



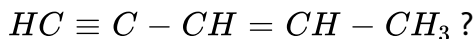
CHEMISTRY

BOOKS - MTG CHEMISTRY (HINGLISH)

ORGANIC CHEMISTRY-SOME BASIC PRINCIPLES AND TECHNIQUES

Tetravalence Of Carbon Shape Of Organic Compounds

1. How many σ and π bonds are present in

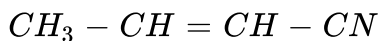


- A. $9\sigma, 4\pi$
- B. $10\sigma, 3\pi$
- C. $6\sigma, 6\pi$
- D. $5\sigma, 5\pi$

Answer: B

 [Watch Video Solution](#)

2. Which type of hybridisation of each carbon is there in the compound ?



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

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

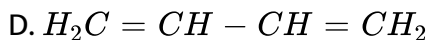
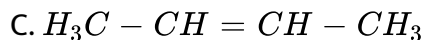
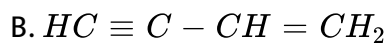
C. sp^3 , sp^2 , sp^3 , sp^3

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

Answer: A

 [Watch Video Solution](#)

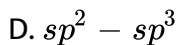
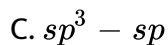
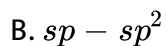
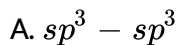
3. Which of the following represents the given sequence of hybridisation of carbon atoms from left to right sp^2 , sp^2 , sp , $sp^?$



Answer: A

 [View Text Solution](#)

4. The hybridisation of carbons of C-C single bond of $HC \equiv C - CH = CH_2$ is



Answer: B

 [View Text Solution](#)

5. What are the hybridization and shapes of the following molecules?

(i) CH_3F

(ii) $HC \equiv N$

A. (i) sp^2 , trigonal planar, (ii) sp^3 , tetrahedral

B. (i) sp^3 , tetrahedral, (ii) sp , linear

C. (i) sp , linear, (ii) sp^2 , trigonal planar

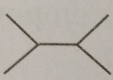
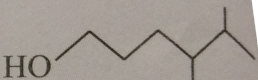
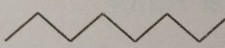
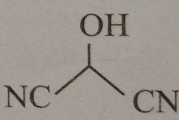
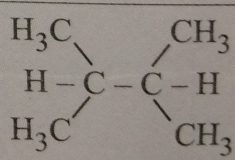
D. (i) sp^2 , trigonal planar, (ii) sp^2 , trigonal planar

Answer: B

 [View Text Solution](#)

Mcqs

1. Match the column I with column II and mark the appropriate choice.

Column I		Column II	
(A)	$\text{N} \equiv \text{C} - \underset{\text{OH}}{\text{CH}} - \text{C} \equiv \text{N}$	(i)	$\text{CH}_3(\text{CH}_2)_6\text{CH}_3$
(B)		(ii)	
(C)		(iii)	
(D)	$\text{HO}(\text{CH}_2)_3 - \underset{\text{CH}_3}{\text{CH}} - \underset{\text{CH}_3}{\text{CH}} - \underset{\text{CH}_3}{\text{CH}}$	(iv)	

A. $A \rightarrow iii, B \rightarrow iv, C \rightarrow i, D \rightarrow ii$

B. $A \rightarrow iv, B \rightarrow iii, C \rightarrow ii, D \rightarrow i$

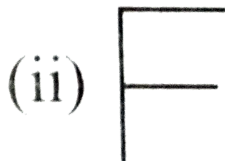
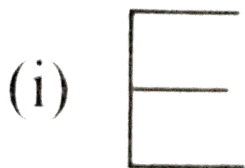
C. $A \rightarrow i, B \rightarrow ii, C \rightarrow iv, D \rightarrow iii$

D. $A \rightarrow ii, B \rightarrow iii, C \rightarrow i, D \rightarrow iv$

Answer: A

 View Text Solution

2. IUPAC names of the given structure are



A. (i) hexane, (ii) 3-methylbutane

B. (i) isopentane, (ii) 2,3-dimethylbutane

C. (i) 3-ethylbutane, (ii) isopentane

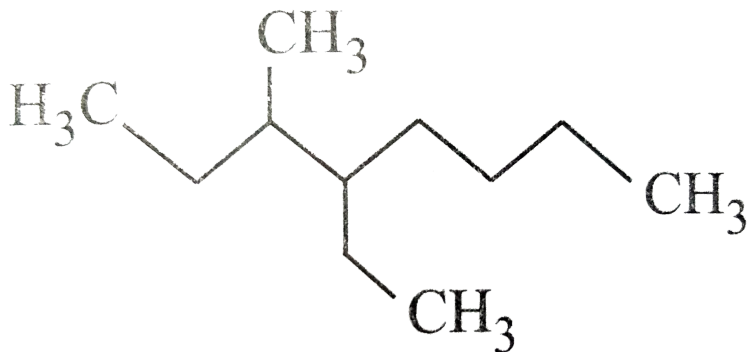
D. (i) 3-methylpentane, (ii) 2-methylbutane.

Answer: D



Watch Video Solution

3. IUPAC name of the compound



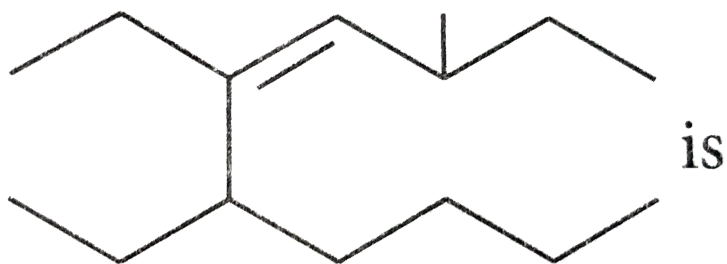
- A. 2,3-dimethylheptane
- B. 3-methyl-4-ethyloctane
- C. 5-ethyl-6-methyloctane
- D. 4-ethyl-3-methyloctane.

Answer: D



[Watch Video Solution](#)

4. The correct IUPAC name of the compound



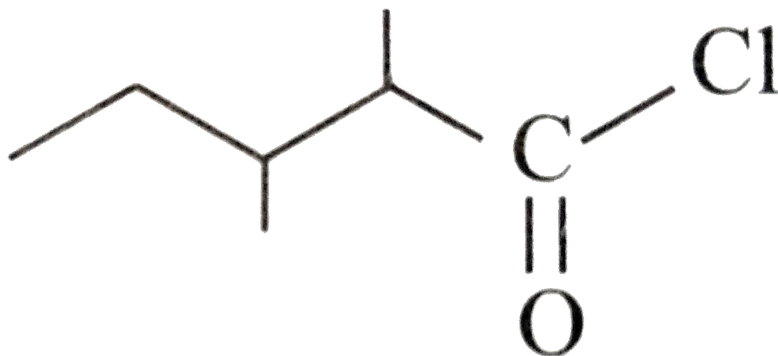
- A. 3-heptyl-5-methylhept-3-ene
- B. 5,6-diethyl-3-methyldec-4-ene
- C. 5-butyl-3-methyloct-4-ene
- D. 8-methyl-3-propylhex-3-ene

Answer: B



[View Text Solution](#)

5. The IUPAC name of



is

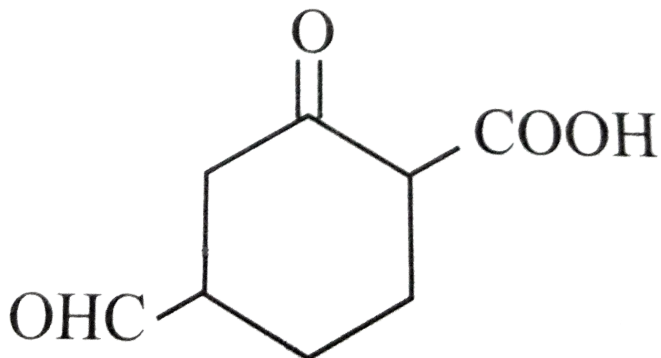
- A. 1-chloro-1-oxo-2,3-dimethylpentane
- B. 2-ethyl-3-methylbutanoyl chloride
- C. 2,3-dimethylpentanoyl chloride
- D. 3,4-dimethylpentanoyl chloride.

