** 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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**19.** 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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**20.** The group reagent for the test of alcohols is :

A. Cerric ammonium nitrate

B. Schiff's reagent

C. Molisch's reagent

D. Bromine water

**Answer: A**

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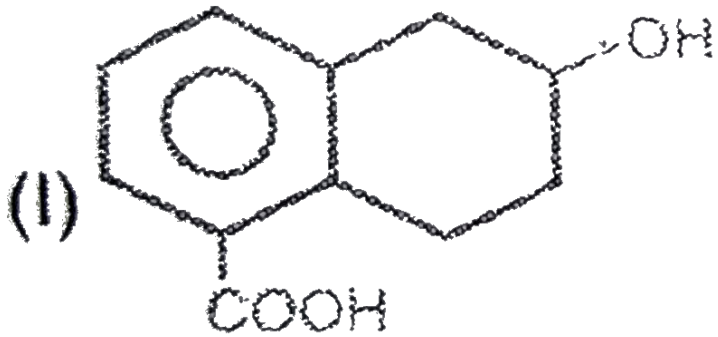
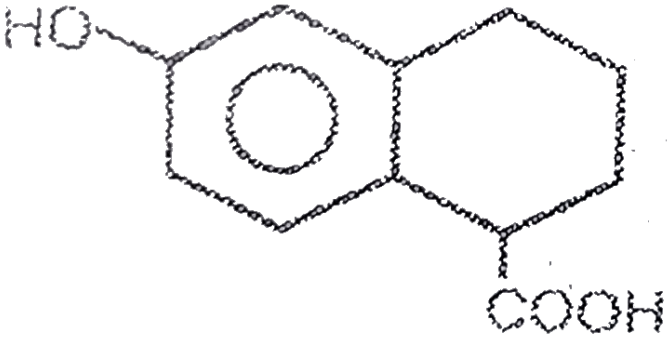
**21.** The following two compounds $I$ and $II$ can be distinguished by using reagent




" "

(II)




(a) aq. $NaHCO_3$ " " (b) Neutral $FeCl_3$

(c ) Blue litmus solution " " $Na$ metal " " (e) $HCl/ZnCl_2$ anhydrous

A. $a$ or c`

B. $b$ or $e$

C. $d$ or $e$

D. $c$ or $d$

**Answer: B**

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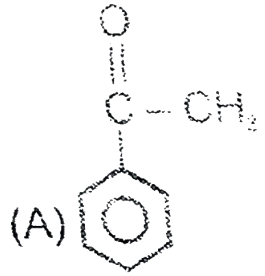
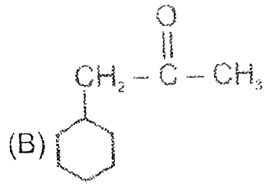
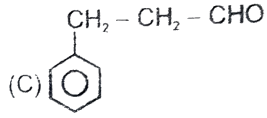
**22.** Which of the following compound will not react with $l_2/OH^-$.

A. 


B. 


C. 


D. $CH_3 - CHO$

**Answer: C**

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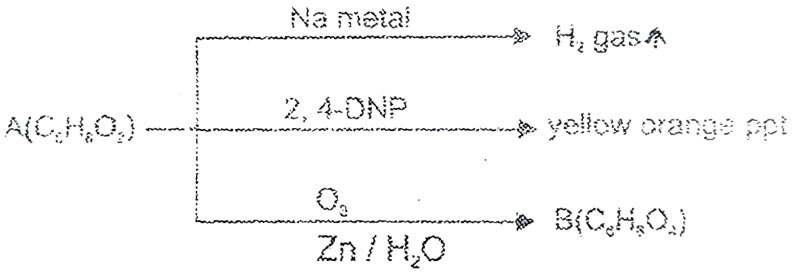
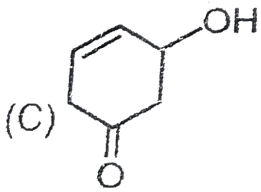
**23.** The compound $A$ gives following reactions

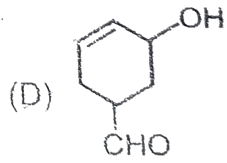



Its structure can be

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**

View Text Solution

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

A. $CH_3 - CH_2 - CH_2 - \underset{\underset{O}{||}}{N}H_2$

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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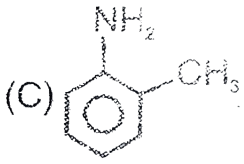
**25.** Which of the following compound will give smell of $NH_4$ with conc. $NaOH$.

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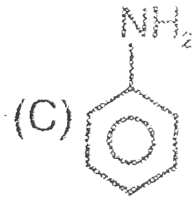
**26.** Which of the following will not give positive test with $CHCl_3 / KOH$.

A. $CH_3 - CH_2 - NH - CH_3$

B. $CH_3 - CH_2 - CH_2 - NH_2$

C. 


D. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - NH_2$

**Answer: A**

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**27.** A positive carbylamine test is given by :

A. $N$, $N$-dimethylaniline

B. $2$, $4$-dimethylaniline

C. $N$-methyl-$O$-methylaniline

D. $N$-methylaniline

**Answer: B**

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**28.** 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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**29.** Molisch reagent is used to identify following compound ?

A. Glucose

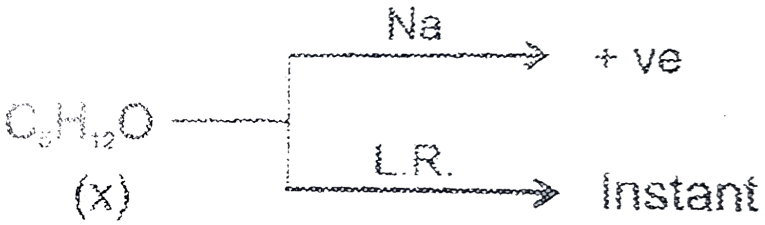
B. Raffinose

C. $D$-oxyribose

D. All of these

**Answer: D**

View Text Solution




**30.** , Instant turbidity

Identyfy $X$ :

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

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

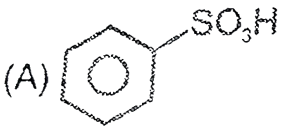
C. $CH_3-\overset{\overset{CH_3}{|}}{\underset{}{CH}}-CH_2-CH_2-OH$

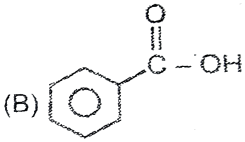
D. $CH_3-\overset{\overset{OH}{|}}{\underset{}{CH}}-CH_2-CH_2-OH$

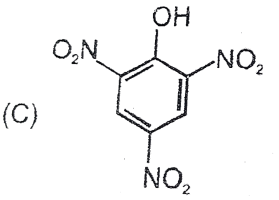
**Answer: B**

View Text Solution

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

A. 


