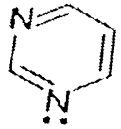
CHEMISTRY

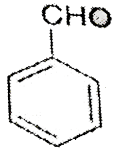
BOOKS - BITSAT GUIDE

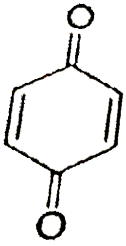
GENERAL ORGANIC CHEMISTRY

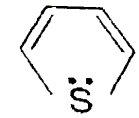
Practise Exercise

1. Which of the following are aromatic compounds ?

I. 

II. 

III. 

IV. 

A. I and III

B. I, II and III

C. I, II and IV

D. III, and IV

Answer: C

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2. 3° carbon is present in the compound

A. cyclopropane

B. toluene

C. benzene

D. cyclohexane

Answer: B

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3. choose the compound in which all the carbon atoms have 66.7% p-charater.

A. $CH_3 - C \equiv CH$

B. $CH_2 = C = CH - CH_3$

C. $CH_2 = CH - CH = CH_2$

D. $(CH_3)_2C = CH_2$

Answer: C

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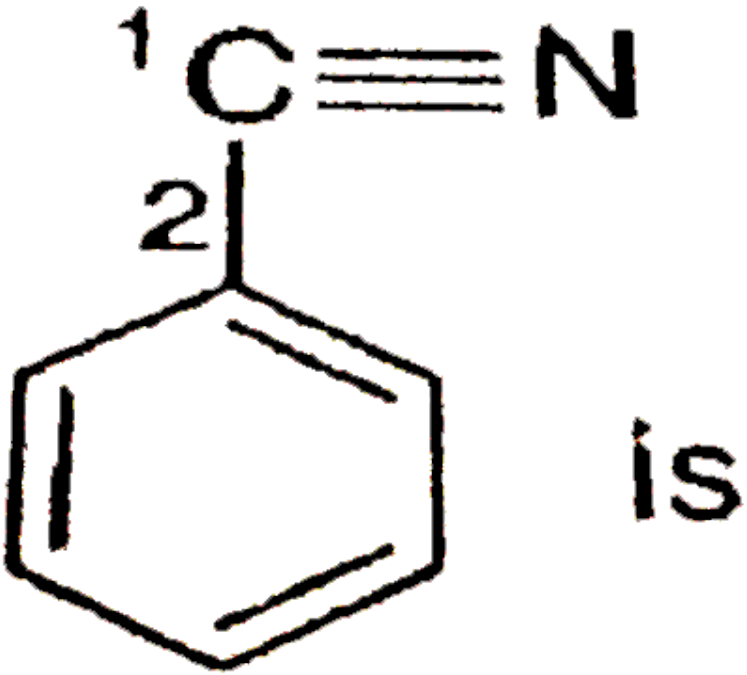
4. The bond between carbon atom (1) and carbon atom (2) in compound



is

A. sp^3 and sp^2 hybridised

B. sp^2 and sp^3 hybridised

C. sp and sp^2 hybridised

D. sp and sp hybridised

Answer: C

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

A. $CH_3 - CH_2 - CH_2 - CH_3$

B. $CH_3 - CH = CH - CH_3$

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

D. $CH_3 - CH_2 - CH = CH_2$

Answer: C

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6. The hybridisation of C_2 carbon atom present in

$\overset{3}{C}H_2 = \overset{2}{C} = \overset{1}{C}H_2$

A. sp

B. sp^3

C. sp^2

D. sp^4

Answer: A

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7. The kind of valency that exists in CaH_2 and C_2H_2 is

A. electrovalency in CaH_2 and convalency in C_2H_2

B. electrovalency in both

C. covalency in CaH_2 and electrovalency in C_2H_2

D. covalency in both

Answer: A

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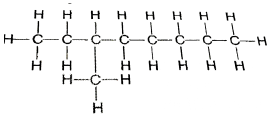
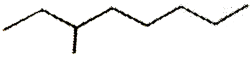
8. 3 - methyloctance can be represented in which of the following forms ?

A. $CH_3CH_2CH(CH_2)_4CH_3$
$|$
CH_3

B. 

C. 

D. All of the above

Answer: D

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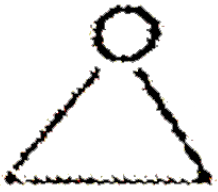
9. Which of the following is a heterocyclic alicyclic compound ?

