# CHEMISTRY

## JEE MAIN AND ADVANCED

## ORGANIC CHEMISTRY : SOME BASIC PRINCIPLES AND TECHNIQUES

**Example**

**1.** How many sigma and pi bonds are present in

(a) $CH_3 - C \equiv N$

(b) $CH_2 = C = O$

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**2.** What is the type of hybridisation of each carbon in the following compounds?

(a) $CH_3 - CH_3$

(ii) $(CH_3)_2CO$

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**3.** Write the condensed formula and bond line formula for

(a) $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2 - CH_2 - OH$

(b) $NH_2 - CH_2 - CH_2 - CH_2 - CH_2 - COOH$

(c) $CH_3 - CH_2 - \underset{\underset{Br}{|}}{CH} - CH_2 - CH_2 - CH_2$

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**4.** Expand the structure

(a) 

(b) $HOCH_2CH_2NH_2$

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**5.** Write three-dimensional (wedge-darked wedge fine) representation for the methyl chloride $(CH_3Cl)$ compound

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**6.** Write its IUPAC name

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

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**7.** Give its IUPAC name.

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**8.** Give its IUPAC name.

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**9.** Give its IUPAC name.

$$CH_3 - \underset{\underset{C_2H_5}{|}}{C}H - CH_2 - \underset{\underset{C_2H_5}{|}}{C}H - CH_3$$

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**10.** Write the IUPAC names of the following compounds.

(i) $CH_3 - CH_2 - \underset{\underset{OH}{|}}{CH} - CH_2 - CH_2 - \underset{\underset{CH_3}{|}}{CH} - CH_2 - CH_3$

(ii) $CH \equiv C - CH = CH - CH = CH_2$

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**11.** Derive the structure of (i) Pent-4-en-2-ol, (ii) Cyclohex-2-en-1-ol.

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**12.** Draw all the possible isomers of monochloro Butane ($C_4H_9CI$)

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**13.** Draw the polygon formulae for all the possible structural isomers having the molecular formula $C_5H_{10}$.

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**14.** Classify the reagents shown in bold in the following equations as nucleophiles or electrophiles.

(a) $CH_3COOH + OH^- \rightarrow CH_2COO^- + H_2O$

(b) $CH_3CH_2Br + SH^- \rightarrow CH_3CH_2SH + Br$

(c) $C_6H_6 + CH_3CO \rightarrow C_6H_5COCH_3$

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**15.** Draw resonance structures for the $C_6H_5NH_2$

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**16.** Arrange the following radicals in decreasing order of their stability.

(I) $\dot{C}H_3$

(II) $CH_3 - \dot{C}H_2$

(III) 

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**17.** 0.2475g of an organic compound gave on combustion 0.4950g of $CO_2$ and 0.2025g of $H_2O$ calculate the % of C & H in it.

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**18.** An organic compound contains $69\%$ carbon and $4.8\%$ hydrogen, the remainder being oxygen. Calculate the masses of $CO_2$ and water produced when $0.20g$ of this substance is subjected to complete combustion.

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**19.** In Dumas' method for estimation of nitrogen, 0.3g of an organic compound gave 50mL of nitrogen collected at 300K temperature and 715mm pressure. Calculate the percentage composition of nitrogen in the compound. (Aqueous tension at 300K=15 mm)

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**20.** 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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**21.** 0.35 g of an organic susbtance was Kjeldahilsed and the ammonia obtained was passed into 100ml of M/$10 H_2SO_4$ The excess acid required 154 ml of $M/10 NaOH$ for neurtralisation, calculate the % of nitrogen in the compound.

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**22.** 0.185 g of an organic substance when treated with conc $HNO_3$ gave 0.328 g of silver bromide. Calculate the % of bromine in the compound.

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**23.** 0.189 g of an organic substance gave in a carius determination 0.287 g of silver chloride. What is the % of Cl in the given compound?

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**24.** 0.2585g of an organic compound contaning iodine was heated with excess of strong nitric acid and silver nitrate in a carius tube. The precipitate of silver iodide was fiterred, washed and dried its weight was found to be 0.3894g . Calculate the % of iodine in the compound.

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**25.** 0.16 g of an organic substance was heated in carius tube and the sulphuric acid formed was precipitated as $BaSO_4$ with $BaCl_2$. The weight of the dry $BaSO_4$ was 0.35g Find the % of sulphur

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**26.** 0.40g of an organic compound containing phosphorus gave 0.555 g of $Mg_2P_2O_7$ by usual analysis calculate the % of phosphorus in the organic compound

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## Try Yourself

**1.** Indicate the $\sigma \& \pi$ bonds in

(i) $CH_2Cl_2$

(ii) $CH_3 - C \equiv C - CH_3$

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**2.** On the basis of hydribidsation predict the shape of the following molecules

(i) $CH_3F$

(ii) $CH_2 = O$

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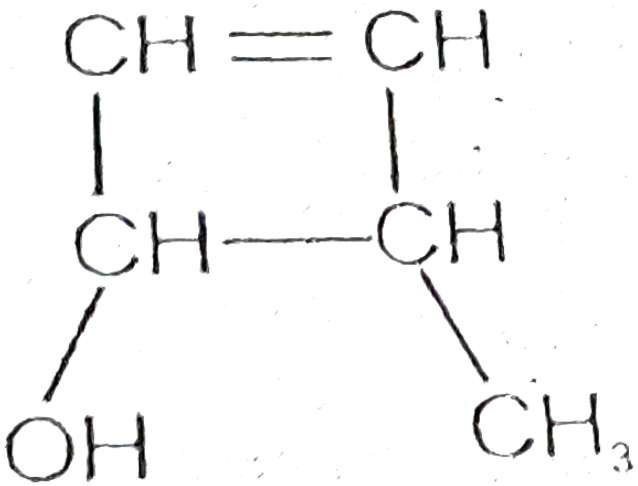
**3.** Write its bond line formula

(i) $CH_3CH(OH)CH_2CH_2OH$

(ii)

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**4.** Write three-dimensional representation for $CH_3CH_2OH$ compound.

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**5.** Give IUPAC name of:

(ii)

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**6.** Draw the structures of

(i)2-Chlorohexane

(ii) 3-Nitrocyclohexene

(iii) 6-Hydroxyheptanal

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**7.** Draw all me possible isomers of $C_4H_6O$ (containing carbonyl group).

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**8.** What is the relation between 2-methyl propanaol-1 and 2-methoxy propane?

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**9.** Using curved arrows rotation,show the formation of reactive intermediates when the following covalent bonds undergo heterolytic fission.

(a) $CH_3 - CN$

(b) $CH_3 - Cu$

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**10.** Classify the following molecules/ions as nucleophiles or electrophiles

$HS^-, BF_3, CH_3CH_2O^-, NO_2^+, NH_3, NH_2^-, Cl^+$

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**11.** Draw the resonating strcuture for $C_6H_5CHO$ compound.

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**12.** Arrange the following calculations in increasing order of stability and mention order suggested.

(i) $CH_3^{(+)}$

(ii)$CH_3CH_2^+$

(iii) $CH_3CH^+CH_3$

(iv) $CH_3 - \overset{(+)}{\underset{\underset{CH_3}{|}}{C}} - CH_3$

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**13.** 0.2613g of an organic compound on combustion in oxygen gave 0.8844 g of carbon dioxide and 0.1809 of water Find the % oc arbon and hydrogen in the substance.

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**14.** 0.2313 g of an organic substance gave 40 ml of moist nitrogen measured at $15^{\circ} C$ and 745 mm pressure. Calcualte the % of nitrogen (Aq tension at $15^{\circ} C$ is 12.7mm)

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**15.** 0.27g of an organic compound gave on combustion 0.396 of $CO_2$ 0.216g of $H_2O$ 0.36g of the same substance gave 48.88 ml of $N_2$ at 290K and 740mm pressure Calculate the percentage composition of the compound.

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**16.** 0.2g of an organic compound of kjedahl's analysis gave enough ammonia to just neutralise 20ml of 0.1 $NH_2SO_4$ Calculate the % of nitrogen in the compound.

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**17.** A sample of $0.50g$ of an organic compound was treated according to Kjeldahl's method. The ammonia evolved was absorbed in $50mL$ of $0.5MH_2SO_4$. The residual acid required $60mL$ of $0.5M$ solution of $NaOH$ for neutralization. Find the percentage composition of nitrogen in the compound.

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**18.** 0.15 gm of an organic compound gave 0.12 gm of silver bromide by the carius method. Find the percentage of bromine in the compound.

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**19.** 0.525g of an organic compound gave 0.356g of silver chloride by a halogen estimation method. Find the % of Cl in the compound.

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**20.** 0.2595 g of an organic substance, when treated by carius method gave 0.25g of $BaSO_4$ calculates the % of S in the compound.

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**21.** 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?

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**22.** 0.092 g of an organic compound containing phosphorus gave 0.111 g $Mg_2P_2O_7$ usual analysis Calculate the % of phosphorus in the organic compound.