B. 


C. 


D. All of these

**Answer: D**

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**32.** 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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**33.** In the Lassaigne's test, one of the organic compounds gave red colour with $FeCl_3$. Compound can be:

A. $Na_2S$

B. $NH_2CSNH_2$

C. $C_6H_6Cl$

D. $NaCl$

**Answer: B**

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**34.** Lassaigne's test is used in qualitative analysis to detect

A. Nitrogen

B. Sulphur

C. Chlorine

D. All of these

**Answer: D**

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**35.** 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**

View Text Solution

**36.** 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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**37.** The sodium extract of an organic compound on acidification with acetic acid and addition of 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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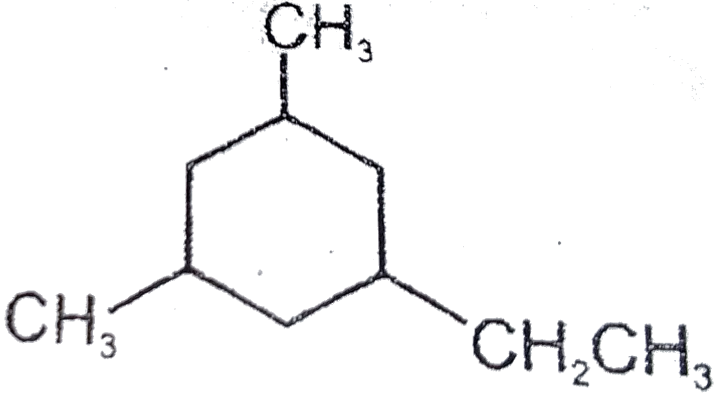
## Exercise 2 Part I

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




A. 6

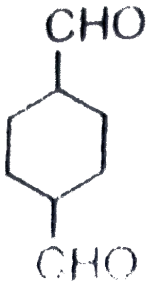
B. 7

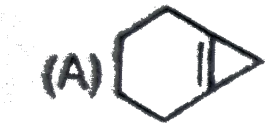
C. 8

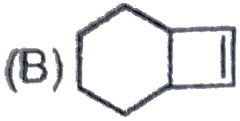
D. 9

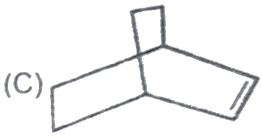
**Answer: B**

View Text Solution

2. An alkene (A) $\xrightarrow{\text{Ozonolysis}}$ 


A. 


B. 


C. 


D. 


**Answer: C**

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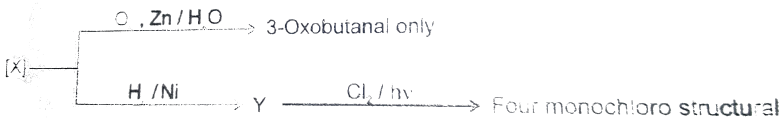


**3.**

compound $'X'$ is :

A. 1-Methylcyclopropene

B. 1, 4-Dimethylcyclogexa-1, 4-diene

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

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

**Answer: D**

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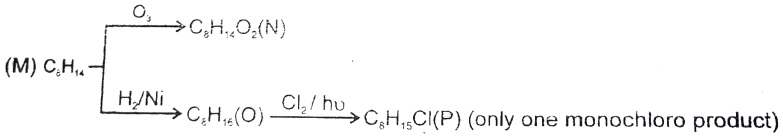
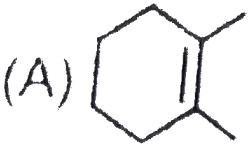
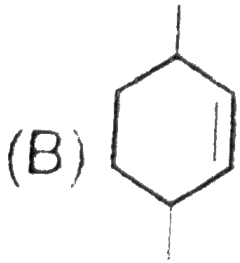
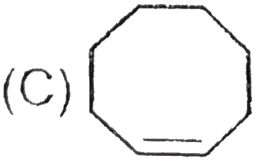
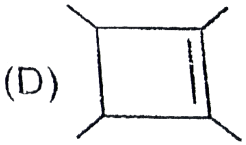
**4.** The chemical reactions of an unsaturated compound $'M'$ are given below. Determine the possible structural formula of $'M'$



A. 


B. 


C. 


D. 


**Answer: C**

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**5.** 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. $CH_3C = C - CH_2 - CH_3$

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

**Answer: B**

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**6.** 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. $CH_3 - CH_2 - N \underset{=}{\longrightarrow} (C)$

D. $CH_2 = C = N - CH_3$

**Answer: B**

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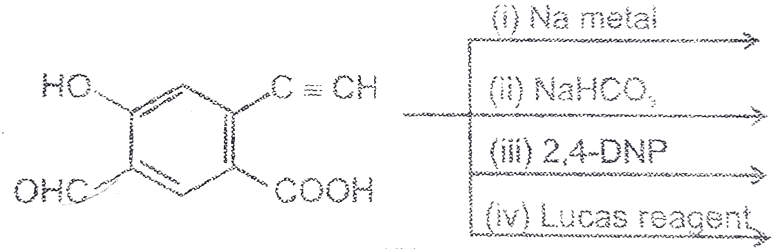
**7.** Observe the following compound and select $+ve$ & $-ve$ test respectively.




A. $+ + + -$

B. $+ + + +$

C. $+ - + -$

D. $+ - - +$

**Answer: A**

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**8.** Which of the following amine 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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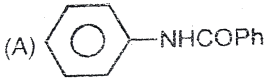
**9.** Lassaigne's test for the detection of nitrogen will fall in the case of

A. 


B. 


C. $NH_2 - NH_2 . HCl$

D.

**Answer: C**

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**10.** 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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**11.** An organic compound is fused with sodium metal and crushed in water. The solution thus obtained when treated with freshly prepared

ferric chloride solution gives blood red color solution. The test confirms

A. Presence of $S$ in the organic compound.

B. Presence of $O$ in the organic compound

C. Presence of $N$ and $O$ in the organic compound

D. Presence of $N$ and $S$ in the organic compound

**Answer: D**

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## Exercise 2 Part Ii

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

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

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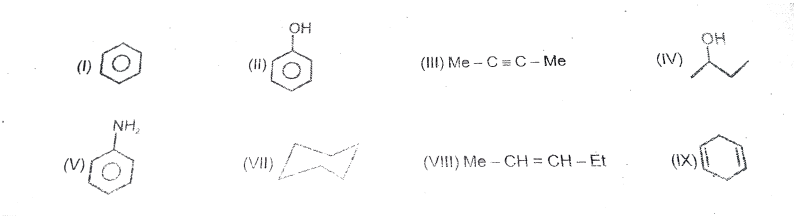
**3.** How many of the following compounds decolorise $Br_2$ water solution ?