A. 

B. 

C. 

D. 

Answer: C

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10. The IUPAC name of the isomer of $CH_3 - CH = NOH$ would be

A. methanamide

B. 1-amino 2- propanone

C. ethanamide

D. none of the above

Answer: C

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11. Pyruvic aldehyde is nothing but

A. methyl glyoxal

B. ethyl glyoxal

C. glyoxal

D. None of the above

Answer: A

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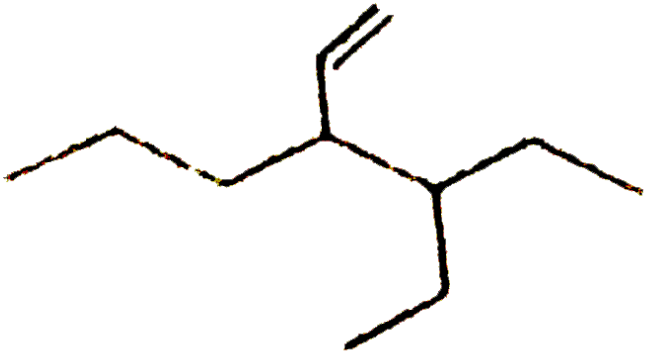
12. The IUPAC name of the following compound is



A. 4-ethyl -3- propyl hex-1-ene

B. 3-(1-ethylpropy)hex-1-ene

C. 3-ethyl-4-propyl hex-5-ene

D. 3-ethyl-4ethylheptane

Answer: A

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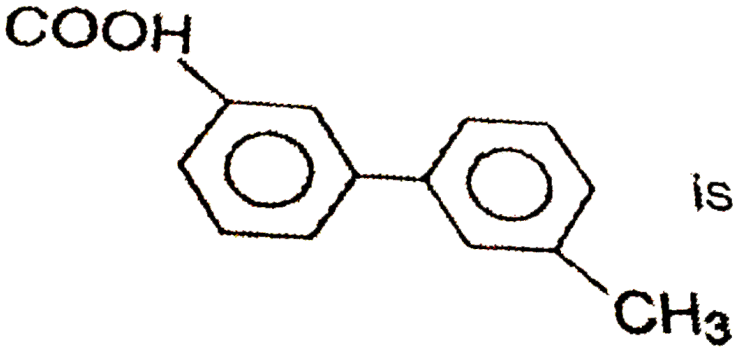
13. The correct IUPAC name of



is

A. 6-methyl-3- phenyl benzene-1-oic acid

B. 6-methyl dibenzene-1-oic acid

C. 3-(3-methyl phenyl) benzene -1- oic acid

D. 3-(5-methyl phenyl) benzene -1- carboxylic acid

Answer: C

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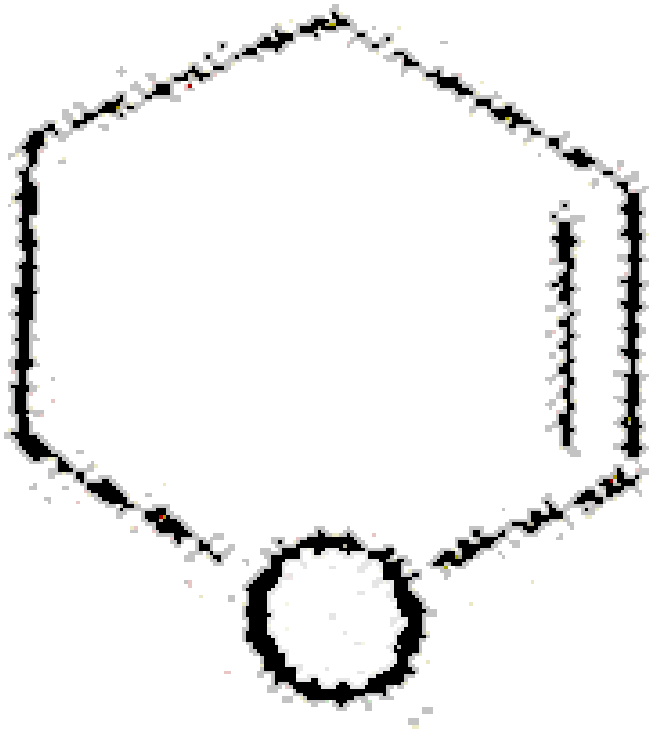
14. The IUPAC name of