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**23.** 0.12 gm of an organic compound containing phosphorus gave 0.22 gm of $Mg_2P_2O_7$ by the usual analysis. Calculate the percentage of phosphorus in the compound.

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## Exercise

**1.** The -hybridisations of central and terminal carbon atoms in are respectively

A. sp and $sp^1$

B. sp and $sp^3$

C. sp and $sp^2$

D. $sp^2$ and $sp$

**Answer:**

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**2.** Correct IUPAC name for $H_3C - \underset{C_2H_5}{\underset{|}{CH}} - \underset{C_2H_5}{\underset{|}{CH}} - CH_3$ is.....

A. 2, 3-Diethylbutane

B. 2-Ethyl-3-Methylpentane

C. 2, 3-Dimethylbutane

D. 3, 4-Dimethylhexane

**Answer:**

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**3.** Which of the following compound has linear shape?

A. $C_2H_4$

B. $C_2H_2$

C. $CH_4$

D. $C_3H_6$

**Answer:**

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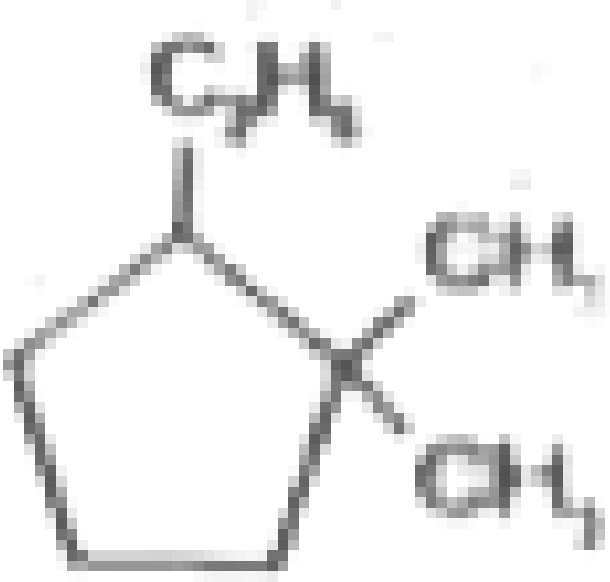
**4.** IUPAC name of the compound



A. ) 2-Ethyl-1, 1-dimethylcyclopentane

B. 1 -Ethyl-2, 2-dimethylcyclopentane

C. 1, 1-Dimethyl-2-ethylcyclopentane

D. 2, 2-Dimetfiyl-1 -ethylcyclopentane

**Answer:**

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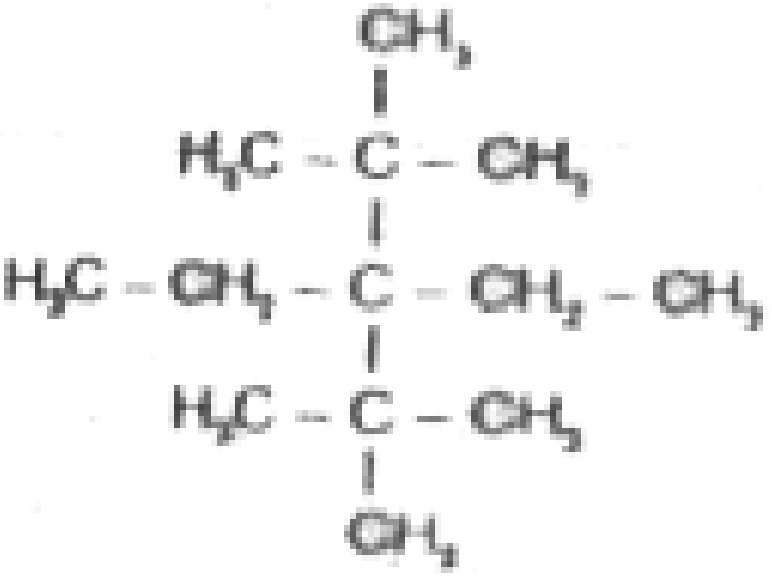
**5.** IUPAC name of the compound



A. 3, 3-Bis (1, 1-dimethylethyl) pentane

B. 3, 3-Bis (isopropyl) pentane

C. 3-Ethyl-3-isopropyl-2,2-dimethyl pentane

D. 3,3-Diethyl-2,2,4,4-tetramethylpentane

**Answer:**

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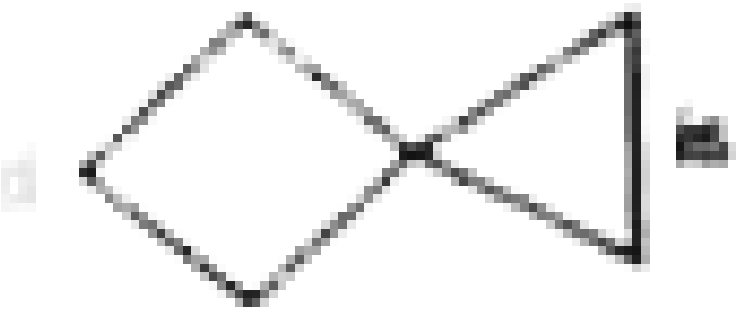
**6.** The molecular formula of the compound



A. $C_5H_{10}$

B. $C_6H_{10}$

C. $C_5H_{12}$

D. $C_6H_{12}$

**Answer:**

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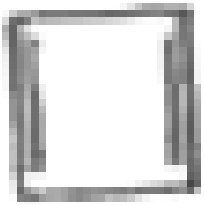
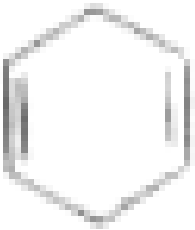
**7.** In which of the following compound has only one type of hybridised carbon atom?

A. 

B. 

C. 

D. All of these

**Answer:**

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**8.** Which of the following compound has maximum number of primary H-atoms?

A. $CH_4$

B. $CH_3 - CH_2 - CH_3$

C. $H_5C_2 - \underset{\underset{CH_3}{|}}{C}\ H - CH_3$

D. $C(CH_3)_4$

**Answer:**

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**9.** Tetravalency of carbon is possible in the case of

A. sp3 -hybridisation

B. sp2 -hybridisation

C. sp-hybridisation

D. All of these

**Answer:**

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**10.** The IUPAC name of $CH_2 = CH - CH_2 - OH$ is

A. Propynal

B. Propanol

C. Prop-2-enol

D. ) Propenyl alcohol

**Answer:**

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**11.** Which of the following alkane cannot show isomerism?

A. $C_4H_{10}$

B. $C_3H_8$

C. $C_5H_{12}$

D. $C_6H_{14}$

**Answer:**

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**12.** The number of structural isomers possible for $C_4H_8$ is

A. 4

B. 3

C. 5

D. 6

**Answer:**

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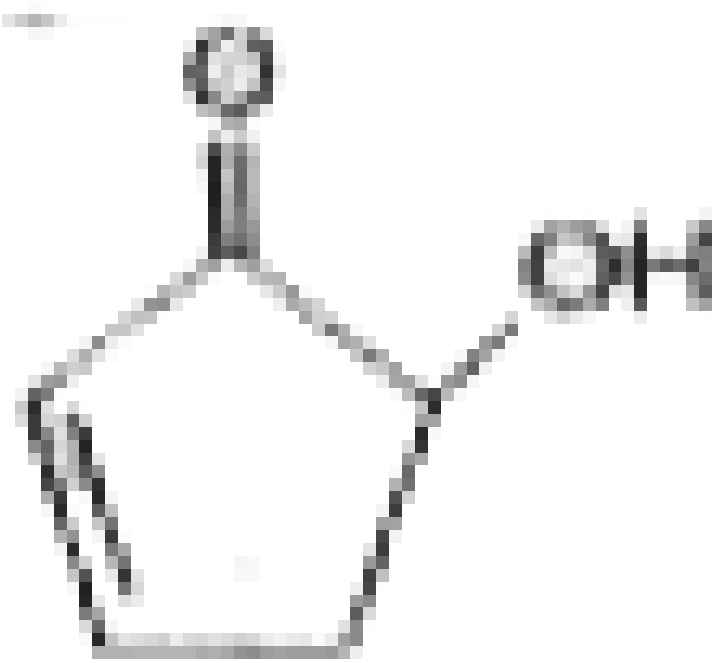
**13.** IUPAC name of the compound




A. 5-Hydroxycyclopent-2-enone

B. 2-Hydroxycyclopent-4-enone

C. 5-Hydroxycyclopent-4-enone

D. 2-Hydroxycyclopent-2-enone

**Answer:**

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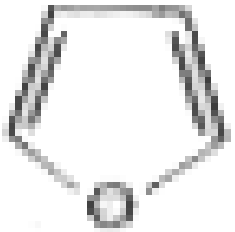
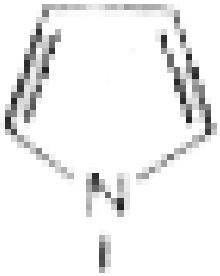
**14.** Which of the following is a heterocyclic compound?