Answer: C



Watch Video Solution

6. The correct IUPAC name of the compound



is

A. 4-formyl-2-oxocyclohexanecarboxylic acid

B. 4-carboxy-2-oxocyclohexanal

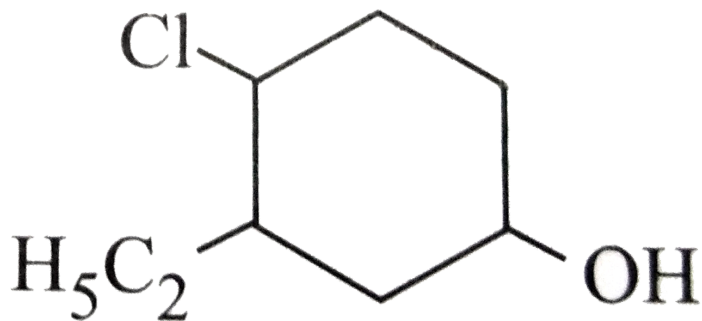
C. 4-carboxy-1-formylcyclohexanone

D. 2-carboxy-5-formyl-1-oxocyclohexane

Answer: A

 [Watch Video Solution](#)

7. The correct IUPAC name of the following compound is



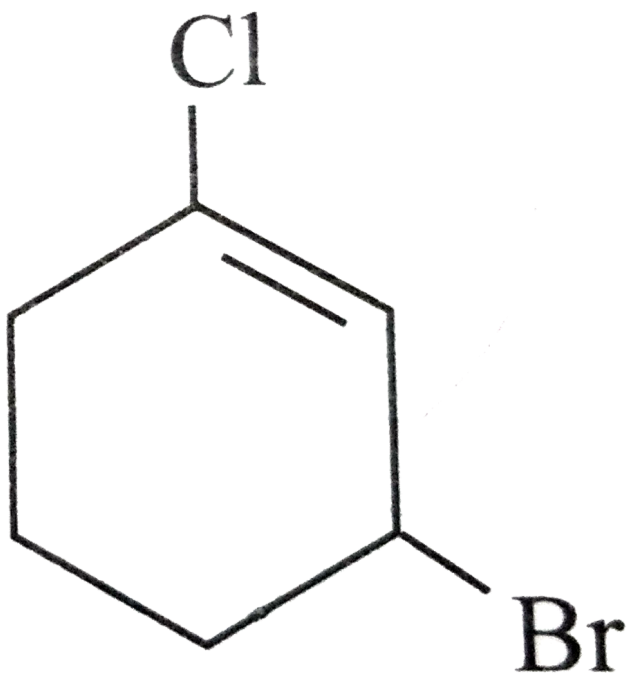
- A. 2-ethyl-1-chlorocyclohexanol
- B. 4-chloro-5-ethylcyclohexanol
- C. 4-hydroxy-2-ethyl-1-chlorocyclohexane
- D. 4-chloro-3-ethylcyclohexanol

Answer: D



[Watch Video Solution](#)

8. The IUPAC name of the compound shown below is



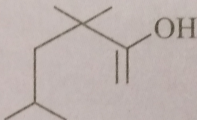
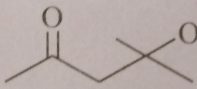
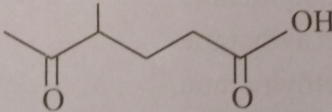
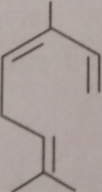
- A. 2-bromo-6-chlorocyclohex-1-ene
- B. 6-bromo-2-chlorocyclohexene
- C. 3-bromo-1-chlorocyclohexene
- D. 1-bromo-3-chlorocyclohexene

Answer: C



Watch Video Solution

9. Match the compounds given in column I with the IUPAC names given in column II and mark the appropriate choice.

	Column I		Column II
(A)		(i)	3,7-Dimethylocta-1,3,6-triene
(B)		(ii)	4-Methyl-5-oxohexanoic acid
(C)		(iii)	3,3,5-Trimethylhex-1-en-2-ol
(D)		(iv)	4-Hydroxy-4-methylpentan-2-one

A. $A \rightarrow ii, B \rightarrow i, C \rightarrow iii, D \rightarrow iv$

B. $A \rightarrow iv, B \rightarrow ii, C \rightarrow i, D \rightarrow iii$

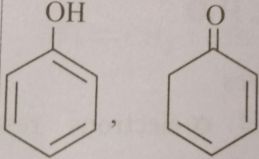
C. $A \rightarrow i, B \rightarrow iii, C \rightarrow ii, D \rightarrow iv$

D. $A \rightarrow iii, B \rightarrow iv, C \rightarrow ii, D \rightarrow i$

Answer: D

 Watch Video Solution

10. Match the column I with column II and mark the appropriate choice.

	Column I	Column II
(A)	$\text{CH}_3\text{CH}_2\text{OH}$, $\text{H}_3\text{C} - \text{O} - \text{CH}_3$	(i) Position isomers
(B)	$\text{C}_2\text{H}_5\text{COC}_2\text{H}_5$, $\text{C}_3\text{H}_7\text{COCH}_3$	(ii) Tautomers
(C)		(iii) Functional isomers
(D)	$\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$, $\text{CH}_3 - \underset{\text{OH}}{\text{CH}} - \text{CH}_3$	(iv) Metamers

A. $A \rightarrow iv$, $B \rightarrow iii$, $C \rightarrow i$, $D \rightarrow ii$

B. $A \rightarrow i$, $B \rightarrow iii$, $C \rightarrow ii$, $D \rightarrow iv$

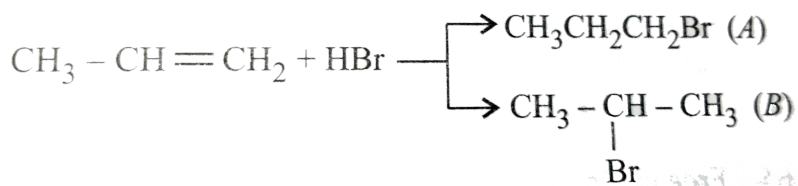
C. $A \rightarrow iii$, $B \rightarrow iv$, $C \rightarrow ii$, $D \rightarrow i$

D. $A \rightarrow iv$, $B \rightarrow i$, $C \rightarrow ii$, $D \rightarrow iii$

Answer: C

 Watch Video Solution

11. In the given reaction two products are expected.



The product (B) is formed as a major product because

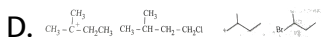
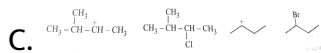
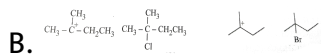
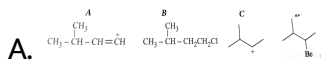
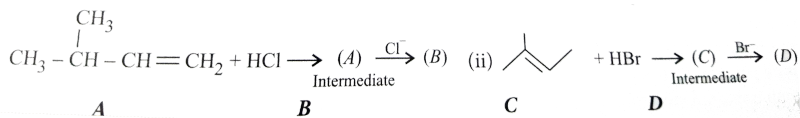
- A. the carbocation $\text{CH}_3 - \overset{+}{\text{C}}\text{H} - \text{CH}_3$ is formed which is more stable
- B. the carbocation $\text{CH}_3 - \text{CH}_2 - \overset{+}{\text{C}}\text{H}_2$ is formed which is more stable
- C. both carbocations are equally stable but the nucleophile attacks on central C atom
- D. $\text{CH}_3 - \overset{+}{\text{C}}\text{H} - \text{CH}_3$ can easily give a proton to attack Br^- .