is

A. 1-alkoxycyclopent-1-ene

B. oxocyclohex-2-ene

C. 2-methoxycyclopent-1-ene

D. 5-oxocyclopent-1-ene

Answer: B

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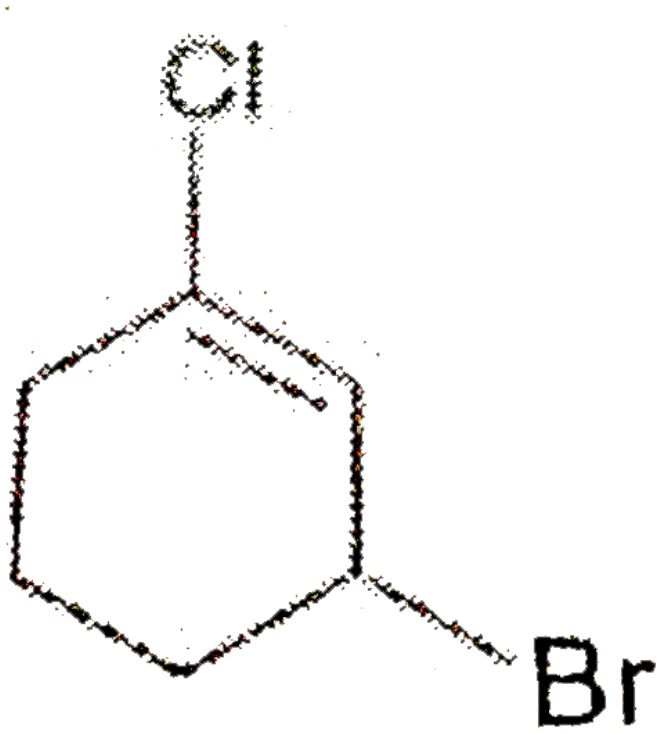
15. The IUPAC name of the compound shown below is



A. 2-bromo-6-chlorocyclohex-1-ene

B. 6-bromo-2- chlorocyclohexene

C. 3-bromo-1-chlorocyclohexene

D. 1-bromo-3-chlorocyclohexene

Answer: C

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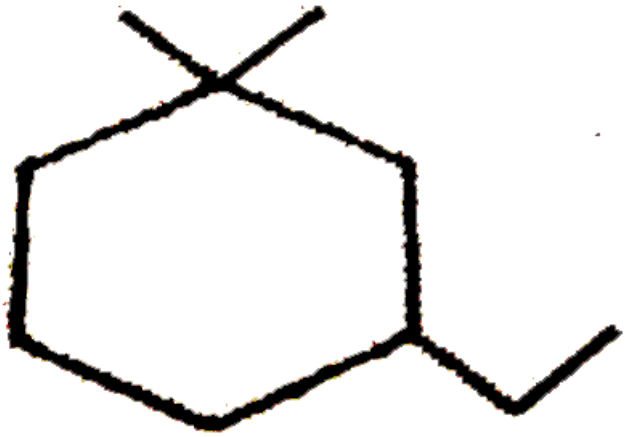
16. What is the correct IUPAC name of the following compound ?



A. 3-ethyl-1 1-dimethylyclohexane

B. 1-ethyl-3, 3-dimethylcyclohexane

C. 1,1-diemthyl-3 ethylcyclohexane

D. None of the above

Answer: A

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17. The correct IUPAC name of the given structures will be

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

II. CH-=C-CH=CH-CH=CH_(2)`

Choose the correct option.

A. I: Hexane-dione II: Hexa-1 3-diene-5-yne

B.

I	II
5-oxohexanoic acid	Hexa-1 3-diene-5-yne

C.

I	II
5-oxohexanoic acid	Hexadiene-5-yne

D.