A.




B.

C. 

D. All of these

**Answer:**

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**15.** Which of the following is incorrect match?

A. $H-\overset{\overset{O}{||}}{C}-CH_2-COOH$:3-Oxopropanoic acid:

B. $CH_3O-\overset{\overset{O}{||}}{C}-H$:Methoxymethanal

C. $H_2N-\overset{\overset{O}{||}}{C}-H$:Methanamide

D. $CH_3CH_2CN$: Propanenitrile

**Answer:**

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**16.** Which of the following will not show tautomerism?

A. HCN

B. $CH_3CH_2NO_2$

C. 

D. $CH_3OH$

**Answer:**

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**17.** Which of the following is not the isomer of $CH_3COOH$?

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

B. $H-\overset{O}{\overset{||}{C}}-OCH_3$

C. $H_2\overset{OH}{\overset{|}{C}}-\overset{O}{\overset{||}{C}}=H$

D. All of these

**Answer:**

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**18.** Which of the following has maximum -I effect?

A. -F

B. $-NO_2$

C. $-CN$

D. -OH

**Answer:**

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**19.** Carbon-carbon bond-order in benzene is -1.5 due to

A. Inductive effect

B. Electromeric effect

C. Resonance

D. H-bonding

**Answer:**

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**20.** Which of the following is the most acidic?

A. HCOOH

B. $CH_3COOH$

C. $CH_3CH_2COOH$

D. $CH_3CH_2CH_2COOH$

**Answer:**

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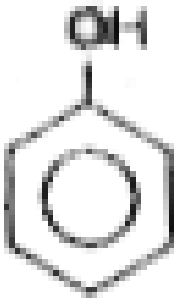
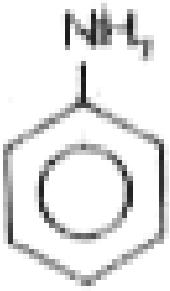
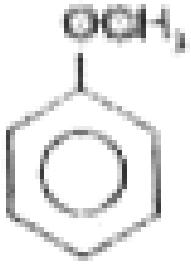
**21.** In which of the following, the group attached to the benzene ring shows +R effect



A.



B.

C. 

D. All of these

**Answer:**

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**22.** Which of the following compound can show resonance?

A. $CH_2 = CH - CH = CH_2$

B. $CH_2 = CH - OCH_3$

C. $CH_2 = CH - NH_2$

D. All of these

**Answer:**

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

A. $CH_3 - \overset{\oplus}{C}H - CH = CH_2$

B. $CH_3 - \overset{\oplus}{C}H - OCH_3$

C. $CH_3 - \overset{\oplus}{C}H - NO_2$

D. $CH_3 - \overset{\oplus}{C}H - CH_3$

**Answer:**

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**24.** Electromeric effect involves the complete transfer of

A. $\sigma$-electron

B. $\pi$-electron

C. Proton

D. Both $\sigma$ and $\pi$. electrons

**Answer:**

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**25.** The most deactivating group for electrophilic substitution reaction in benzene ring is

A. $-NH_2$

B. $-NO_2$

C. $OCH_3$

D. CHO

**Answer:**

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**26.** The number of carbon-hydrogen atoms present in $C_2H_5 - \overset{\overset{CH_3}{|}}{\underset{\oplus}{C}} - H$

A. 9

B. 8

C. 5

D. 4

**Answer:**

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**27.** Hyperconjugation involves delocalization of

A. $\sigma$-electron

B. $\pi$-electron

C. Both $\sigma$ and $\pi$ electron

D. Proton

**Answer:**

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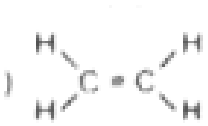
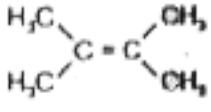
**28.** Which of the following alkene is the most unstable

A. 

B. $CH_3 - CH = CH_2$

C. $H_3C - CH = CH - CH_3$

D. 

**Answer:**

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**29.** The maximum number of no bond resonating structure is possible in

A. $CH_3 - \overset{\oplus}{C}H_2$

B. $H_3C - \overset{\oplus}{C}H - CH_3$

C. $C_2H_5 - \underset{\oplus}{\overset{CH_3}{\overset{|}{C}}} - CH_3$

D. $H_3C - \underset{\oplus}{\overset{CH_3}{\overset{|}{C}}} - CH_3$

**Answer:**

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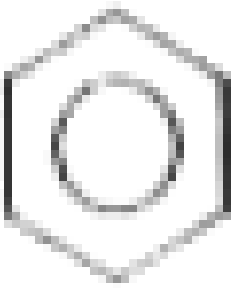
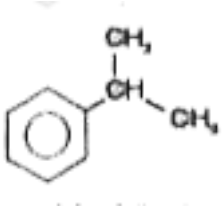
**30.** Which of the following is the most reactive towards electrophilic substitution?

A. 

B. 

C. 


D. 


**Answer:**

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**31.** Which of the following can act as an electrophile?

A. $H_2\ddot{O}$

B. $BF_3$

C. $CN^{(-)}$

D. $OH^{(-)}$

**Answer:**

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**32.** Which of the following is neutral nucleophile?

A. $CN^{(-)}$

B. $AlCl_3$

C. $H_2O$

D. $\overset{(-)}{O}CH_3$

**Answer:**

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**33.** The group which is most activating is

A. $-NO_2$

B. $-OCH_3$

C. $-NH_2$

D. $-OH$

**Answer:**

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**34.** Hyperconjugation is also known as

A. . Baker-Nathan effect

B. No bond resonance

C. Inductive effect

D. Both (A) and (B)

**Answer:**

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**35.** Which of the following is electron deficient species?

A. $\overset{\oplus}{C}H_3$

B. $\cdot CH_3$

C. $H_2$

D. Both (1) & (2)

**Answer:**

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**36.** Hybridisation of carbon in $CH_2 = CH - \overset{\oplus}{C}H_2$

A. $sp^2$

B. $sp$

C. $sp^3$

D. All of these

**Answer:**

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**37.** The most stable carbocation is

A. $Ch \equiv \overset{\oplus}{\copyright} H$

B. $CH_2 = \overset{\oplus}{C}H$

C. $CH_3 - \overset{\oplus}{C}H_2$

D. All are equally stable

**Answer:**

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**38.** The hybridisation of carbon in $CH_2 = CH - \ddot{C}H_2$ is

A. $sp^3$

B. $sp^2$

C. $sp$

D. $sp^3d$

**Answer:**

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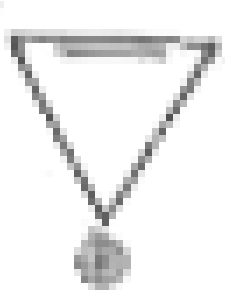
**39.** The most stable carbocation amongst the following is



A.

B. $CH = CH - \overset{\oplus}{C}H_2$

C. $CH_3 - CH_2 - \overset{\oplus}{C}H_2$

D. $CH_2 = C = \overset{\oplus}{C}H$

**Answer:**

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**40.** Which.of the following has pyramidal shape? .

A. $\overset{\oplus}{C}H_3$

B. $\cdot CH_3$

C. $CH_3 - \overset{\oplus}{C}H_2$

D. $\overset{\cdot\cdot}{\underset{-}{C}}H_3$

**Answer:**

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**41.** The carbanion which is most stable is

A. $HC = \overset{(-)}{C}$

B. $CH_2 = CH - \overset{(-)}{C}H_2$

C. 

D. $CH_3 - \underset{CH_3}{\overset{CH_3}{\overset{|}{\underset{|}{C}}}}\overset{(-)}{}$

**Answer:**

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**42.** Which of the following can have vacant p-orbital?

A. $\dot{C}H_3$

B. $\overset{\oplus}{C}H_3$

C. $\uparrow \downarrow CH_2$

D. Both (2) & (3)

**Answer:**

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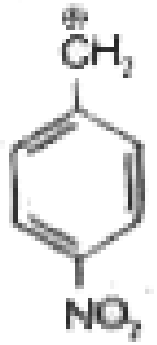
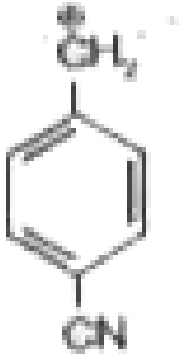
**43.** The carbocation which is most stable is

A.

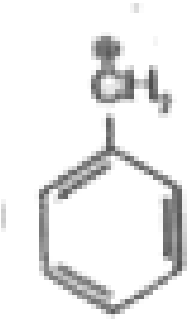



B.

C.




D.




**Answer:**

Watch Video Solution

**44.** The free radical which is most stable is

A. $CH_2 = CH - \dot{C}H_2$

B. 