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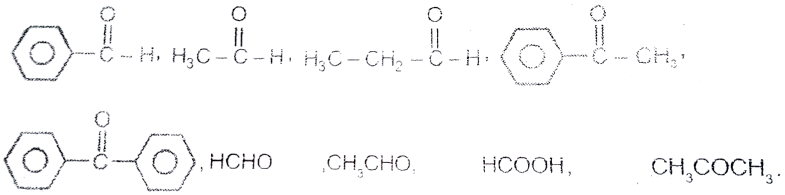
**5.** Among the following the number of compounds which react with react will Fehling's solution is :

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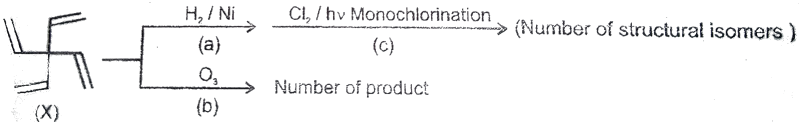
**6.**




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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## Exercise 2 Part Iii

**1.** Which of the following perfome reaction with $I_2/OH^-$ ?

A. $CH_3COCH_2CH_3$

B. $CH_3CONH_2$

C. $C_6H_5COCH_3$

D. $CH_3CHO$

**Answer: A::C::D**

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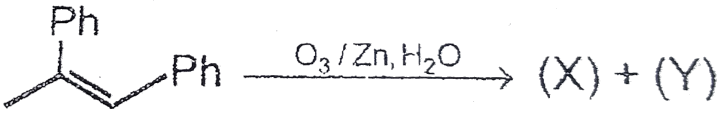
**2.** 

,

$\xrightarrow{O_3 / Zn, H_2O} (X) + (Y)$

Compound $(X)$ and $(Y)$ can be distinguish by :

A. Tollen's reagent

B. Fehling solution

C. Haloform test

D. $2, 4$-DNP Test

**Answer: A::C::D**

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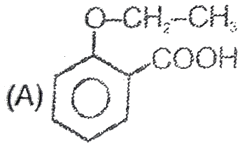
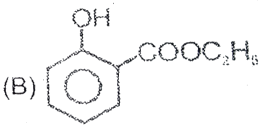
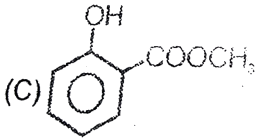
**3.** A compound $(X)$ gives fruity smell. $[X]$ on hydrolysis gives an acid and alcohol. Acid give violet colour with neutral $FeCl_3$ while alcohol give

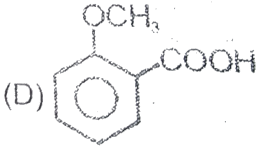
yellow precipitate on boiling with $I_2$ and $NaOH$. $(X)$ can be :

[Hint : $R - \underset{\underset{O}{||}}{C} - OR' \xrightarrow{\text{Hydrolysis}} R - COOH + R' - OH$]

A. 


B. 


C. 


D. 


**Answer: B**

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**4.** Formic acid and Acetaldehyde can be distinguish by

A. $I_2 + NaOH$

B. Tollen's reagent

C. Fehling reagent

D. $2, 4$-DNP test

**Answer: A::D**

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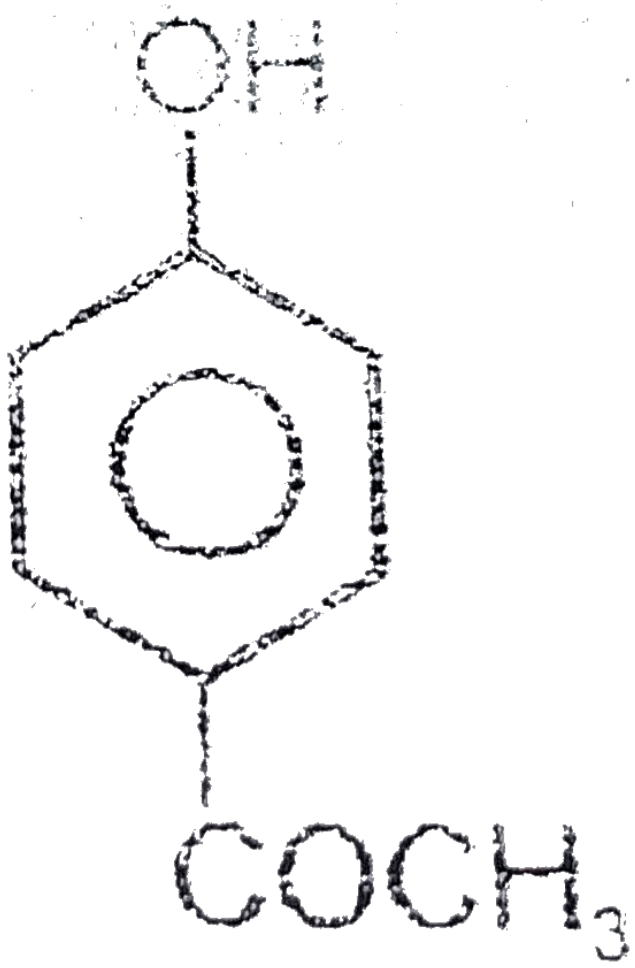
**5.** Correct statement $(s)$ about




is / are

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

B. It liberates $H_2$ gas with $Na$ metal.

C. It gives $+ve$ Iodoform test.

D. It forms sweet smelling compound with alcohols.

**Answer: A::B::C**

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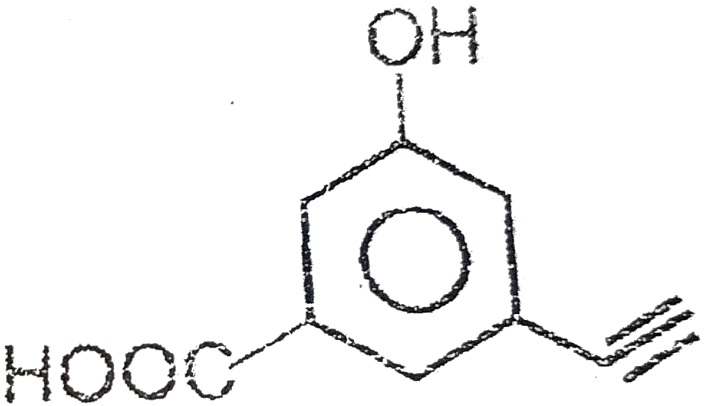
**6.** Correct statement $(s)$ about




is / are :