I	II
3-oxohexanoix acid	Hexadiene-5-yne

Answer: B

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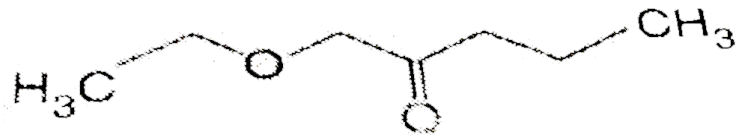
18. The IUPAC name of



A. ethypentanoate

B. 1-ethoxy-2-pentanone

C. 5-ethoxy-4-pentanone

D. ethyl -2- oxopentyl ether

Answer: B

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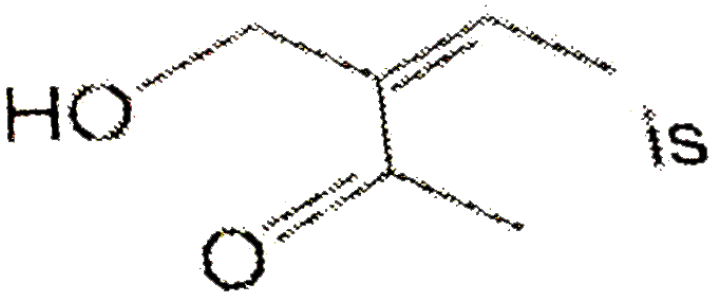
19. The IUPAC name of



A. 2-acetyl-1-buten-1-ol

B. 3-(hydroxymethy)3-penten-2-one

C. 3-ethylidence-4-hydroxy-2-butanone

D. 3-acetyl-2-buten-4-ol

Answer: B

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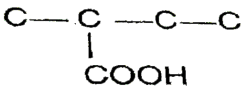
20. Which skeleton exhibit optical isomerism?

A. $C - C - C - C - COOH$

B. 

C. $C - \underset{\underset{C}{|}}{-} C - COOH$

D. $\begin{array}{c} C \\ | \\ C-C-COOH \\ | \\ C \end{array}$

Answer: B

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21. In which isomer of $C_7H_7NO_2$ there are two functional groups ?

A. Phenyl nitromethane

B. m- nitrotoluene

C. Anthranillic acid

D. Benzylnitrite

Answer: C

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22. The pair of functional group isomers is

A. $\underset{\underset{NH_2}{|}}{C}\ H_2CHO$

B. $CH_3COOHHCOOCH_3$

C. $CH_3 - CH_2OHCH_3OCH_3$

D. All of the above

Answer: C

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23. The compound $C_nH_{2n}[n = 4]$ does not exhibit the which of the following isomerism?

A. Chain

B. Geometrical

C. Position

D. Optical

Answer: D

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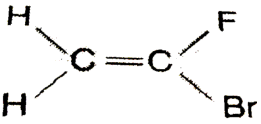
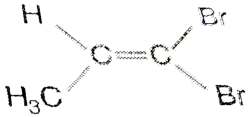
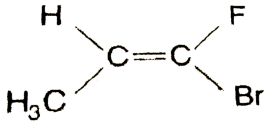
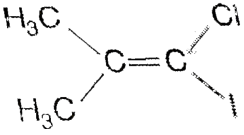
24. Geometrical isomerism is shown by

A. 

B. 

C. 

D. 

Answer: C

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25. The compound 2,3- dichlorobutane exhibits

A. geometrical isomerism

B. diastereoisomerism

C. structural isomerism

D. optical isomerism

Answer: D

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26. The number of constitutional isomers of the formula C_5H_{11} Br is

A. 4

B. 8

C. 6

D. 10

Answer: B

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27. How many optical isomers are possible on monochlorination of 2-methyl butane?

A. 2

B. 4

C. 6

D. 10

Answer: B

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28. The structural formula of 2-oxo-3-methyl-(N-bromo) butanamide is

A. $CH_3 - CH_2 - CO - CO - NH - Br$

B. $CH_3 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CO - CO - NH - Br$

C. $CH_3CH - CO - CO - \underset{\displaystyle CH_3}{\underset{|}{N}}OBr$

D. $(CH_3)_3C - CO - CO - NHBr$

Answer: B

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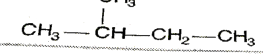
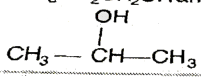
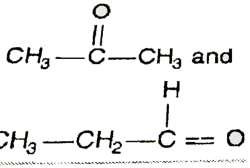
29. Match the items of column I with the column II and choose the correct option from the codes given below.