C. $(H_3C)_3C^{\cdot}$

D. $\cdot C_2H_5$

**Answer:**

Watch Video Solution

**45.** In which of the following, carbon atom has sextet of electrons?

A. $:CH_2$

B. $\cdot CH_3$

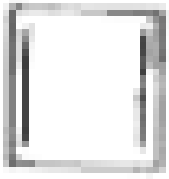
C. $CH_4$

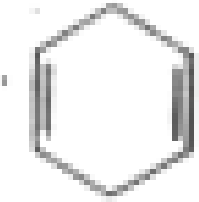
D. $\overset{(\cdot\cdot)}{C}H_3$

**Answer:**

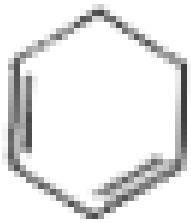
Watch Video Solution

**46.** The compound which is antiaromatic and least stable is

A. 

B. 

C. 

D. 

**Answer:**

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**47.** Towards catalytic hydrogenation, the least reactive compound is

A. $CH_2 = CH_2$

B. $CH_3 - CH = CH_2$

C. $H_3C\text{-}CH = CH - CH_3$

D. $(CH_3)_2C = C(CH_3)_2$

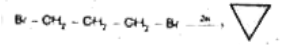
**Answer:**

Watch Video Solution

**48.** Which of the following reaction is an example of $\beta$-elimination?

A. $CH_3 - CH_2 - OH \xrightarrow[\Delta]{Cu} CH_3CHO$

B. $CH_3 - CH_2Br \xrightarrow[\Delta]{\text{base}} CH_2 = CH_2$

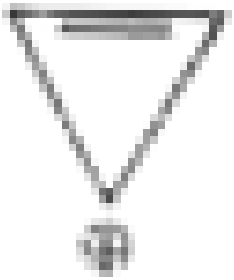
C. 

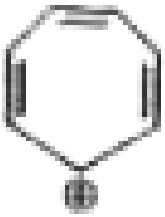
D. $CH_2 = CH_2 \xrightarrow[Pt]{H_2} CH_3 - CH_3$

**Answer:**

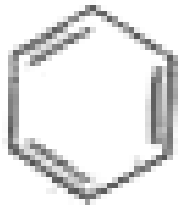
Watch Video Solution

**49.** Which of the following is aromatic in nature?

A. 



B.



C.

D. All of these

**Answer:**

Watch Video Solution

**50.** Which of the following statement is true about aromatic compound?

A. They contain (2n + 4)pi electrons

B. They are non-planar compounds

C. They.are highly stable compounds

D. They show antiaromaticity

**Answer:**

Watch Video Solution

**51.** In which of the following reaction formation of reaction intermediate does not take place?

A. Isomerisation reaction

B. Pericyclic reaction

C. Substitution reaction $(S_N1)$

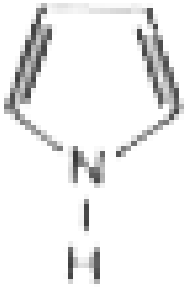
D. Elimination reaction (E1)

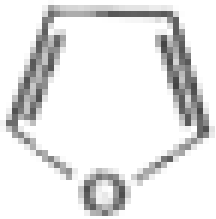
**Answer:**

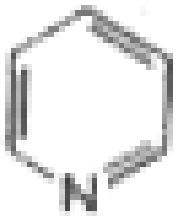
Watch Video Solution

**52.** Which of the following is not e heterocyclic aromatic compound ?

A. 


B. 


C. 


D. 

**Answer:**

Watch Video Solution

**53.** $CH_3 \cdot CH_2CH_2Cl \xrightarrow{aq.KOH} CH_3CH_2CH_2OH$ The reaction is

A. Free radical substitution

B. Addition reaction

C. Elimination reaction

D. Nucleophilic substitution

**Answer:**

Watch Video Solution

**54.** Which is not an aromatic species?'

A. Graphite

B. Benzene

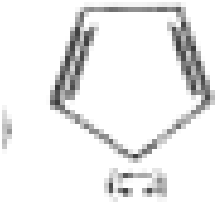
C. Fullerene

D.

**Answer:**

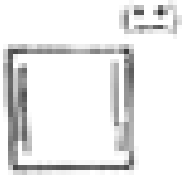
Watch Video Solution

**55.** Which of the following is aromatic carbanion?



A.

B. 

C. 

D. All of these

**Answer:**

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**56.** If an organic compound contains both N and S , the appearance of blood red colour takes place in Lassaignetest due to formation of

A. NaCNS

B. $Fe(SCN)_3$

C. NaSCN

D. $Fe\{CN)_2$

**Answer:**

Watch Video Solution

**57.** Layer test is used to detect the presence of

A. Iodine

B. Phosphorite

C. Bromine

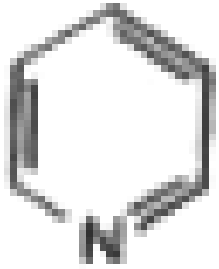
D. None of the above

**Answer:**

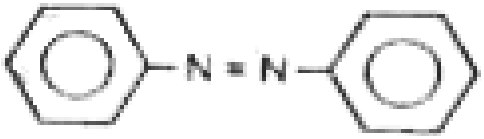
Watch Video Solution

**58.** Kjeldahl's-method for detection of nitrogen in organic compound, cannot be used in case of

A. $CH_3NO_2$



B.



C.

D. All of these

**Answer:**

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**59.** Carius method is used for the estimation of

A. Halogens

B. Sulphur .

C. Phosphorus

D. All of these -

**Answer:**

Watch Video Solution

**60.** During estimation by Duma's method 2.36 g of an organic compound gave 448 mL of $N_2$ (g) at NTP. The % of N in the compound is

A. 23.7

B. 40

C. 47.4

D. 12

**Answer:**

Watch Video Solution

**61.** The estimation of $C$ and $H$ in an compound is done by

A. Duma's method

B. Leibig's method

C. ) Lassaigne method

D. Carius method

**Answer:**

Watch Video Solution

**62.** The principle involved in paper chromatography is

A. Partition

B. Sublimation

C. Adsorption

D. Solubility

**Answer:**

Watch Video Solution

**63.** A mixture of naphthalene and benzoic acid can be separated by

A. Crystallisation

B. Sublimation

C. Distillation

D. Chromatography

**Answer:**

Watch Video Solution

**64.** Which of the following compounds will not give Lassaigne's test for nitrogen ?

A. Azobenzene

B. Hydrazine

C. Phenylhydrazine

D. Urea

**Answer:**

Watch Video Solution

## Assignment Section A

**1.** In which of the following homolytic bond fission takes place ?

A. Alkaline hydrolysis of ethylchloride.

B. Addition of HBr to double bond

C. Photochlorination of methane

D. ) Nitration of benzene

**Answer:**

Watch Video Solution

**2.** Which of the following is heterocyclic compound? ’

A. Pyrrole .

B. Furan

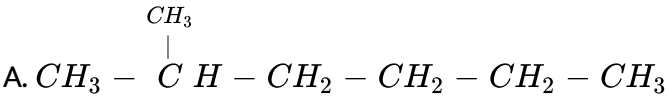
C. Thiophene

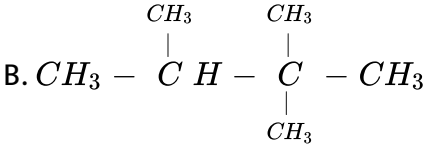
D. All of these

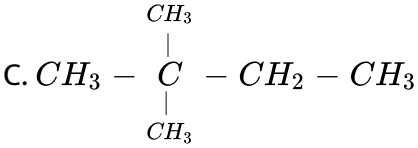
**Answer:**

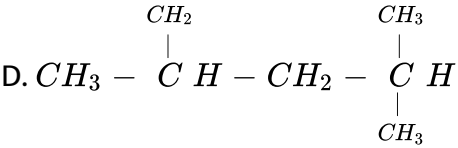
Watch Video Solution

**3.** Which of the following shows structure of neohexane?

A. 

B. 

C. 

D. 