A. librate $\frac{3}{2}$ 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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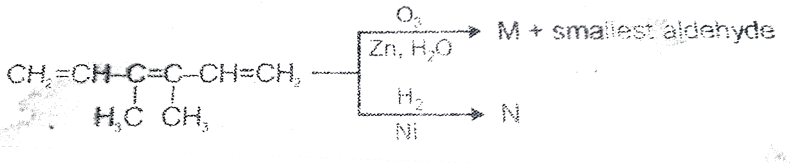
## Exercise 2 Part Iv

**1.** Read the following passage carefully and answer the questions :

$$CH_2 = CH - \underset{\underset{H_1C}{|}}{C} = \underset{\underset{CH_3}{|}}{C} - CH = CH_2$$ ,




Product $M$ cannot respond with :

A. 2, 4-DNP

B. Ammonical silver nitrate

C. Sodium hypoiodite

D. Sodium bicarbonate

**Answer: D**

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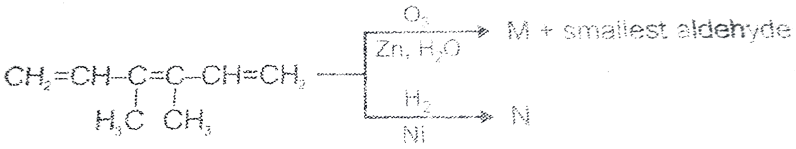
**2.** Read the following passage carefully and answer the questions :

$$CH_2 = CH - \underset{\underset{H_1C}{|}}{C} = \underset{\underset{CH_3}{|}}{C} - CH = CH_2$$ ,




Number of moles of ozone used for one mole of the given unsaturated hydrocarbon ?

A. 1

B. 2

C. 3

D. 4

**Answer: C**

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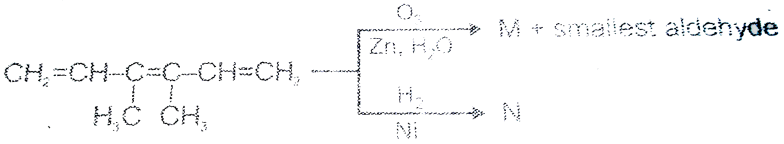
**3.** Read the following passage carefully and answer the questions :

$$CH_2 = CH - \underset{\underset{H_1C}{|}}{C} = \underset{\underset{CH_3}{|}}{C} - CH = CH_2$$ ,




How many total monochloro structure isomers obtained on chlorination of product $(N)$.

A. $2$

B. $4$

C. $6$

D. $8$

**Answer: B**

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## Exercise 3 Jee Advanced Part I

**1.** Four isomeric para-disubstituted aromatic compounds $A$ to $D$ with molecular formula $C_8H_8O_2$ were given for identification. Based on the following observations, give structures of the compounds.

A. Both $A$ and $B$ form a silver mirror with Tollen's reagent, also $B$ give a positive test with $FeCl_3$ solution.

B. $C$ gives positive iodoform test.

C. $D$ is readily extracted in aqueous $NaHCO_3$ solution.

D.

**Answer:** $(\#\#RES_CHM_ORG_XI_C02_E01_{107} \_ A01\#\#)$

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**2.** In conversion of 2-butanone to propanoic acid when reagent is used.

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

B. Fehling solution

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

D. Tollen's reagent

**Answer: C**

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## Exercise 3 Jee Advanced Part Ii

**1.** On mixing a certain alkane with chlorine and irradiating it with ultraviolet light, it forms only one monochloroalkane this alkane could be :

A. propane

B. pentane

C. isopentane

D. neopentane

**Answer: D**

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**2.** The prussian blue colour obtained during the test of nitrogen by Lassiagne'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. $Na_4(FeCN)_5NOS\big]$

**Answer: A**

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**3.** Of the five isomeric hexanes, the isomer which can give two monochlorination compounds is ?

A. $n$-Hexane

B. $2, 3$-Dimethylbutane

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

D. $PhCHOHCH_3$

**Answer: D**

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

$CH_3CH = CHCH_3 \xrightarrow{O_3} A \xrightarrow{H_2O} B$ 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 reagent may be 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-Pentene

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 monosubstituted 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 ketone

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 an organic compound was digested by Kjeldahl method and the evolved ammonia was absorbed in $60mL$ of $\frac{M}{10}$ sulphuric acid. The unreacted acid required $20mL$ of $\frac{M}{10}$ sodium hydroxide of complete neutralization. The percentage of nitrogen in the compound is:

A. $6\ \%$

B. $10\ \%$

C. $3\ \%$

D. $5\ \%$

**Answer: B**

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**14.** In Carius method of estimation of halogens, $250mg$ of an organic compound gave $141mg$ 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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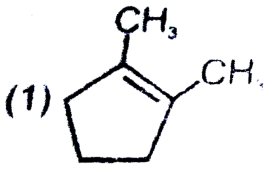
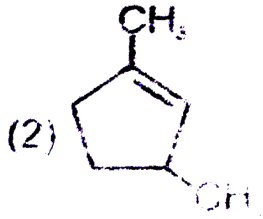
**15.** Which compound would give 5-keto-2-methyl hexanal upon ozonolysis ?

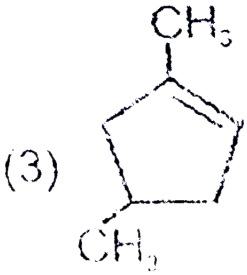
A.



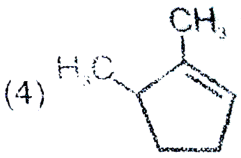

B.




C.




D.




**Answer: B**

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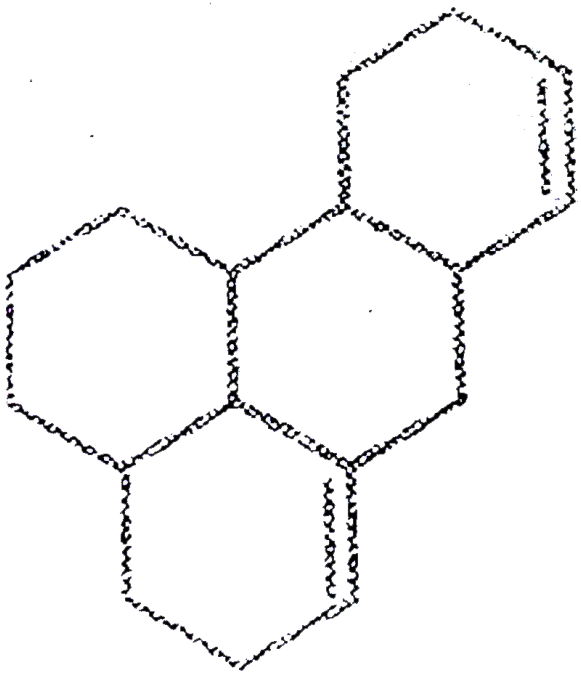
## Advanced Level Problems Part I