Answer: A



View Text Solution

12. Complete the following reactions by filling most stable intermediate and the product.



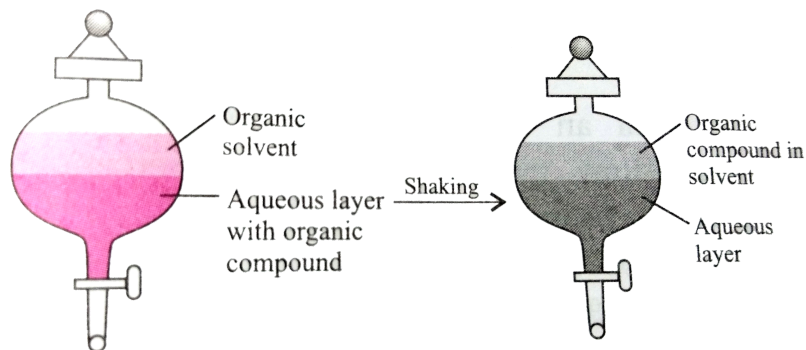
Answer: B



View Text Solution

13. The process of separation of an organic compound from its aqueous solution by shaking with a suitable solvent is termed solvent extraction

or differential extraction.



The organic compound present in the aqueous layer moves to the organic solvent because

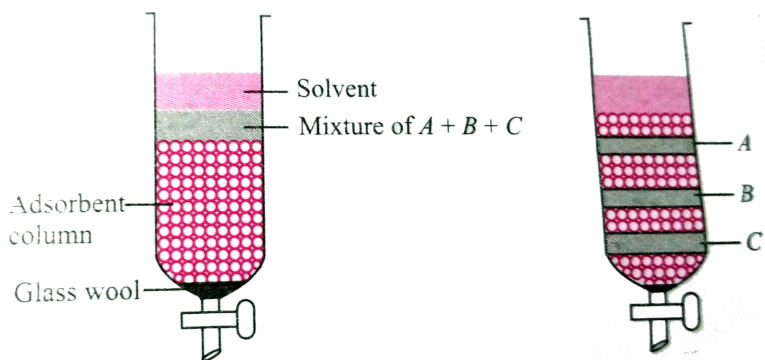
- A. The organic substance is more soluble in the organic solvent
- B. organic compound being lighter moves in the upper layer
- C. organic solvent is insoluble in water hence organic compound moves up
- D. from the supersaturated aqueous solution the solute starts diffusing

Answer: A



[View Text Solution](#)

14. Given below is a column of adsorbent in which the mixture of compounds A+B+C is placed. When the solvent is poured through the column, the components are separated depending upon the degree of adsorption. Which of the given statements is correct?



A. A is the most weakly adsorbed component hence remains near the top

B. A is the most strongly adsorbed component hence remains near the top

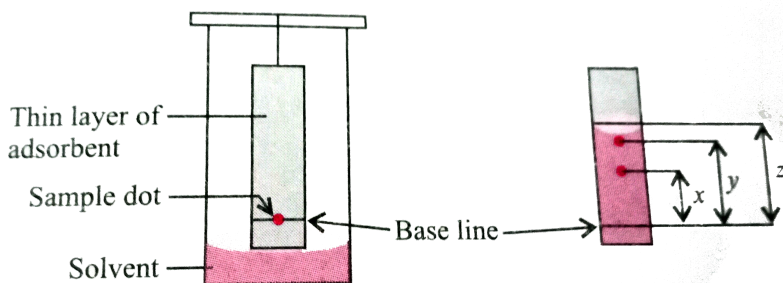
C. C is the most strongly adsorbed component hence is found near the bottom

D. B is the most strongly adsorbed component hence is found in the centre of the column.

Answer: B

 [View Text Solution](#)

15. Given below is the developed chromatogram of a mixture of pigments.



R_f values for x and y can be expressed as

A. $\frac{x}{z}, \frac{y}{z}$

B. $\frac{x}{y}, \frac{y}{z}$

C. xz, yz

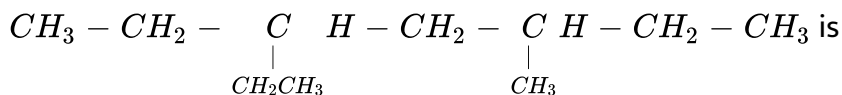
D. $\frac{z}{x}, \frac{z}{y}$

Answer: A

 [View Text Solution](#)

Nomenclature Of Organic Compounds

1. Correct name for the given compound

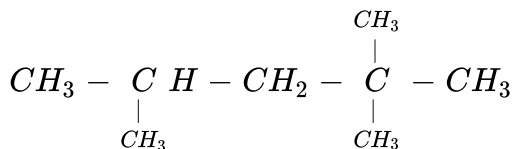


- A. 3-ethyl-5-methylheptane
- B. 5-ethyl-3-methylheptane
- C. 1,1-diethyl-3-methylpentane
- D. 3-methyl-5,5-diethylpentane

Answer: A

 [Watch Video Solution](#)

2. How many primary, secondary, tertiary and quaternary carbon atoms are present in the following compound?

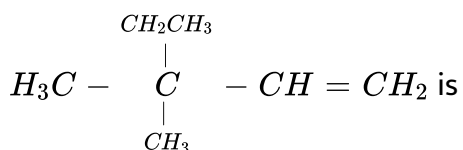


- A. One primary, two secondary and one tertiary
- B. Five primary, three secondary
- C. Five primary, one secondary, one tertiary and one quaternary
- D. four primary, two secondary and two quaternary

Answer: C

 [Watch Video Solution](#)

3. The IUPAC name of the compound having formula



A. 3,3,3-trimethylprop-1-ene

B. 1,1,1-trimethylprop-2-ene

C. 3,3-dimethylpent-1-ene

D. 2,2-dimethylbut-3-ene.

Answer: C

 [View Text Solution](#)

4. IUPAC name of $(CH_3)_3C - CH = CH_2$ is

A. 2,2-dimethylbut-3-ene

B. 2,2-dimethylpent-4-ene

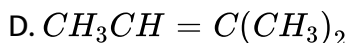
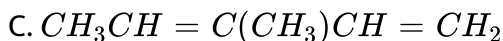
C. 3,3-dimethylbut-1-ene

D. hex-1-ene

Answer: C

 [View Text Solution](#)

5. Which of the following represents 3-methylpenta-1,3-diene?

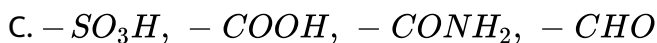
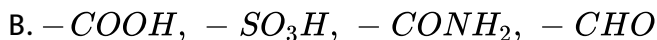
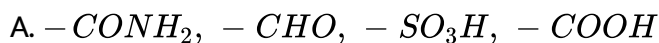


Answer: C



[View Text Solution](#)

6. The correct decreasing order of priority for the functional groups of organic compounds in the IUPAC system of nomenclature is