**Answer:**

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**4.** The incorrect match is

A. $C_nH_{2n-1}$ - Alkyne

B. $C_nH_{2n}$ - Alkene

C. $C_nH_{2n+2}$ - Bicycloalkane

D. $C_nH_{2n-2}$ - Alkadiene

**Answer:**

Watch Video Solution

**5.** The number of C atoms present in allyl vinyl acetylene is ___ and it has _____ degree of unsaturation

A. 7 and 4

B. 7 and 3

C. 5 and 4 .

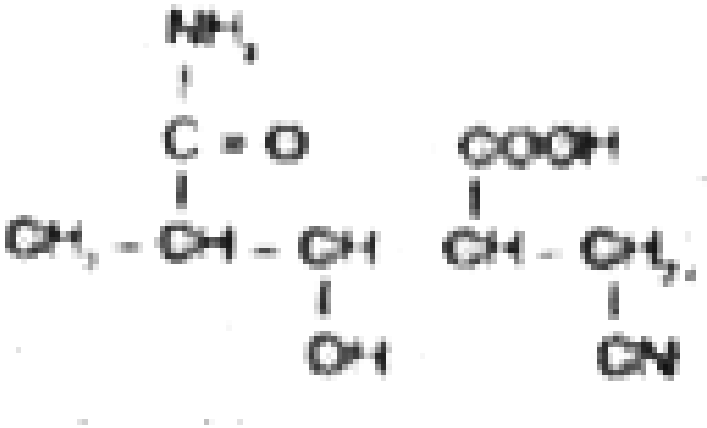
D. 5 and 3

**Answer:**

Watch Video Solution

**6.** In the structure

number of functional groups presents is/are



A. Two

B. Four

C. Five

D. Three

**Answer:**

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**7.** IUPAC name for‘the compound having formula $C(CH_3)_4$ is

A. Tetra’methyl methane

B. 1, 1, 1, 1-Tetramethyl methane

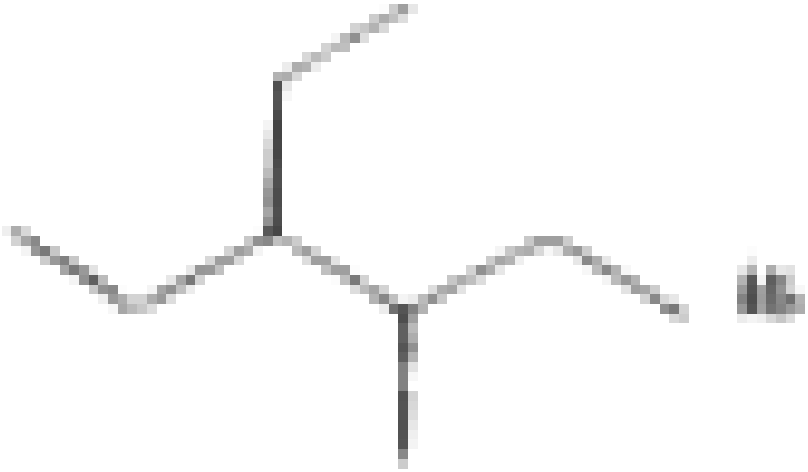
C. 2, 2-Dimethyl propane

D. 2, 2-Dimethyl isopropane

**Answer:**

Watch Video Solution

**8.** IUPAC name for .the compound



A. ' 3-Methyl-4-ethyl hexane

B. 3-Ethyl-4-methyl hexane

C. 4-Ethyl-3-methyl hexane

D. Nonane

**Answer:**

Watch Video Solution

**9.** IUPAC name of the compound $BrCH_2 - CHCI - CHCI_2$ is

A. 1-Bromo-2, 3, 3-trichloropropane

B. 1,1,2-Trichloro-3-bromopropane

C. 3-Bromo-1, 1. 2-trichloropropane

D. Trichlorobromopropane

**Answer:**

Watch Video Solution

**10.** IUPAC name of the compound

A. Cyclopentylethyne. .

B. Ethynylcyclopentane

C. Cyclopentylacetylene

D. Ethynyl pentane

**Answer:**

Watch Video Solution

**11.** The compound which has one isopropyl group is —

A. 2, 2, 3, 3 -Tetramethyl pentane

B. 2, 2 -Dimethyl pentane

C. 2, 2, 3-Trimethy! pentane

D. 2-Methyl pentane

**Answer:**

Watch Video Solution

**12.** Which alkane would have only the primary and tertiary carbon ?

A. Pentane

B. 2-Methylbutane

C. 2, 2-Dimethyl propane

D. 2, 3-Dimethylbutane

**Answer:**

Watch Video Solution

**13.** The IUPAC name of $CH_3 - CHBr - CH_2OH$ is

A. 3-Hydroxy 2-bromopropane

B. 2-B romopropan-1 -ol

C. 2-Bromo 3-propanol

D. 3-Hydroxy isopropyl bromide

**Answer:**

Watch Video Solution

**14.** The $IUPAC$ name of $CH_3OC_2H_5$ is

A. Ethoxymethane

B. Methoxyethane

C. Methyl ethyl ether

D. Ethyl methyl ether

**Answer:**

Watch Video Solution

**15.** IUPAC name of $\underset{\underset{CN}{|}}{CH_2} - \underset{\underset{CN}{|}}{CH} - \underset{\underset{CN}{|}}{CH_2}$

A. 1, 2, 3-Cyanopropene

B. 1, 2, 3-Cyanopropane

C. 3-Cyanopentan-T, 5,-dinitrile

D. Propane-1,2,3-T ricarbonitrile

**Answer:**

Watch Video Solution

**16.** The IUPAC name of the following compound $CH_3 - \underset{\underset{O}{||}}{C} - \underset{\underset{O}{||}}{C} - CH_3$ is

A. Butandione

B. 2,3-Butandiketone

C. Butane-2,3-dione

D. None of these

**Answer:**

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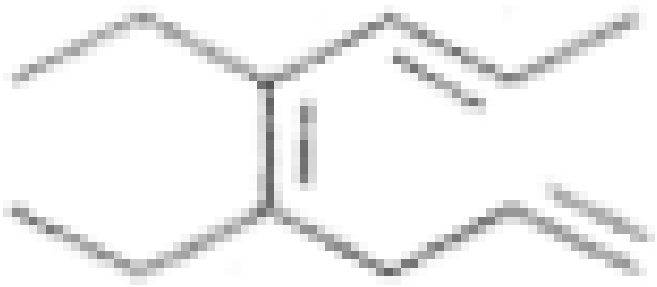
**17.** The IUPAC name, of



A. 4.5- Diethy locta-2,4,7-triene

B. 4.,5-Diethyiocta-1,4,6-triene

C. 4.5- Dimethylocta-1,4.6-4riene

D. 4, 5-Diethylocta-1, 4, 6 triync

**Answer:**

Watch Video Solution

**18.** The IUPAC name of $CH_2 = CH - CH_2 - C = CH$ is

A. Pent-2-en-5-yne

B. Pent-1-en-4-yne

C. PenW-en-1-yne

D. ) Pent-4-en-2-yne

**Answer:**

Watch Video Solution

**19.** The number of tertiary carbon atoms in the following^ structure is

$$CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CH_2 - \overset{\overset{CH_3}{|}}{C}H - CH_3$$

A. Four

B. Three

C. Two

D. One

**Answer:**

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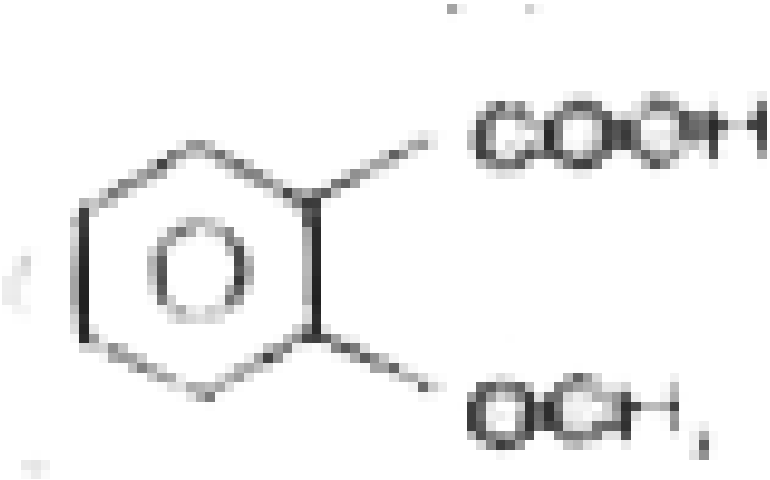
**20.** IUPAC name of is:



A. 2-methoxybenzoic acid

B. 2-carboxymethoxide

C. 2-carboxyphenyl methoxide

D. 2-methoxy carboxybenzene

**Answer:**

Watch Video Solution

**21.** The IUPAC name of

A. N, N-dimethylmethanal

B. N, N-dimethylmethanamide

C. N. N-dimethylcarbaldehyde

D. None of these.

**Answer:**

Watch Video Solution

**22.** The number of chain isomers possible in $C_5H_{12}$ is

A. 2

B. 3

C. 4

D. 5

**Answer:**

Watch Video Solution

**23.** $CH_3 - CH_2 - CH_2 - \underset{OH}{\overset{|}{C}}H - CH_3$ and $CH_3 - CH_2 - \underset{OH}{\overset{|}{C}}H - CH_2 - CH_2 - CH_3$ are