**1.** Degree of unsaturation of product form after complete hydrogenation of the following compound:



A. 0

B. 2

C. 6

D. 4

**Answer: D**

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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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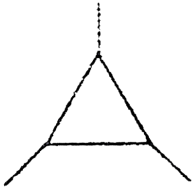
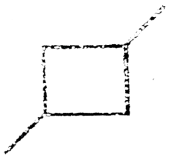
**3.** Compound $A(C_{6H_{12}}$ does not absorb $H_2$ in presence of $Ni$. It forms two monochloro isomers on photochemical chlorination. Its structure can be :

A. (1) 

B. (2) 

C. (3) 

D. (4) 

**Answer: C**

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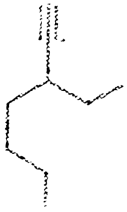
**4.** Which alkyne will give 3-Ethyl heptane on catalytic hydrogenation.

A. (1) 

B. (2) 

C. (3) 

D. (4) 

**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. $CH - C \equiv C - CH_2 - CH_2 - OH$

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-dimethylpropanol

C. $\alpha$-haloethanol

D. methanal

**Answer: C**

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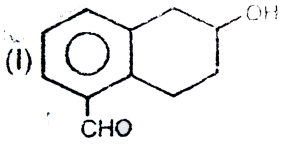
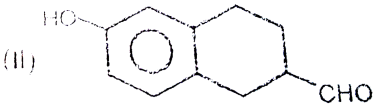
**8.** The following two compounds $I$ and $II$ can be distinguished by using reagent

(I) 


(II) 


(a) aq. $NaHCO_3$ " " (b) Neutral $FeCl_3$

(c ) Fehling solution " " (d) $Na$ metal

A. $a$ or c`

B. $b$ or c`

C. $c$ or $d$

D. $b$ ro $d$

**Answer: B**

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**9.** Which of the following compound can not give Iodoform when react with $IO^-$ (hypoiodite).

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

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

C. 

D. 

**Answer: A**

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**10.** How many structural isomeric ketones having molecular formula $(C_6H_{10}O)$ give iodoform test ?

A. 1

B. 2

C. 3

D. 4

**Answer: B**

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**11.** Which of the following compound will not react with $I_2/OH^-$.

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

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

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

D. $CH_3 - CHO$

**Answer: C**

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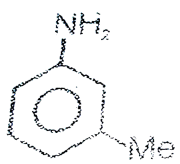
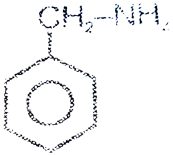
**12.**  and  can be distinguish by :

A. $CHCl_3 + KOH$

B. $NaNO_2 + HCl$ followed by $\beta$- Napthol

C. $CS_2 + HgCl_2$

D. $Na$ metal

**Answer: B**

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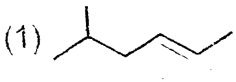
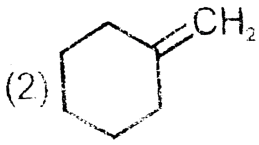
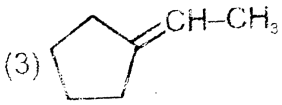
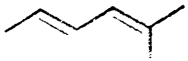
**13.** $(x)C_7H_{12} \xrightarrow[Me_2S]{O_3} P + Q$

Compound $P$ responds to Tollen's test and iodoform test but $O$ does not respond with both the reagents. Structure of compound $(x)$ is :

A. 


B. 


C. 

(4) 

D.

**Answer: C**

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14.  $\xrightarrow{H_2/Ni}$ P $\xrightarrow{Cl_2/hv}$ Q (Total number of monochloro structural products).

, $\xrightarrow{H_2/Ni}$

Poverset(Cl_(2)//hv)rarrQ` (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 reaserch scholar get a mixture of three product during an experimant 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 $III$ alll 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. Hinsberg 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. $CH_2 - \underset{\underset{O}{||}}{C} - CH_2$

**Answer: B**

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

A. Carbohydrates " " $\rightarrow$ " " $\alpha$-Napthol (Molish reagent)

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

C. Phenol " " $\rightarrow$ " " Anhydrous $ZnCl_2 + Conc.\ HCl$ (Lucas Reagent)

D. Benzoic acid " " $\rightarrow$ " " $NaHCO_3$

**Answer: C**

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**20.** How many hydrocarbons having molecular mass $68$ can give while 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. $CH_3 - CH_2 - COOH \& CH_3 - CH - \underset{\underset{O}{||}}{C} - CH_3$

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

**Answer: C**

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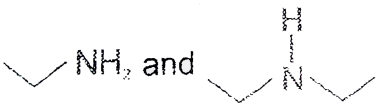
**22.**  can be differentiated by :

A. Carbylamine reaction

B. Iodoform test

C. Cold $KMnO_4$

D. $Br_2 - H_2O$

**Answer: A**

View Text Solution

**23.** Molisch reagent is used to identify following compound ?

A. Glucose

B. Fructose

C. $D$-oxyribose

D. All of these

**Answer: D**

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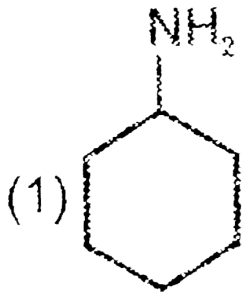
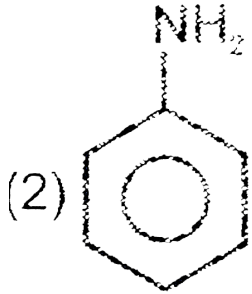
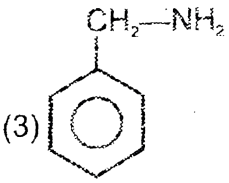
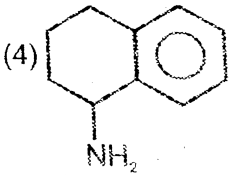
**24.** Which of the following compounds gives azo dye test ?

A. 


B. 


C. 


D. 