D. $-CHO$, $-COOH$, $-SO_3H$, $-CONH_2$

Answer: B

 [View Text Solution](#)

7. Which of the following compounds is not correctly matched with its IUPAC name?

A. $CH_3CH_2CH_2COOCH_2CH_3$ -Ethyl butanoate

B. $CH_3 - \underset{\substack{| \\ CH_3}}{C} H - CH_2 - CHO - 3$ - Methylbutanal

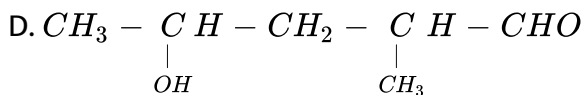
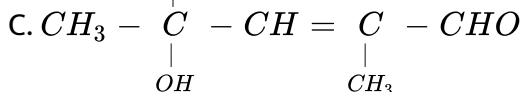
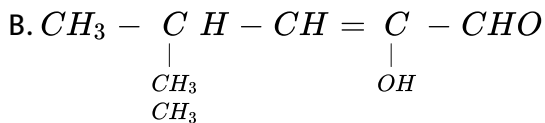
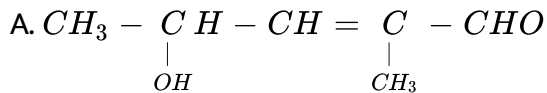
C. $CH_3 - \underset{\substack{| \\ CH_3}}{C} H - \underset{\substack{|| \\ O}}{C} - CH_2CH_3 - 2$ - methylpentan-3-one

D. $CH_3 - \underset{\substack{| \\ OH}}{C} H - \underset{\substack{| \\ CH_3}}{C} H - CH_3 - 3$ - Methylbutan-3-ol

Answer: D

 [View Text Solution](#)

8. The correct representation of 4-hydroxy-2-methylpent-2-en-1-al is



Answer: A

 [View Text Solution](#)

9. The correct name of $CH_3CH_2 - \underset{\substack{|| \\ O}}{C} - \underset{\substack{| \\ CN}}{C}H - CHO$ is

A. 2-cyano-3-oxopentanal

B. 2-formyl-3-oxopentanenitrile

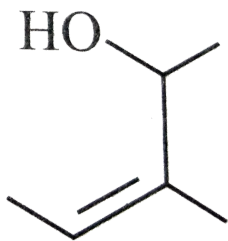
C. 2-cyano-1,3-pentadiene

D. 1,3-dioxo-2-cyanopentane

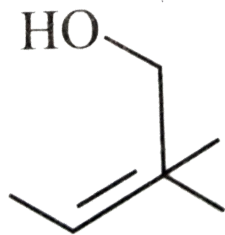
Answer: B

 Watch Video Solution

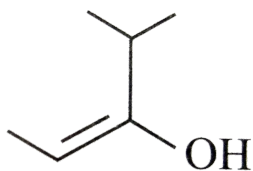
10. Correct representation of 3-methylpent-3-en-2-ol is



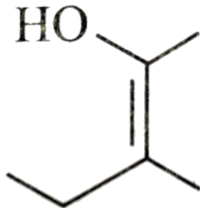
A.



B.



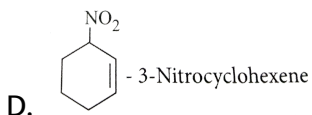
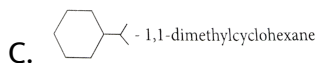
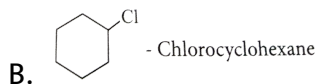
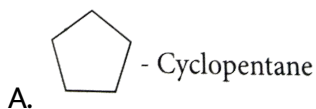
C.



Answer: A

 [View Text Solution](#)

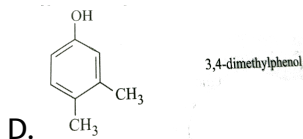
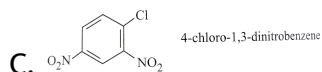
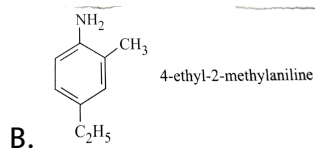
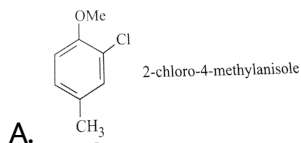
11. Which of the following IUPAC name is not correctly matched?



Answer: C

 [View Text Solution](#)

12. Which of the following names of substituted benzene compounds is not correct?



Answer: C



[View Text Solution](#)

1. What is the minimum number of carbon atoms of an alkane must have to form an isomer?

A. 4

B. 3

C. 2

D. 1

Answer: A



[View Text Solution](#)

2. 1-Butene and cyclobutane show

A. position isomerism

B. ring-chain isomerism

C. functional isomerism

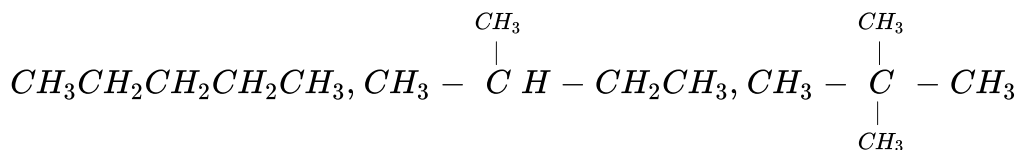
D. metamerism

Answer: B



View Text Solution

3. The type of isomerism shown by the following compounds is



- A. position isomerism
- B. metamerism
- C. ring-chain isomerism
- D. chain isomerism

Answer: D



View Text Solution

4. Which of the followingg is an isomer of ethanol?

A. Methanol

B. Acetone

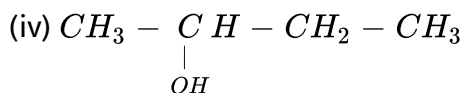
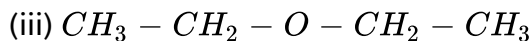
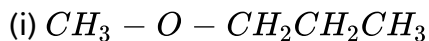
C. Diethylether

D. Dimethylether

Answer: D

 [View Text Solution](#)

5. Given below are the structures of few compounds with molecular formula $C_4H_{10}O$. Select metamers from these structures.



A. (i) and (ii)

B. (ii) and (iii)

C. (i) and (iii)

D. (ii) and (iv)

Answer: C

 [Watch Video Solution](#)

6. Which of the following compounds is isomeric with 2,2,4,4-tetramethylhexane?

A. 3-ethyl-2,2-dimethylpentane

B. 4-isopropylheptane

C. 4-ethyl-3-methyl-4-n-propyloctane

D. 4,4-diethyl-3-methylheptane

Answer: B

 [View Text Solution](#)

1. Heterolysis of a carbon-chlorine bond produces

- A. two free radicals
- B. two carbocations
- C. one cation and one anion
- D. two carbanions.

Answer: C



[View Text Solution](#)

2. Which of the followingg intermediates contains three paris of electrons in its valence shell?

- A. Carbocations
- B. Carbanions

C. Free radicals

D. Both (a) and (b)

Answer: A



[View Text Solution](#)

3. which of the following is an electrophilic reagent?