A. Functional isomers

B. Position isomers

C. Chain isomers

D. These are not isomers

**Answer:**

Watch Video Solution

**24.** $CH_3 - CH_2 - CH_2 - O - CH_3$ and $CH_3 - \overset{CH_3}{\underset{|}{C}}H - O - CH_3$ are

A. Chain isomers

B. Position isomers

C. Ring-chain isomers

D. ) Functional isomers

**Answer:**

Watch Video Solution

**25.** Number of structural isomers possible in $C_3H_6O$, are

A. 9

B. 6

C. 5

D. 3

**Answer:**

Watch Video Solution

**26.** In $CH_3 - \underset{\underset{CH_3}{|}}{C}H - CH_3$ most stable radicals/ions formed on homolysis is/are

A. $CH_3 - \underset{\underset{CH_3}{|}}{C}H - C\dot{H}_{-}(2)$ and $\dot{H}$

B. $CH_3\underset{\underset{CH_3}{|}}{\dot{C}} - CH_3$ and $\dot{H}$

C. $CH_3\overset{+}{\underset{\underset{CH_3}{|}}{C}} - CH_3$ and $\overset{(-)}{H}$

D. $CH_3\overset{\overset{o-}{}}{\underset{CH_3}{\underset{|}{C}}} - CH_3$ and $\overset{+}{H}$

**Answer:**

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**27.** The most stable carbocation is

A. $CH_3 - \overset{\oplus}{C}H - CH_3$

B. $CH_3 - \overset{\oplus}{C}H - CH_2 - CH_3$

C. $CH_3 - \overset{\oplus}{C}H - CH_2 - CH_2 - CH_3$

D. $CH_3 - CH_2 - \overset{\oplus}{C}H - CH_2 - CH_3$

**Answer:**

Watch Video Solution

**28.** The most stable carbanion is

A. $CH_3 - \bar{C}H_2$

B. $CH_2 = \bar{C}H$

C. $CH \equiv \bar{C}$

D. $(CH_3)_2\bar{C}H$

**Answer:**

Watch Video Solution

**29.** The most stable alkene is

A. $CH_2 = CH - CH_2 - CH_3$

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

C. $CH_2 = CH - CH = CH_2$

D. $CH_3 - CH = CH - CH_3$

**Answer:**

Watch Video Solution

**30.** In

$$\underset{(i)}{-NO_2}, \underset{(ii)}{-NH_2}, \underset{(iii)}{-SO_3H},$$

The decreasing order of -I effect is

A. $(I) > (II) > (III)$.

B. $(I) > (III) > (II)$

C. $(III) > (II) > (I)$

D. $(III) > (I) > (II)$

**Answer:**

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**31.** . Which of (he following is not an electrophile?

A. $\overset{\oplus}{C}H_3$

B. $AlCl_3$

C. $SiF_3$

D. $\left[(CH_3)_4\overset{\oplus}{N}\right]\overset{\oplus}{O}H$

**Answer:**

Watch Video Solution

**32.** :$CH_2$ is an

A. Electrophile

B. Nucleophile

C. Free radical

D. Ambiphiles

**Answer:**

Watch Video Solution

**33.** The nucleophile is not

A. Lewis base

B. Lewis acid

C. $H_2\ddot{O}$

D. Carbanion

**Answer:**

Watch Video Solution

**34.** The most stable carbocation is

A. $CH_3 - \overset{\oplus}{C}H_2$

B. $CH_3 - \underset{CH_3}{\overset{\oplus}{C}} H$

C. $CH_2 = CH - \overset{\oplus}{C}H_2$

D. $\overset{\oplus}{C}H_3$

**Answer:**

Watch Video Solution

**35.** The electromeric effect is

A. Permanent effect

B. Temporary effect

C. %-electrons transfer-in this effect

D. Both (2) & (3)

**Answer:**

Watch Video Solution

**36.** $CH_3CH = CH - CH_3 + Br_2 \rightarrow CH_3 - \underset{\underset{Br}{|}}{CH} - \underset{\underset{Br}{|}}{CH} - CH_3$ is an

A. Substitution reaction

B. Elimination reaction

C. Electrophilic addition reaction

D. Nucleophilic addition reaction

**Answer:**

Watch Video Solution

**37.** The correct statement for $\alpha$-elimination is

A. It forms cyclic compounds

B. It forms carbene or substituted carbene

C. Two atoms are removed from $\alpha$ and $\beta$ positions

D. In $CHCl_3$ , $\alpha$ elimination's not possible

**Answer:**

Watch Video Solution

**38.** In compound

The hybridization of C (1) to (7) are

A. $sp^2, sp^2, sp^2, sp, sp^2, sp, sp$

B. $sp^2, sp, sp, sp^2, sp^2, sp^2, sp$

C. $sp, ap, sp^2, sp, sp^2, sp^2, sp^2$

D. $sp^2, sp, sp^2, sp, sp^3, sp, sp$

**Answer:**

Watch Video Solution

**39.** The hybridization and Shape of $\overset{(-)}{C}H_3$ is respectively

A. $sp^3$ and trigonal pyramidal.

B. $sp^3$ and tetrahedral

C. $sp^3$ and trigonal planar

D. $sp^2$ and trigonal planar

**Answer:**

Watch Video Solution

**40.** Number of C atoms which present linearly in vinyl acetylene is.

A. 2

B. 3

C. 4

D. 1

**Answer:**

Watch Video Solution

**41.** A mixture containing urea and napthalene can be separated by

A. Filtration

B. Sublimation

C. Chromatographic

D. Distillation

**Answer:**

Watch Video Solution

**42.** Principle of crystallization method depends on

A. Solubility difference

B. Boiling point difference

C. Refractive index difference

D. Difference in vapour pressure.

**Answer:**

Watch Video Solution

**43.** Chloroform and aniline can be purified by

A. Sublimation

B. Crystallization

C. Distillation

D. Chromatographic

**Answer:**

Watch Video Solution

**44.** The principle involved in gas liquid chromatography (GLC) is

A. Adsorption

B. Absorption

C. Partition

D. Condensation

**Answer:**

Watch Video Solution

**45.** Steam distillation is applied for the separation of those compounds which are

A. Steam volatile dnd soluble in water

B. Steam volatile and decompose in water

C. Steam volatile and insoluble in water

D. Capable of chemical reaction with steam

**Answer:**

Watch Video Solution

**46.** The process of differential extraction is based upon

A. Different solubilities

B. Different molecular masses

C. Different boiling points

D. Different freezing point

**Answer:**

Watch Video Solution

**47.** Glycerol decomposes at its boiling point, the purification of glycerol can be affected by

A. Crystallisation

B. Simple distillation

C. Distillation under reduced pressure

D. Fractional crystallisation

**Answer:**

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**48.** The Na metal is used in "Lassaigne's test" is due to

A. Formation of ionic compound

B. Its compounds are soluble in $H_2O$

C. Na is reactive metal

D. All of these

**Answer:**

Watch Video Solution

**49.** Which of the following compound will give blood red colour while doing the Lassaigne's test for N?

A. $(NH_2)_2C=O$

B. $H_2N(C_6H_4)SO_3H$

C. $C_6H_5SO_3H$

D. $CHCl_3$

**Answer:**

Watch Video Solution

**50.** The violet-red colour in the Lassaigne's test of sulphur is due to

$$S^{2-} + \underset{\text{Sodium nitro prusside}}{\left[Fe(CN)_5(NO)\right]^{2+}} \rightarrow (3)$$

A. $FeCl_3$

B. $Na_2\left[Fe(CN)_6\right]$

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

D. None of these

**Answer:**

Watch Video Solution

**51.** The function of boiling the sodium extract with concentrated nitric acid before testing halogens is

A. To make solution clear

B. To destroy $CN^-$ and $S^{2-}$ ions

C. To make the solution acidic

D. To disproportionate $CN^-$ and $S^{2-}$

**Answer:**

Watch Video Solution

**52.** A mixture of acetone and methanol can be separated by

A. Vacuum distillation

B. Steam distillation

C. Fractional-dtstillation

D. Simple distillation

**Answer:**

Watch Video Solution

**53.** In Duma's method for determining the nitrogen content of an organic compound, the nitrogen content is determined in the form of :

A. Gaseous $NH_3$

B. NaCN

C. Gaseous $N_2$

D. $(NH_4)_2SO_4$

**Answer:**

Watch Video Solution

**54.** 0.2 g of an organic compound on comptete combustion produces 0.18 g of water ,then the percentage of hydrogen in it is

A. 5

B. 10

C. 1

D. 20

**Answer:**

Watch Video Solution

**55.** The substance which can be used as an adsorbent in column chromatography is

A. $Na_2O$

B. $NaCl$

C. $Al_2O_3$

D. Alum

**Answer:**

Watch Video Solution

**56.** In the estimation of Duma's method 1.18 of an organic compound gave 224 ml of $N_2$ (g) at NTP. Then percentage of N in the compound is about

A. 20

B. 11.8

C. 47.5

D. 23.7

**Answer:**

Watch Video Solution

**57.** 0.5 g of an organic compound cantaining N on Kjeldahlising required 29 ml of N/5 $H_2SO_4$ for complete neutralization of NH3 . The percentage of N in the compound is