**Answer: B**

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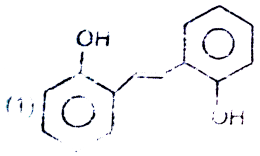
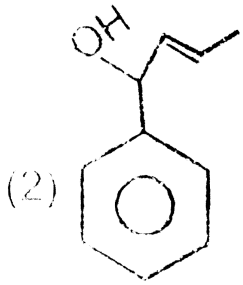
**25.** A compound $(P)$, obtained as an ozonolysis product of $(Q)$ gives brisk effervescence with $Na$, violet coloration with neutral $FeCl_3$ and silver mirror with Tollen's reagent $(Q)$ may be :

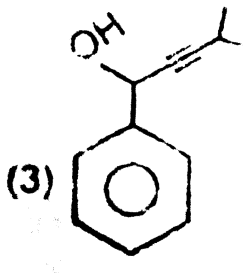
A.




B.




C.



D. All of these

**Answer: A**

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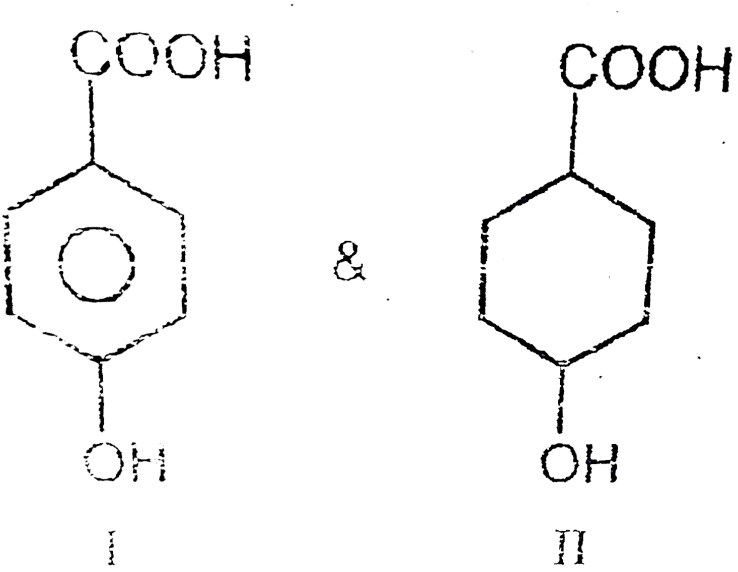
**26.** Which of the following reagent can distinguish the given compound $I$ & $II$ ?




I II

A. $Na$ metal

B. $NaHCO_3$

C. Lucas Reagent

D. 2, 4-D.N.P

**Answer: C**

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**27.** The percentage of nitrogen in a compound is determined by

A. Nessler's mathod

B. Kjeldahl's method

C. Carius method

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

**Answer: B**

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**28.** Fehlings 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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**29.** Identify a reagent from the folloiwng 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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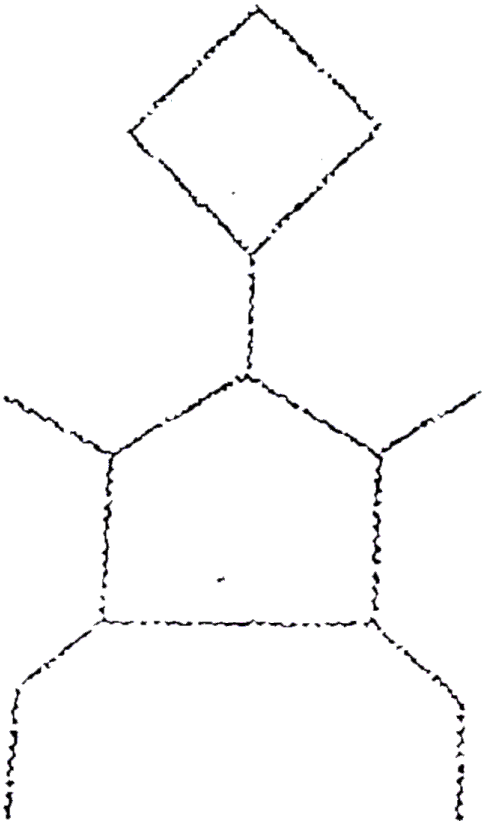
Advanced Level Problems Part Ii

**1.** How many isomaric alkenes (structural only) on hydrogenation can give following compound?



A. 7

B. 8

C. 9

D. 10

**Answer: C**

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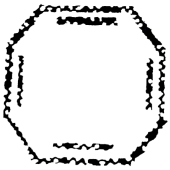
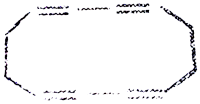
**2.** A hydrogen on oxidative ozonlysis produces Oxalic acid and Butanedioic acid. Its structrure is

A. (A) 

B. (B) 

C. (C) 

D. (D) 

**Answer: D**

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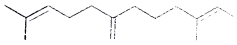
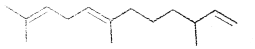
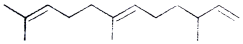
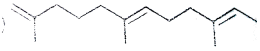
**3.** Farnesence is a compound found in the waxy coating of apples. On hydrogenation it gives $2, 6, 10$-Trimethyl dodecane. On ozonolysis it gives one mole acetone, one mole of formoaldehyde, one mole of $2$-Methylpentanedial and one mole of $4$-Oxopentanal. The structure proposed for Farnesence may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

A. 


B. 


C. 

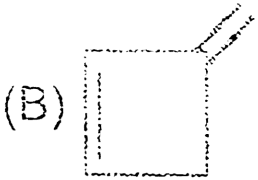

D. 


**Answer: C**

View Text Solution

**4.** 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. 

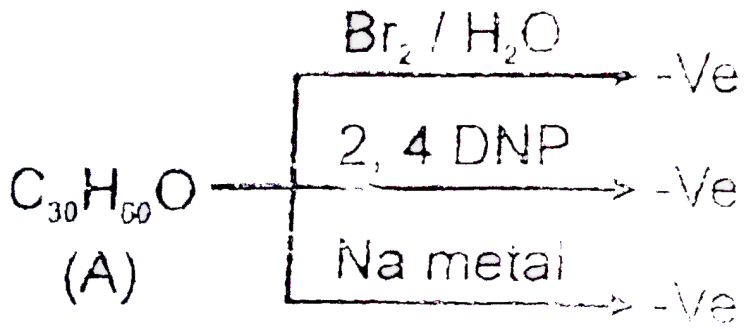

C. 


D.