A. H_2O

B. NH_3

C. OH^-

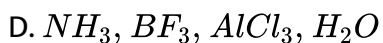
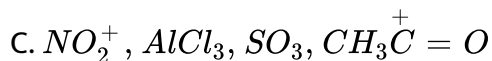
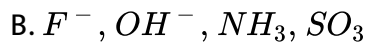
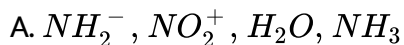
D. Cl^+

Answer: D



[View Text Solution](#)

4. Which of the following sets of groups contains only electrophiles?



Answer: C



[View Text Solution](#)

5. Inductive effect involves

A. displacement of σ -electrons resulting in polarisation

B. displacement of π -electrons resulting in polarisation

C. delocalisation of σ -electrons

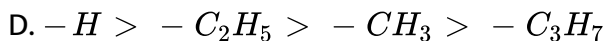
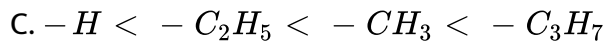
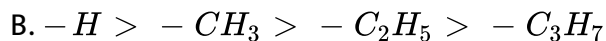
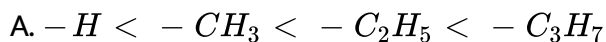
D. delocalisation of π -electrons.

Answer: A



[View Text Solution](#)

6. The increasing order of electron donating inductive effect of alkyl groups is



Answer: A



[View Text Solution](#)

7. Inductive effect of which atom is taken as zero to compare inductive effect of other atoms?

A. Hydrogen

B. Chlorine

C. carbon

D. oxygen

Answer: A



[View Text Solution](#)

8. Maximum -I effect is exerted by the group

A. $-C_6H_5$

B. $-OCH_3$

C. $-Cl$

D. $-NO_2$

Answer: D



[View Text Solution](#)

9. Which one of the following acids would you expect to be the strongest?

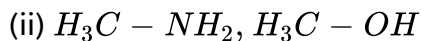
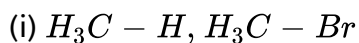


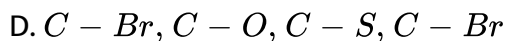
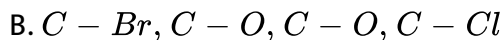
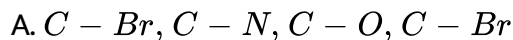
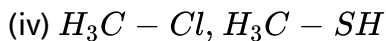
Answer: D



[View Text Solution](#)

10. Few pairs of molecules are given below. Which bond of the molecule of the pairs is more polar?



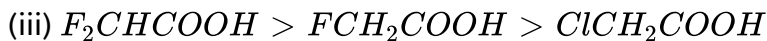
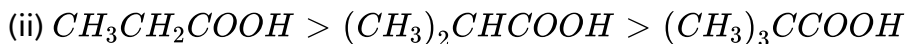


Answer: B



[View Text Solution](#)

11. Which of the following is the correct order of acidity of carboxylic acids?



A. (i) and (ii)

B. (ii) and (iii)

C. (i) and (iii)

D. (i), (ii) and (iii)

Answer: D



[View Text Solution](#)

12. Point out the incorrect statement about resonance?

A. Resonance structures should have equal energy

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

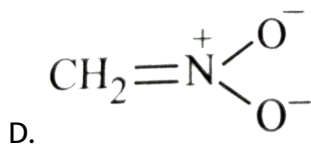
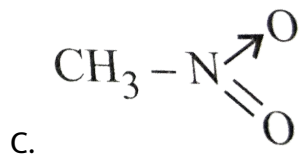
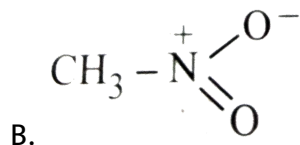
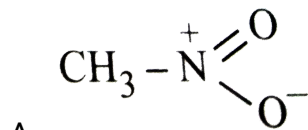
C. In resonance structures, there should not be same number of electron pairs

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

Answer: C

 [View Text Solution](#)

13. Which of the following is not structure of nitromethane molecule?



Answer: D

 [View Text Solution](#)

14. Which of the following ions is the most resonance stabilised?

- A. Ethoxide
- B. Phenoxide
- C. Butoxide
- D. Isopropoxide

Answer: B



[View Text Solution](#)

15. Hyperconjugation is

- A. $\sigma - \pi$ conjugation
- B. noticed due to delocalisation of σ and π bond
- C. no bond resonance
- D. all the above

Answer: D

 [View Text Solution](#)

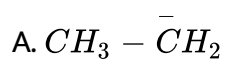
16. Stability of iso-butylene can be best explained by

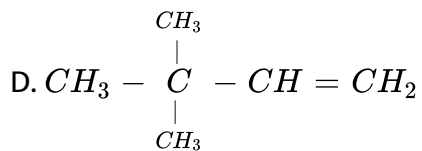
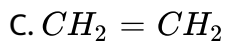
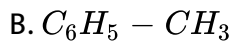
- A. inductive effect
- B. mesomeric effect
- C. hyperconjugative effect
- D. steric effect

Answer: C

 [View Text Solution](#)

17. In which of the following species hyperconjugation is possible?

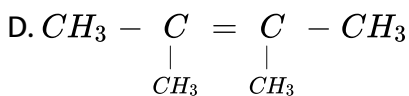
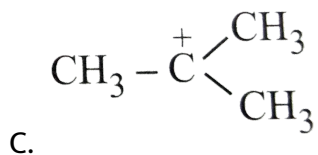
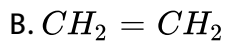
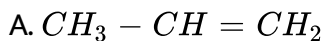




Answer: B

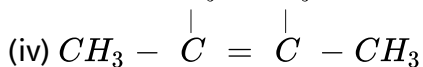
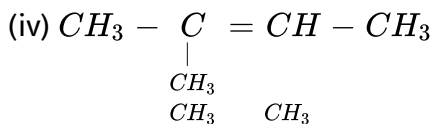
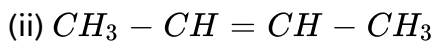
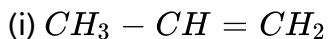
 [View Text Solution](#)

18. Hyperconjugation is not possible in



Answer: B

19. Decreasing order of stability of following alkenes is



A. (i)gt(ii)gt(iii)gt(iv)

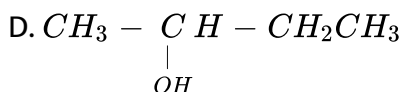
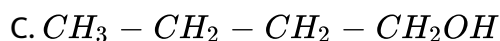
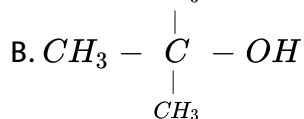
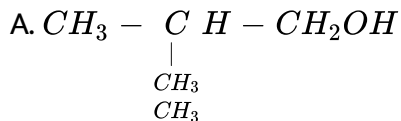
B. (iv)gt(iii)gt(ii)gt(i)

C. (iii)gt(ii)gt(i)gt(iv)

D. (ii)gt(iii)gt(iv)gt(i)

Answer: B

20. Which of the following alcohols on dehydration gives most stable carbocation?



Answer: B



[View Text Solution](#)

21. Stability of alkyl carbocations can be explained by

A. inductive effect only

B. hyperconjugation only

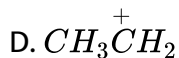
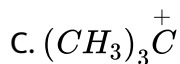
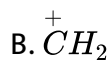
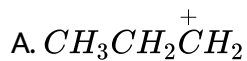
C. both inductive effect and hyperconjugation

D. electromeric effect only

Answer: C

 [View Text Solution](#)

22. The carbocation $CH_3\overset{+}{C}HCH_3$ is less stable than



Answer: C

 [View Text Solution](#)

23. Which of the following statements is not true about the stability of carbanions?

A. Stability of carbanions because with increase in s-character of orbital

B. The electron withdrawing groups like $-\text{NO}_2$, $-\text{CN}$, $>\text{C}=\text{O}$ increases the stability of carbanions.