A. 34.3

B. 16.2

C. 21.6

D. 14.8

**Answer:**

Watch Video Solution

**58.** 0.4 g of Organic Compound gave 0.188g of AgBr. The percentage of Br in the compound is

A. 39.8

B. 46

C. 20

D. 40

**Answer:**

Watch Video Solution

**59.** Which of the following will not give the Lassaigne test for nitrogen?

A. $NH_2 - NH_2$

B. $C_6H_5 - N = N - C_6H_5$

C. $CH_3OONH_2$

D. $CH_3CN$

**Answer:**

Watch Video Solution

**60.** For the detection of phosphorus, the organic compound after fustion with $Na_2O_2$ is extracted with water, boiled with $HNO_3$ and then ammonium molybdate is added to it. A yellow pppt. Is obtained which is due to the formation of

A. Yellow ppt of $(NH_3)_3PO_4$

B. Yellow ppt of $C_6H_5 - N = N - C_6H_5$

C. white ppt of $(NH_4)_3PO_4$

D. whit ppt of $(NH_4)_2HPO_3$

**Answer:**

Watch Video Solution

## Assignment Section B

**1.** The correct order of + I effect is

A. $-COO^- > -O^- > -NH^- > -CH_2^-$

B. $-CH_2^- > -O^- > -COO^- > -C(CH_3)_3$

C. $-C(CH_3)_3 > -O^- > -COO^- > -NH^-$

D. $-O^- > -COO^- > -C(CH_3)_3 > -NH^-$

**Answer:**

Watch Video Solution

**2.** The correct order of stability of given carbocations is

(i) $NO_2—CH_2—CH_2^+$ (ii) $NH_2—CH_2—CH_2^+$ (iii) $CH_3—O—CH_2^+$

(iv) $HO—CH_2^+$ (v) $NH_2—CH_2^+$ (vi) $NO_2—CH_2^+$

(vii) $CH_3O—CH_2—CH_2^+$

A. $vii > iii > ii > iv > v > i > vi$

B. $v > iii > iv > ii > vi > i > vii$

C. $v > iv > iii > ii > vii > i > vi$

D. $vi > i > vii > iii > ii > v > iv$

**Answer:**

Watch Video Solution

**3.** The stability of alkyl free radicals is due to

A. Hyperconjugation

B. + I effect

C. (- I effect)

D. Both (1) & (2)

**Answer:**

Watch Video Solution

## Assignment Section C

**1.** The correct statement regarding electrophile is:

A. Electrophile is a negatively charged species and can form a bond by accepting a pair of electrons from a nucleophile

B. Electrophile is a negatively charged species and can form a bond by accepting a pair of electrons from another-Telectrophile

C. Electrophiles are generally neutral species andean form a bond by. accepting a pair of electrons from a nucleophile

D. Electrophile can be either neutral dr positively charged species-and can form a bond by accepting a pair of electrons from a nucleophile

**Answer:**

Watch Video Solution

**2.** The most suitable method of separation of 1 : 1 mixture of ortho and para - nitrophenols is-

A. The most suitable method of separation of 1 : 1 mixture of ortho and para-nitrophenols is

B. Chromatography

C. Crystallisation

D. Steam distillation

**Answer:**

Watch Video Solution

**3.** The pair of electrons in the given carbanion, $CH_3C \equiv C^{\Theta}$ is present in which of the following orbitals?

A. sp

B. 2p

C. $sp^3$

D. $sp^2$

**Answer:**

Watch Video Solution

**4.** The correct statement regarding a carbonyl compound with a hydrogen atom on its alphacarbon, is

A. A carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as keto-enol tautomerism

B. A carbonyl compound with a hydrogen atom on its alpha-carbon never- equilibrates with its corresponding eno

C. A carbonyl compound .with a hydrogen atom on. its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as aldehyde-ketone equilibration

D. A carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as carbonylation

**Answer:**

**5.** $2,3-$ Dimethyl$-2-$ butene can be prepared by heating which of the following compounds with a strong acid ?

A. $(CH_3)_2C=CH-CH_2-CH_3$

B. $(CH_3)_2CH-CH_2-CH=CH_2$

C. $(CH_3)_2CH-\underset{\underset{CH_3}{|}}{CH}-CH=CH_2$

D. $(CH_3)_3C-CH=CH_2$

**Answer:**

Watch Video Solution

**6.** The number of structure isomers possible from the molecular formula $C_3H_9N$ is:

A. 2

B. 3

C. 4

D. 5

**Answer:**

Watch Video Solution

**7.** Which of the following statements is not correct for a nucleophiles?

A. Nucleophiles attack low $e^-$ density sites

B. Nucleophiles are not electron seeking

C. Nucleophile is a Lewis acid

D. Ammonia is a nucleophile

**Answer:**

Watch Video Solution

**8.** In Duma's method for estimation of nitrogen. $0.25g$of an organic compound gave $40mL$ of nitrogen collected at $300K$ temperature of $725mm$ pressure. If the aqueous tension at $300K$ is $25mm$, the percentage of nitrogen in the compound is

A. 15.76

B. 17.36

C. 18.2

D. 16.76

**Answer:**

Watch Video Solution

**9.** In the Kjeldahl's method for estimation of nitrogen present in a soil sample, ammonia avolved from 0.75 g of sample neutralized 10 mL of 1 M $H_2SO_4$. The percentage of nitrogen in the soil is

A. 37.33

B. 45.33

C. 35.33

D. 43.33

**Answer:**

Watch Video Solution

**10.** The structure of isobutyl group in an organic compound is

A. $CH_3 - CH - CH_2 - CH_3$

B. $CH_3CH_2 - CH_2 - CH_2 -$

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

D. 

**Answer:**

Watch Video Solution

**11.** Structure of the compound whose $IUPAC$ name is $3-$ ethyl$-2-$ hydroxy$-4-$ methylhex$-3-$ en$-5-$ ynoic acid is

A. 

B. 

C. 

D. 

**Answer:**

Watch Video Solution

**12.** Some meta-directing substituents in aromatic substitution are given which one is the most deactivating?

A. $-SO_3H$

B. $-COOH$

C. $-NO_2$

D. $-C=N$

**Answer:**

Watch Video Solution

**13.** Which of the following compounds will not undergo Friedel-Crafts reaction easily-

A. Xylene

B. Nitrobenzene

C. Toluene

D. Cumene

**Answer:**

Watch Video Solution

**14.** Among the following compounds the one that is most reactive towards electrophilic nitration is

A. Toluene

B. Benzene

C. Benzoic acid

D. Nitrobenzene

**Answer:**

Watch Video Solution

**15.** In Dumas' method of estimation of nitrogen $0.35g$ of an organic compound gave $55mL$ of nitrogen collected at $300K$ temperature and $715mm$ pressure. The percentage composition of nitrogen in the compound would be : ( Aqueous tension at $300K = 15mm$)

A. 14.45

B. 15.45

C. 16.45

D. 17.45

**Answer:**

Watch Video Solution

**16.** Considering the state of hybridization of carbon atoms, find out the molecule among the following which is linear?

A. $CH_3 - CH_2 - CH_2 - CH_3$

B. $CH_3 - CH = CH - CH_3$

C. $CH_3 - C = C - CH_3$

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

**Answer:**

Watch Video Solution

**17.** The LaSSaigen's extract is boiled with conc. $HNO_3$ while testing for halogens. By doing so it :

A. Increases the concentration of $NO_3^-$ ions

B. Decomposes $Na_2S$ and NaCN, if formed

C. Helps in the precipitation of AgCI

D. Increases the solubility product of AgCI

**Answer:**

Watch Video Solution

**18.** Which of the following species is not electrophilic in nature ?

A. $Cl_2$

B. $BH_3$

C. $H_2O$

D. $NO_2$

**Answer:**

Watch Video Solution

**19.** The $IUPAC$ name of the compound $CH_3CH = CHC \equiv CH$ is

A. Pent-4-yn-2-ene

B. Pent-3-en-1-yne

C. Pent-2-en-4-yne

D. Pent-1-yn-3-ene

**Answer:**

Watch Video Solution

**20.** The $IUPAC$ name of the compound having the formula $CH \equiv C - CH = CH_2$ is

A. 1-butyn-3-ene

B. but-1-yne-3-ene

C. 1-butene-3yne

D. 3-butene-1-yne

**Answer:**

Watch Video Solution

**21.** Which of the following compounds will exhibit cis-trans (geometrical ) isomerism ?

A. Butanol

B. 2-Butyne

C. 2-Buteno

D. 2-Butene

**Answer:**

Watch Video Solution

**22.** In the hydrocarbon $CH_3 - CH = CH - CH_2 - C$ = CH The state of hybridization of carbons 1,3 and 5 are in the following sequence

A. $sp^3$, $sp^2$ ,sp

B. $sp^2$ ,sp,$sp^3$

C. sp, `sp^(3) , sp^(2)

D. sp, $sp^2$ , $sp^3$

**Answer:**

Watch Video Solution

**23.** Acidic strength of

(a) $H_3CH$

(b) $H_2C = CH_2$

(c ) H-C $\equiv C - H$

is in the order of

A. $a > b > c$

B. $b > a > c$

C. $c > b > a$

D. $a > c > b$

**Answer:**

Watch Video Solution

**24.** The general molecular formula, which represents the homologous series of alkanols is

A. $C_nH_{2n}O_2$

B. $C_nH_{2n}O$

C. $C_nH_{2n+1}$

D. $C_nH_{2n+2}O$

**Answer:**

Watch Video Solution

**25.** The correct order regarding the electronegativity of hybrid orbitals of carbon is ?

A. sp gt $sp^2 < sp^3$

B. . sp gt $sp^2 > sp^3$

C. sp lt $sp^2 > sp^3$

D. sp lt $sp^2 < sp^3$

**Answer:**

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**26.** Which one of the following pairs represent stereoisomerism?