**Answer: C**

View Text Solution

**5.** In compound $A(C_{30}H_{60}O)$ following tests are observed negatively, A can be




A. an unsaturated ether

B. an epoxide

C. a cyclic ketone

D. a cycloalkanol

**Answer: B**

View Text Solution

**6.** Compound $I$ and $II$ can be distinguished by using reagent.

$(I)$ 4-Hydroxy-4-methylpent-2-enoic acid " " $(II)$ 5-Hydroxypent-2-ynoic acid

A. $NaHCO_3$

B. $Br_2 / H_2O$

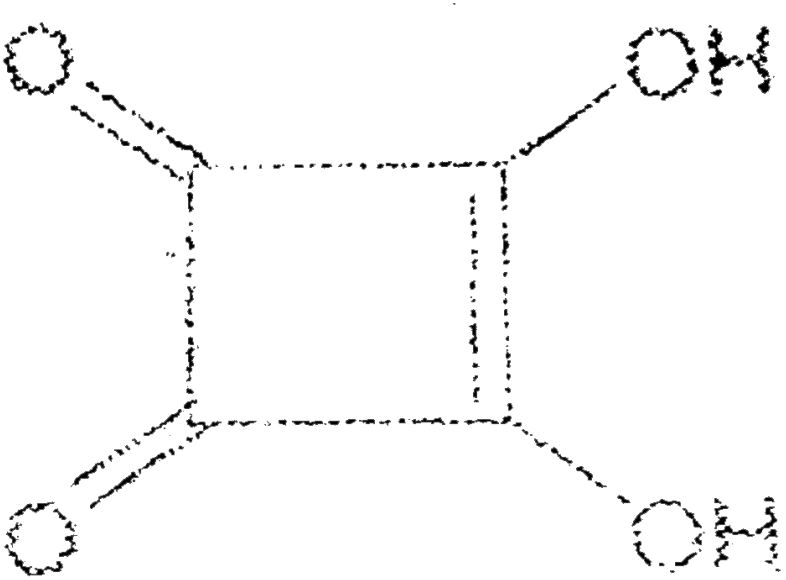
C. $HCl / ZnCl_2$ (anhydrous)

D. $Cu_2Cl_2 / NH_4OH$

**Answer: C**

View Text Solution

**7.** Which of the following test will not be given by



, (Squaric acid)

A. $Br_2$ water test

B. 2, 4-DNP test

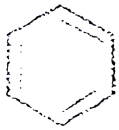
C. Neutral $FeCl_3$

D. Tollen's test

**Answer: D**

View Text Solution

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

(A) 

A.

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

C. 

D. $HC \equiv C - \overset{\overset{C \equiv CH}{|}}{CH} - C \equiv CH$

**Answer: C::D**

View Text Solution

**9.** 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**

View Text Solution

**10.** 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 $CH_3 - \underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2 - O - CH_3$

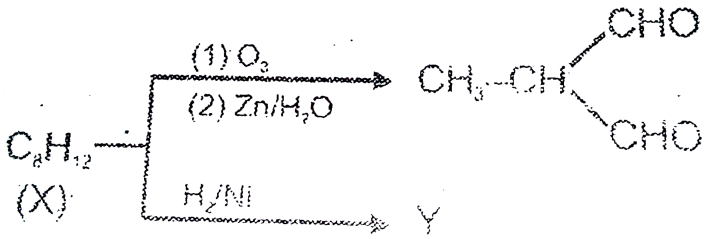
C. $P$ is $CH_3 - O - C \equiv C - H$

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

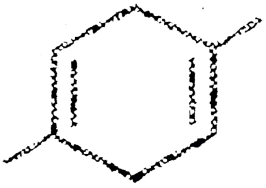
**Answer: B::C**

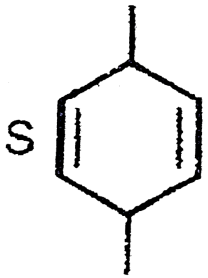
View Text Solution

**11.**




True statements is / are :

A. Structure of $X$ is 




B. Structure of $X$ is

C. $Y$ on monochlorination produce $3$ monochloro structral products.

D. Oxidative ozonolysis product of $X$ is ,

**Answer: B::C::D**

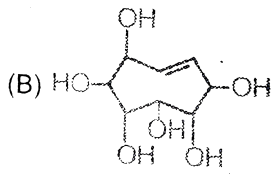
View Text Solution

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

Structure of $P$ connote be :

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

B.



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

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

**Answer: B::C::D**

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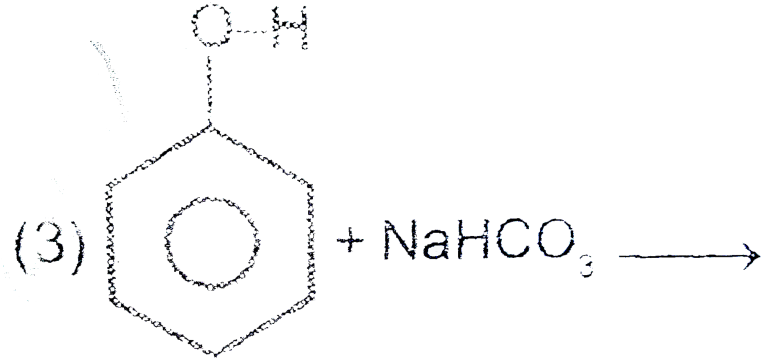
**13.** In how many reactions $CO_2$ gas is released out after reaction with $NaHCO_3$

(1) $CH_3 - \overset{\overset{O}{||}}{\underset{\underset{O}{||}}{S}} - O - H + NaHCO_3 \rightarrow$

(2) $CH_3 - \underset{\underset{O}{||}}{C} - O - H + NaHCO_3 \rightarrow$

(3)  + $NaHCO_3$ ⟶

$CH_3 - CH_2 - OH + NaHCO_3 \rightarrow$

(5) $CH_3 - C \equiv C - H + NaHCO_3 \rightarrow$

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

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

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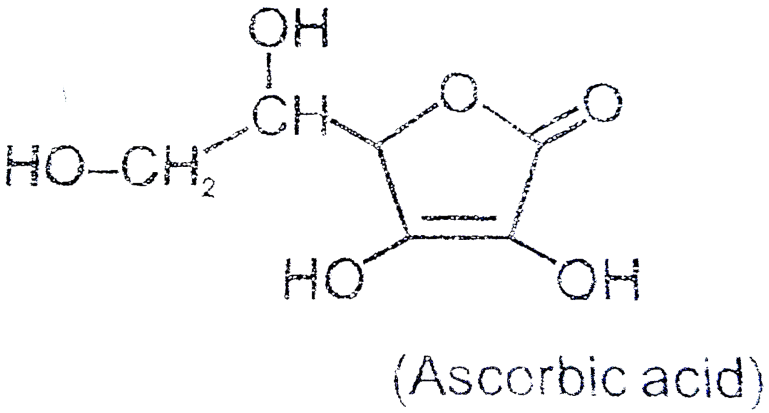
**16.** Structure of Ascorbic acid as represented as follows.