C. Order of stability of carbanions is $3^\circ > 2^\circ > 1^\circ$.

D. The negatively charged carbon is sp^3 hybridised and pyramidal.

Answer: C

 [View Text Solution](#)

24. Which of the following carbanion expected to be most stable?

A. $p\text{-NO}_2\text{C}_6\text{H}_4\text{CH}_2^-$

B. $o\text{-NO}_2\text{C}_6\text{H}_4\text{CH}_2^-$

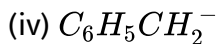
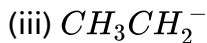
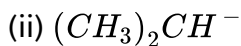
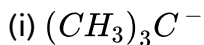


Answer: B



View Text Solution

25. The order of decreasing stability of the following carbanions is



A. (i)gt(ii)gt(iii)gt(iv)

B. (iv)gt(iii)gt(ii)gt(i)

C. (iv)gt(i)gt(ii)gt(iii)

D. (iii)gt(ii)gt(i)gt(iv)

Answer: B

 [View Text Solution](#)

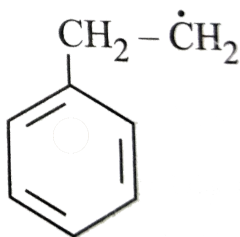
26. Free radicals can undergo

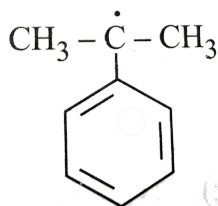
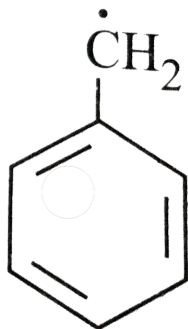
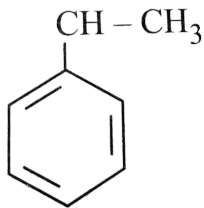
- A. rearrangement to a more stable free radical
- B. decomposition to give another free radical
- C. combination with other free radical
- D. all are correct

Answer: D

 [View Text Solution](#)

27. The most stable free radical among the following is





Answer: D



[View Text Solution](#)

28. Which of the following is a characteristic feature of a free radical?

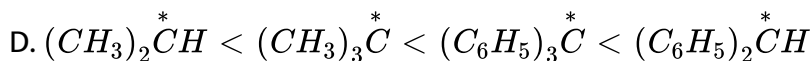
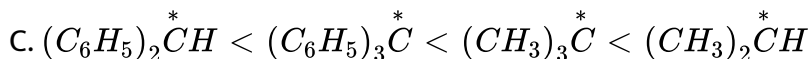
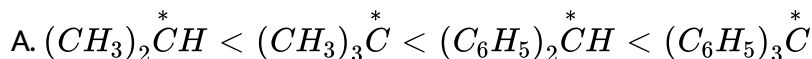
A. It has a positive charge

- B. It has a negative charge
- C. It has all paired electrons.
- D. It has an unpaired electron.

Answer: D

 [View Text Solution](#)

29. The increasing order of stability of the following free radicals is



Answer: A

 [View Text Solution](#)

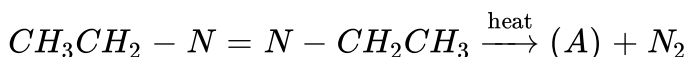
30. Which of the following is a false statement?

- A. Free radicals, carbonium ions or carbanions are reaction intermediates.
- B. Reaction between methane and chlorine in presence of sunlight proceeds via free radical
- C. The electronegative atom in the carbon chain produces +I effect
- D. Homolytic fission of C-C bonds gives free radicals

Answer: C

 [View Text Solution](#)

31. Which type of intermediate (A) is formed during the reaction?



- A. Carbocation
- B. Carbanions

C. Free radical

D. Carbene

Answer: C



[View Text Solution](#)

Methods Of Purification Of Organic Compounds

1. Separation of two substances by crystallisation depends upon their differences in

A. densities

B. solubility

C. melting points

D. boiling points

Answer: B



[View Text Solution](#)

2. Those substances can be separated by steam distillation which are

- A. steam volatile and insoluble in water
- B. steam volatile and soluble in water
- C. steam volatile and sparingly soluble in water
- D. in liquid form in steam and solid form in water.

Answer: A



[View Text Solution](#)

3. Glycerine can be purified by

- A. vacuum distillation
- B. simple distillation
- C. steam distillation

D. fractional distillation

Answer: A



[View Text Solution](#)

4. Distillation under reduced pressure is generally used to purify those liquids which

A. have very low boiling points

B. are volatile

C. have high boiling points and which decompose below their boiling points

D. have a large difference in their boiling points

Answer: C



[View Text Solution](#)

5. Which method can be applied to separate a mixture of camphor and benzoic acid?

- A. Sublimation
- B. Chemical methods
- C. Crystallisation
- D. Extraction with solvent

Answer: B



[View Text Solution](#)

6. The substance which can be used as adsorbent in column chromatography is

- A. Na_2O
- B. Na_2SO_4
- C. Al_2O_3

D. NaCl

Answer: C



[View Text Solution](#)

Qualitative Analysis Of Organic Compounds

1. The presence of carbon in an organic compound can be shown by

- A. heating the compound with sodium
- B. heating the compound with cupric oxide
- C. heating the compound on bunsen flame
- D. heating the compound with magnesium

Answer: B



[View Text Solution](#)

2. In Lassaigne's test for N,S and halogens, the organic compound is

- A. fused with sodium
- B. dissolved with sodamide
- C. extracted with sodamide
- D. fused with calcium

Answer: A



[View Text Solution](#)

3. The blue compound formed in the positive test for nitrogen with Lassaigne solution of an organic compound is

- A. $Na_4[Fe(CN)_5(NOS)]$
- B. $Na_3[Fe(CN)_6]$
- C. $Fe(CN)_3$
- D. $Fe_4[Fe(CN)_6]_3$

Answer: D

 [View Text Solution](#)

4. If on adding $FeCl_3$ solution to acidified Lassaigne solution, a blood red colouration is produced, it indicates the presence of

A. S

B. N

C. N and S

D. S and Cl

Answer: C

 [View Text Solution](#)

5. During sodium extract preparation for Lassaigne's test both N and S present in organic compound change to

A. NaCN and Na_2S

B. NaNH_2 and Na_2SO_4

C. NaSCN

D. NaNO_3 and Na_2S .

Answer: C

 [View Text Solution](#)

6. Lassaigne's test for the detection of nitrogen fails in

A. $\text{NH}_2\text{CONHNH}_2 \cdot \text{HCl}$

B. $\text{NH}_2\text{NH}_2 \cdot \text{HCl}$

C. NH_2CONH_2

D. $\text{C}_6\text{H}_5\text{NHNH}_2 \cdot \text{HCl}$

Answer: B

 [View Text Solution](#)

7. Freshly prepared solution of sodium nitroprusside is added to the sodium extract. Appearance of a deep violet colour indicates the presence of

- A. nitrogen
- B. sulphur
- C. both nitrogen and sulphur
- D. halogen

Answer: B



[View Text Solution](#)

8. Which of the following will not give a white pt. when $AgNO_3$ is added to its solution?

- A. CCl_4

B. $NaCl$

C. $MgCl_2$

D. KCl

Answer: A

 [View Text Solution](#)

Quantitative Analysis

1. 0.92 g of an organic compound was analysed by combustion method. The mass of the U-tube increased by 1.08 g. what is the percentage of hydrogen in the compound?

A. 0.1304

B. 0.5217

C. 0.6521

D. 0.113

Answer: A



[View Text Solution](#)

2. An organic compound gave 0.4655 g of CO_2 on complete combustion. If the mass of the compound taken was 0.2115g, what is the percentage of C in it?