A. Chain isomerism and rotational isomerism

B. Structural isomerism and geometric isomersm

C. Linkage isomerism and geometric isomerism

D. Optical isomerism and geometric isomerism

**Answer:**

Watch Video Solution

**27.** The best method for the separation of naphthalene and benzoic acid from their mixture is

A. Chromatography

B. Crystallisation

C. Distillation

D. Sublimation

**Answer:**

Watch Video Solution

**28.** The correct order of increasing bond length of C - H ,C - O, C - C and C = C is

A. $C-H<C-O<C-C<C=C$

B. $C-H<C=C<C-O<C-C$

C. $C-C<C=C<C-O<C-H$

D. $C-O<C-H<C-C<C=C$

**Answer:**

Watch Video Solution

**29.** Homolytic fission of the following alkanes forms free radicals $CH_3 - CH_3, CH_3 - CH_2 - CH_3, (CH_3)_3C, CH_3 - CH_2 - CH(CH_3)_2$

Increasing order of stability of the radicals is

A.

$$(CH_3)_3C^{\cdot} < (CH_3)_2C^{\cdot} - CH_2CH_3 < CH_3 - CH^{\cdot} - CH_3 < CH_3$$

B.

$$(CH_3)_2C^{\cdot} - CH_2CH_3 < CH_3 - CH^{\cdot} - CH_3 < CH_3 - CH_2^{\cdot} < (C$$

C.

$$CH_3 - CH_2^{\cdot} < CH_3 - CH^{\cdot} - CH_3 < (CH_3)_2C^{\cdot} - CH_2 - CH_3 <$$

D.

$$CH_3 - CH_2^{\cdot} < CH_3 - CH^{\cdot} - CH_3 < (CH_3)_3C^{\cdot} < (CH_3)_2C^{\cdot} - C$$

**Answer:**

Watch Video Solution

**30.** Nitrogen detection in an organic compound is carried out by Lassaigne's test. The blue colour formed corresponds to which of the following formulae?

A. $Fe_3\left[Fe(CN)_6\right]_3$

B. $Fe_3\left[Fe(CN)_6\right]_2$

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

D. $Fe_4\left[Fe(CN)_6\right]_2$

**Answer:**

Watch Video Solution

**31.** An organic compound contains carbon, hydrogen and oxygen. Its elemental analysis gave$C$, $38.71\ \%$ and $H$, $9.67\ \%$. The empirical formula of the compound would be :

A. $CH_4O$

B. $CH_3O$

C. $CH_2O$

D. CHO

**Answer:**

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**32.** The number of structural isomers in $C_4H_{10}O$ will be

A. 7

B. 8

C. 5

D. 6

**Answer:**

Watch Video Solution

**33.** The IUPAC name of

$(CH_3)_2CH - CH_2 - CH_2Br$ is

A. 1 -bromo-3-methyl butane

B. 2-meth'yl-3-bromo propane

C. 1- bromo pentane

D. 2-methyl and 4-bromo butane

**Answer:**

Watch Video Solution

**34.** Tautomerism is exhibited by

A. $R_3CNO_2$

B. $RCH_2NO_2$

C. $(CH_3)_3CNO$

D. $(CH_3)_2NH$

**Answer:**

Watch Video Solution

**35.** Which of the following is correct regarding the -I-effect of the substituents ?

A. — $NR_2$ lt — OR lt — F

B. — $NR_2$ gt — OR gt — F

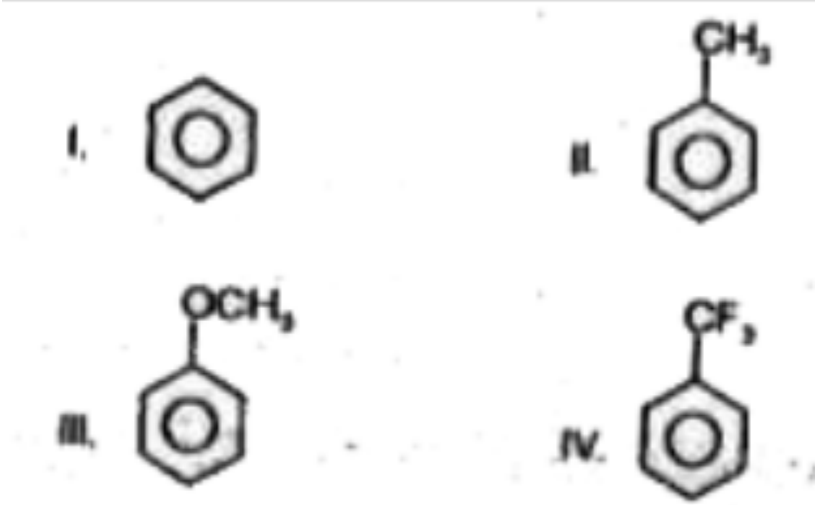
C. — $NR_2$ lt — OR gt — F

D. —$NR_2$ gt —O R lt —F

**Answer:**

Watch Video Solution

**36.** Increasing order of electrophilic substitution for following




compounds .

A. $iv < i < ii < iii$

B. $iii < ii < i < iv$

C. $i < iv < iii < ii$

D. $ii < iii < i < iv$

**Answer:**

Watch Video Solution

**37.** IUPAC name of the following is

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

A. 1, 5-heXenyne

B. 1-hexene-5-yne

C. 1 -hexyne-5-ene

D. 1,5-hexynene

**Answer:**

Watch Video Solution

## Assignment Section D Assertion Reason Type Questions

**1.** A: $CH_3 - CH - CH_3$ has 6. hyperconjugative hydrogens while $CH_3 - CH - CH_2 - CH_3$ has 5 hyperconjugative hydrogens.

R: $CH_3 - CH - CH_3$ is more stable than $CH_3 - CH - CH_2 - CH$

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

Watch Video Solution

**2.** A : Addition of HCN in alkene is a type of electrophilic substitution reaction.

R : In first step, $H_3O^+$ attacks on double bond

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

Watch Video Solution

**3.** The IUPAC name of $CH_2 = CH - C = CH$ is but-3-en-1-yne.

The priority of triple bond is more than double bond

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

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**4.** A: Allyl carbanion ($CH_2 = CH - CH_2^-$) is more stable $^-CH_2NO_2$ than

R: In $^-CH_2NO_2$ only -I effect of $-NO_2$ group is present while in Allyl carbanion resonance is present

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

Watch Video Solution

**5.** The isomeric structural alcohols of molecular formula $C_4H_{10}O$ are 4.

R: All are primary alcohols.

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

Watch Video Solution

**6.** Assertion (A) o-and p-nitrophenol can be separated by steam distillation.

Reason (R ) o-Nitrophenol is steam volatile whereas p-nitrophenol is not steam volatile.

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

Watch Video Solution

**7.** Assertion (A) The Duma's method is of more general application to nitrogen containing organic compounds than the Kjeldahl's method.

Reason (R ) The Kjeldahl's method does not give satisfactory results for eompomds in which nitrogen is directly linked to oxygen.

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

Watch Video Solution

**8.** A : Phenol is less acidic than benzoic acid.

R: Phenoxide has less number of resonating . structures than benzyl carboxylate ion.

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

Watch Video Solution

**9.** A : $C_2H_5 - {}^+CH — C_2H_5$ . is more stable than $CH_3 - {}^+CH - CH_3$

R : Positive inductive effect of $C_2H_5$ group is less than $CH_3$—group.

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

Watch Video Solution

**10.** A : $CH_3— BH— CH_2$ can not show resonance.

R : Boron and carbocation both are electron defficient species.

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

Watch Video Solution

**11.** A: $C_2BrCIFI$ can form 6 different geometrical isomers.

R : Each one structure is geometrical isomer of other five structures.

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

Watch Video Solution

**12.** A: Phenol is more reactive than toluene towards $S_E$ reaction.

R: OH group shows +R and +I both effects.

A. If both Assertion' & Reason are true and the reason is the correct explanation of the assertion, then mark'(1).

B. If both Assertion. & Reason are true but the reason is not the correct explanation of the ' assertion, then mark (2).

C. If Assertion is true statement but Reason is false, then mark (3). .

D. If both Assertion and-Reason are false statements, then mark (4)

**Answer:**

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