(Ascorbic acid)

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

| | | | |
|---|---|---|---|
| $Cu_2Cl_2 + NH_4OH$ | $2,4-DNP$ | Na metal | $HCl + ZnCl_2$ |
| $(I)$ | $(II)$ | $(III)$ | $(IV)$ |
| $NaOH +$ Phenopthalein | dil. $KMnO_4$ | $Br_2 / H_2O$ | $AgNO_3 + NH_4OH$ |
| $(VI)$ | $(VII)$ | $(VIII)$ | $(XI)$ |

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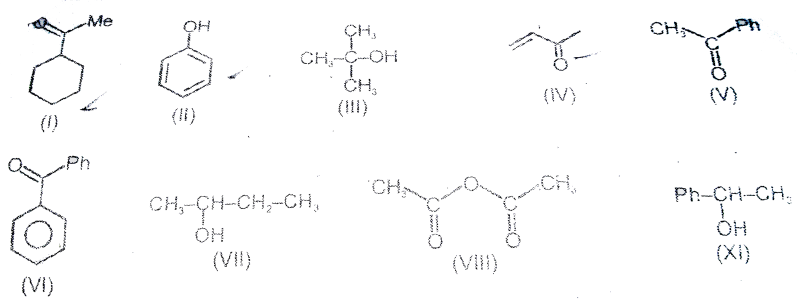
**17.** Observe the following compounds




Number of coumpound which can gives positive Haloform test $= (x)$

Number of compound which can gives positive Lucas reagent test $= (y)$

Report your answer $(x + y)$

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**18.** $'n'$ number of alkenes yield $2, 2, 3, 4, 4$-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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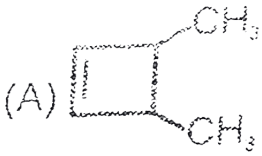
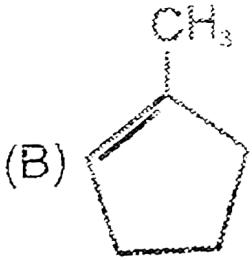
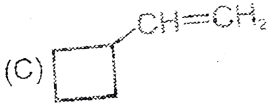
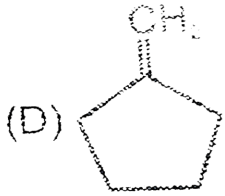
**19.** A compound $(P)$ having molecular formula $C_6H_{10}$ contains two $DU$. It yields $Q(C_6H_{12})$ when reacts with excess of $H_2$ of the presence of $Ni$. On ozonolysis $P$ gives cyclopentanone and compound $Y$.

$Ident \quad \text{if} \quad ythestructureofthecompound$P`

A. 


B. 


C. 


D. 


**Answer: D**

View Text Solution

**20.** A compound $(P)$ having molecular formula $C_6H_{10}$ contains two $DU$. It yields $Q(C_6H_{12})$ when reacts with excess of $H_2$ of the presence of $Ni$. On ozonolysis $P$ gives cyclopentanone and compound $Y$.

The compound $Q$ gives the number of of monochlorination products

A. $3$

B. $4$

C. $5$

D. $6$

**Answer: B**

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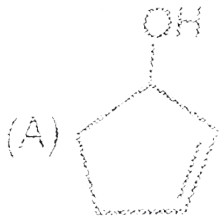
**21.** A compound $(P)$ having molecular formula $C_6H_{10}$ contains two $DU$. It yields $Q(C_6H_{12})$ when reacts with excess of $H_2$ of the presence of $Ni$.

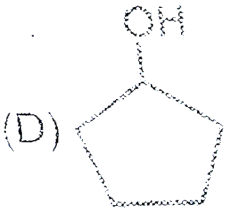
On ozonolysis $P$ gives cyclopentanone and compound $Y$.

Which of the following is not functional group isomer of cyclopentanone.

A. 


B. 


C. 


D. 


**Answer: D**

View Text Solution

Advanced Level Problems Part Iii

**1.** 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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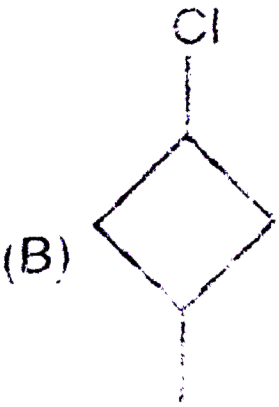
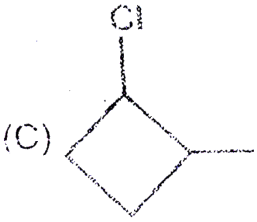
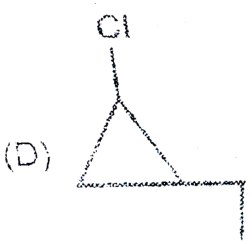
**2.** A compound $A$ has the molecular formula $C_5H_9Cl$. It does not react with bromine in carbon tetrachloride. On treatement with a stron base it produces a single compound $B$. $B$ has a molecular formula $C_5H_6$ and reacts with bromine in carbond tetrachloride. Ozonolysis of $B$ produces a compound $C$ which has a molecular formula $C_5H_6O_2$. Which of the following structure is that of $A$?

A. 


B. 


C. 


D. 


**Answer: B**

View Text Solution

**3.** Which of the following tests could be performed to distinguish between 1-butyene and 2-butyene?

A. $Ag^{+} / NH_3$

B. $Br_2 / CCl_4$

C. $H_2 / Pt$

D. $Hg^{+2} / H_2SO_4$

**Answer: A**

View Text Solution

**4.** Which of the following tests could be performed to distinguish between 1-butyene ?

A. methanol

B. 2, 2-dimethylpropanol

C. $\alpha$-haloethanol

D. methanal

**Answer: C**

View Text Solution

**5.** 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**

View Text Solution

**6.** The percentage of nitrogen in a compound is determined by

A. Nessler's mathod

B. Kjeldahl's method

C. Carius method

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

**Answer: B**

View Text Solution

**7.** The percentage of nitrogen in a compound is determined by

A. Dumas method

B. Kjeldahl's method

C. Carius method

D. substraction the sum of percentages of all other elements present from 100.

**Answer: D**

View Text Solution

**8.** In the Duman 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. $20.67\ \%$

B. $10.6\ \%$

C. $11.2\ \%$

D. $13.9\ \%$

**Answer: B**

View Text Solution

**9.** 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**

View Text Solution

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

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

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

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

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

**Answer: B**

View Text Solution

**11.** Fehlings 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**

View Text Solution

**12.** Which of the following phenols is most soluble in aqueous sodium bicarbonate?

A. $2$, $4$-dihydroxyacetophenone

B. $p$-cyanophenol

C. $3$, $4$-dicyanophenol

D. $2$, $4$, $6$-trichyanophenol

**Answer: D**

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