A. 0.133

B. 0.2667

C. 0.6003

D. 0.288

Answer: C



[View Text Solution](#)

3. In Duma's method 0.52g of an organic compound on combustion gave 68.6 mL N_2 at $27^\circ C$ and 756mm pressure. What is the percentage of nitrogen in the compound?

A. 0.1222

B. 0.1493

C. 0.1584

D. 0.1623

Answer: B



[View Text Solution](#)

4. In Kjeldahl's method of estimation of nitrogen, nitrogen is quantitatively converted to ammonium sulphate. It is then treated with standard solution of alkali. The nitrogen which is present is estimated as

A. N_2 gas

B. NO_2 gas

C. NH_3 gas

D. $(NH_4)_2SO_4$ ppt

Answer: C



[View Text Solution](#)

5. In Carium method of estimation of halgoen, 0.15 g of an organic compound gave 0.12 g of AgBr. What is the percentage of bromine in the compound?

A. 0.6808

B. 0.3504

C. 42.1 %

D. 0.5

Answer: B

[View Text Solution](#)

6. 2.18g of an organic compound containing sulphur produces 1.02 g of $BaSO_4$. The percentage of sulphur in the compound is

- A. 0.0726
- B. 0.0898
- C. 0.1
- D. 0.0642

Answer: D

[View Text Solution](#)

7. 1.6 g of an organic compound gave 2.6 g of magnesium pyrophosphate. The percentage of phosphorus in the compound is

- A. 0.4538

B. 0.5438

C. 0.3776

D. 0.1902

Answer: A

 [View Text Solution](#)

8. The masses of carbon, hydrogen and oxygen in an organic compound are in the ratio 6:1:8 respectively. Which of the following pairs of formulae correspond to above information?

A. CH_3O and CH_3CHO

B. CH_2O and C_3H_6O

C. C_3H_6O and $C_2H_6O_2$

D. $C_3H_6O_3$ and $HCHO$

Answer: D

[View Text Solution](#)

9. 0.2 g of an organic compound contains C, H and O. On combustion, it yields 0.15 g CO_2 and 0.12 g H_2O . The percentage of C, H and O respectively is

A. $C = 15\%$, $H = 20\%$, $O = 65\%$

B. $C = 10\%$, $H = 8.2\%$, $O = 81.8\%$

C. $C = 12.2\%$, $H = 8.8\%$, $O = 79\%$

D. $C = 20\%$, $H = 6.66\%$, $O = 73.34\%$

Answer: D

[View Text Solution](#)

10. 0.46g of an organic compound was analysed. The increase in mass of $CaCl_2$ U-tube was 0.54g and potash bulb was 0.88g. The percentage composition of the compound is

A. $C = 52.17\%$, $H = 13.04\%$, $O = 34.79\%$

B. $C = 50\%$, $H = 50\%$

C. $C = 32.19\%$, $H = 18.01\%$, $O = 49.8\%$

D. $C = 72\%$, $H = 28\%$

Answer: A

 [View Text Solution](#)

11. An organic compound contains 69% carbon and 4.8% hydrogen, the remainder being oxygen. What will be the masses of carbon dioxide and water produced when 0.20 g of this substance is subjected to complete combustion.

A. 0.69g and 0.048g

B. 0.506 g and 0.086g

C. 0.345g and 0.024 g

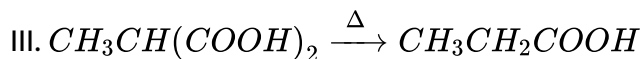
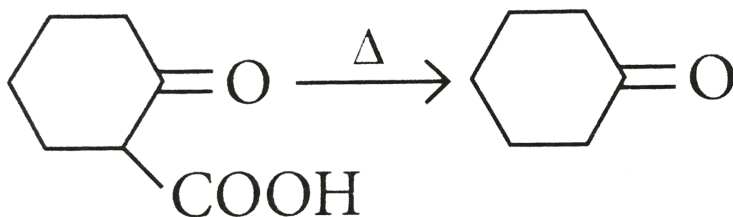
D. 0.91 g and 0.72 g

Answer: B

 View Text Solution

Higher Order Thinking Skills

1. Consider the following reactions.



In which cases, parent compound loses its functional group in preference?

A. I,II

B. I,II,III

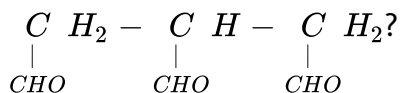
C. II,III

D. I,III

Answer: A

 [View Text Solution](#)

2. Which of the following names is correct for



A. 3-Formylpentane-1,3-dial

B. 1,2,3-Triformylpropane

C. 2-Formylmethylbutane-1,4-dial

D. Propane-1,2,3-tricarbaldehyde.

Answer: D

 [View Text Solution](#)

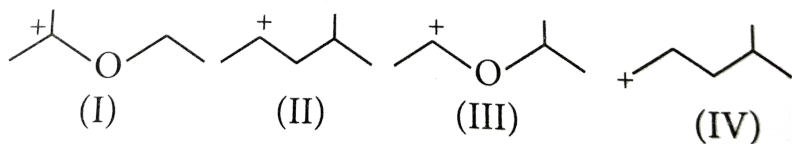
3. The number of structural and configurational isomers of a bromo compound, C_5H_9Br , formed by the addition of HBr to 2-pentyne respectively are

- A. 1 and 2
- B. 2 and 4
- C. 4 and 2
- D. 2 and 1

Answer: B

 [View Text Solution](#)

4. The correct stability order for the following species is



- A. II > IV > I > III

B. IgtIIgtIIIgtIV

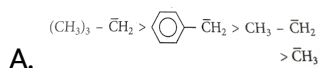
C. IIgtIgtIVgtIII

D. IgtIIIgtIIgtIV

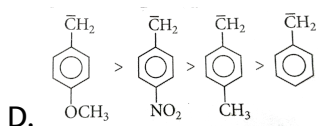
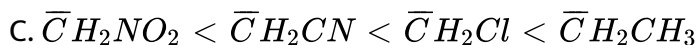
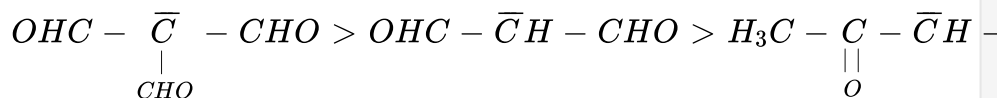
Answer: D

 View Text Solution

5. Which of the following orders correctly depicts the decreasing order of stability of carbanion?



B.



Answer: B



[View Text Solution](#)

6. A sample of 0.50 g of an organic compound was treated according to Kjeldahl's method. The ammonia evolved was absorbed in 50 mL of 0.5 M H_2SO_4 . The residual acid required 60 mL of 0.5 M solution of NaOH for neutralisation. What would be the percentage composition of nitrogen in the compound?

A. 50

B. 60

C. 56

D. 44

Answer: C



[View Text Solution](#)

1. Which of the following is the correct IUPAC name?

- A. 3-Ethyl-4,4-dimethylheptane
- B. 4,4-Dimethyl-3-ethylheptane
- C. 5-Ethyl-4,4-dimethylheptane
- D. 4,4-Bis(methyl)-3-ethylheptane

Answer: A

 [View Text Solution](#)

2. The IUPAC name for $CH_3 - \overset{\overset{O}{\parallel}}{C} - CH_2 - CH_2 - \overset{\overset{O}{\parallel}}{C} - OH$ is _____.

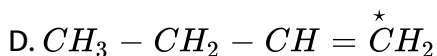
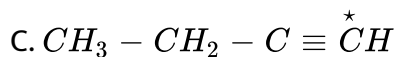
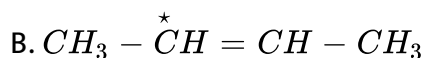
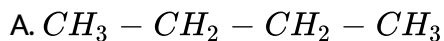
- A. 1-hydroxypentane-1,4-dione
- B. 1,4-dioxopentanol
- C. 1,carboxybutan-3-one

D. 4-oxopentanoic acid

Answer: D

 [View Text Solution](#)

3. Electronegativity of carbon atoms depends upon their state of hybridisation. In which of the following compounds, the carbon marked with asterisk is most electronegative?



Answer: C

 [View Text Solution](#)

4. In which of the following functional group isomerism is not possible?

- A. Alcohols
- B. Aldehydes
- C. Alkyl halides
- D. Cyanides

Answer: C



[View Text Solution](#)

5. The fragrance of flowers is due to the presence of some steam volatile organic compounds called essential oils. These are generally insoluble in water at room temperature but are miscible with water vapour in vapour phase. A suitable method for the extraction of these oils from the flowers is

- A. distillation
- B. crystallisation

C. distillation under reduced pressure

D. steam distillation

Answer: D



[View Text Solution](#)

6. During hearing of a court case, the judge suspected that some changes in the documents had been carried out. He asked the forensic department to check the ink used at two different places. According to you which technique can give the best results?

A. Column chromatography

B. solvent extraction

C. Distillation

D. Thin layer chromatography

Answer: D



[View Text Solution](#)

7. The principle involved in paper chromatography is

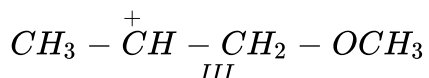
- A. adsorption
- B. partition
- C. solubility
- D. volatility

Answer: B



[View Text Solution](#)

8. What is the correct order of decreasing stability of the following cations?



- A. IIgtIgtIII

B. IIgtIIIgtI

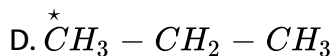
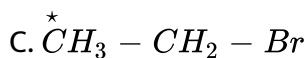
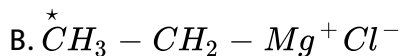
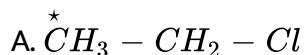
C. IIIgtIgtII

D. IgtIIgtIII

Answer: A

 [View Text Solution](#)

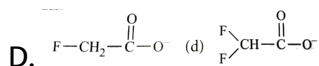
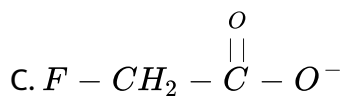
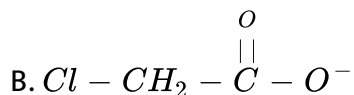
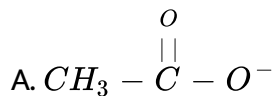
9. In which of the following compounds the carbon marked with asterisk is expected to have greatest positive charge?



Answer: A

 [View Text Solution](#)

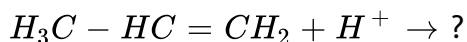
10. Ionic species are stabilised by the dispersal of charge. Which of the following carboxylate ion is the most stable?



Answer: D

 [View Text Solution](#)

11. Electrophilic addition reactions proceed in two steps. The first step involves the addition of an electrophile. Name the type of intermediate formed in the first step of the following addition reaction.



A. 2° carbanion

B. 1° carbocation

C. 2° carbocation

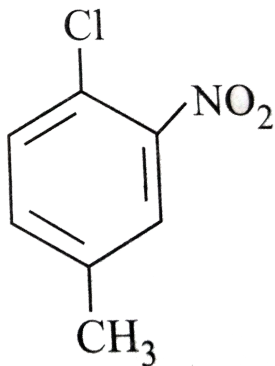
D. 1° carbanion

Answer: C

 [View Text Solution](#)

Exemplar Problems

1. The IUPAC name for



The IUPAC name for is

- A. 1-chloro-2-nitro-4-methylbenzene
- B. 1-chloro-4-methyl-2-nitrobenzene
- C. 2-chloro-1-nitro-5-methylbenzene
- D. m-nitro-p-chlorotoluene

Answer: B

 [View Text Solution](#)

Assertion And Reason

1. Assertion: Hybridisation influences the bond length and bond enthalpy in organic compound.

Reason: More the s character of hybrid orbital, shorter and stronger will be the bond.

A. If both assertion and reason are true and reason is the correct explanation of assertion

- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

Answer: A

 [View Text Solution](#)

2. Assertion: sp^3 hybrid carbon atom is more electronegative than sp hybrid carbon atom.

Reason: sp^3 hybrid orbitals are more closer to the nucleus.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

 [View Text Solution](#)

3. Assertion: Rotation about C=C is restricted.

Reason: Electron charge cloud of the π bond is located above and below the plane of bonding atoms.

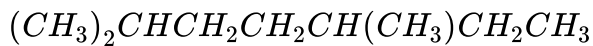
- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

Answer: B



[View Text Solution](#)

4. Assertion: The name of the hydrocarbon



is 2,5-dimethylheptane and not 3,6-dimethylheptane.

Reason: Numbering should be done in such a way that sum of the locants on the parent chain is lowest possible number.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

Answer: A



[View Text Solution](#)

5. Assertion: Alkanes containing more than three carbon atoms exhibit chain isomerism.

Reason: In an alkane, all carbon atoms are sp^3 hybridised.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

Answer: B



[View Text Solution](#)

6. Assertion: Nitroalkanes and alkyl nitrites exhibit functional isomerism.

Reason: Compounds having same molecular formula but different

functional groups are called functional isomers.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

Answer: A



[View Text Solution](#)

7. Assertion: Heterolytic fission occurs readily in polar covalent bonds.

Reason: Heterolytic fission involves breaking of bond in such a way that the shared pair of electrons go with one atom.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

Answer: B



[View Text Solution](#)

8. Assertion: When inductive and electromeric effects operate in opposite directions, the inductive effect predominates.

Reason: Inductive effect is the complete transfer of shared pair of π electrons to one of the atoms.

- A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

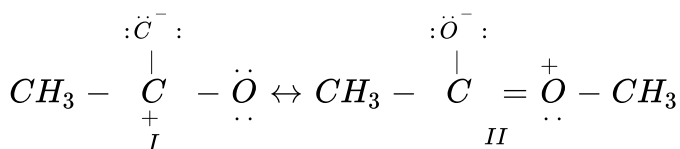
C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

 [View Text Solution](#)

9. Assertion: The following structures (I) and (II) cannot be the major contributors to the real structure of CH_3COOCH_3



Reason: Both the structures involve charge separation and structure (I) contains a carbon atom with an incomplete octet.

A. If both assertion and reason are true and reason is the correct explanation of assertion

- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

Answer: A

 [View Text Solution](#)

10. Assertion: The order of stability of carbocations is $3^\circ > 2^\circ > 1^\circ$

Reason: Carbon atom in carbocation is in sp^3 state of hybridisation.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

 [View Text Solution](#)

11. Assertion: Glycerol is purified by distillation under reduced pressure.

Reason: Method of distillation under reduced pressure is used to purify liquids having very high boiling points and those, which decompose at or below their boiling points.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

Answer: A



[View Text Solution](#)

12. Assertion: Paper chromatography is a type of partition chromatography.

Reason: Moving phase is liquid and stationary phase is solid.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

Answer: C



[View Text Solution](#)