Column I (Structure of compounds)	Column II (Type of isomerism)
A. $CH_3CH_2CH_2CH_2CH_3$ and 	1. Chain isomerism
B. $CH_3CH_2CH_2OH$ and 	2. Position isomerism
C. 	3. Metamerism
D. $CH_3OC_3H_7$ and $C_2H_5OC_2H_5$	4. Functional group isomerism

A. A B C D
1 2 3 4

B. A B C D
2 3 1 4

C. A B C D
4 1 2 3

D. A B C D
1 2 4 3

Answer: D

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30. Example of geometrical isomerism is

A. 2-butanol

B. 2-butene

C. butanol

D. 2-butyne

Answer: B

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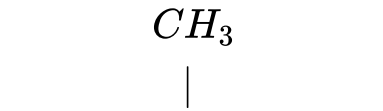
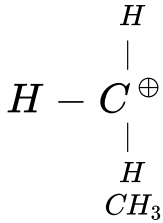
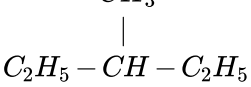
31. Among the following four structures I to IV

I 

II 

III 

IV  it is true that

A. all four are chiral compounds

B. I and II are chiral compounds

C. III is a chiral compounds

D. II and IV are chiral compounds

Answer: B

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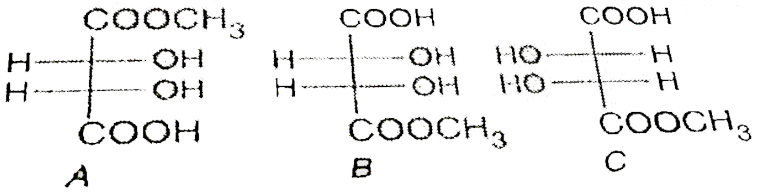
32. The correct statement about the compounds A, B and C is



A. A and B are identical

B. A and B are siastereomers

C. A and C are enatiomers

D. A and B are enantiomers

Answer: D

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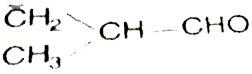
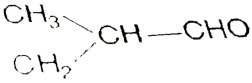
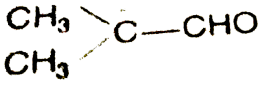
33. If $\begin{matrix} CH_3-CH-CHO \\ | \\ CH_3 \end{matrix}$ Carbanion would be

A. 

B. 

C. 

D. All of these

Answer: C

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34. In which case, Ionic mechanism is not followed ?

A. Reaction of acetylene and bromine water

B. Reaction of HBr and propene in the presence of peroxide

C. Reaction of ethyl bromine and alcoholic KOH

D. Dehydration of ethyl alcohol catalysed by acid

Answer: B

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35. Which compound is more sensitive to undergo S_N 1 reaction?

A. 2-bromobutane

B. 2-bromo-2-methyl propane

C. 2-methyl-1-bromo propane

D. Bromoethane

Answer: B

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36. The enolic form of acetone contains:

A. $9\sigma - bonds 2\pi$-bonds and 1 lone pair of electron

B. $10\sigma - bonds 1\pi$-bond and 1 lone pair of eletrons

C. $9\sigma - bonds 1\pi$-bond and 2 lone pairs of electrons

D. $8\sigma - bonds 2\pi$ bonds and 2 lone pairs of electrons

Answer: C

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37. Consider the following carbocations

I $(CH_3)_3\overset{+}{C}CH_2$

II $(CH_3)_3C^+$

III $CH_3CH_2\overset{+}{C}H_2$

IV $CH_3-\overset{+}{C}H-CH_3$

The correct order for the stability of the above carbocations is

A. $I > III > IV > II$

B. $III > IV > I > II$

C. $IV > III > II > I$

D. $II > IV > III > I$

Answer: A

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38. The solvent in which enol form of ethylacetoacetate is maximum is

A. CH_3COOH

B. aqueous HCl

C. n-hexane

D. H_2O

Answer: C

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39. Which among the following compounds will give maximum enol content in solution?

A. $C_6H_5-\overset{\overset{O}{||}}{C}-CH_2-\overset{\overset{O}{||}}{C}-CH_3$

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

C. $CH_3-\overset{\overset{O}{||}}{C}-CH_2-CH_2CH_3$

D. $CH_3-\overset{\overset{O}{||}}{C}-CH_2-COOC_2H_5$

Answer: D

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

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

II $CH_3 - \overset{\oplus}{C}H - OCH_3$

III $CH_3 - CH - \overset{\oplus}{C}H_2 - OCH_3$

A. $II > I > III$

B. $II > III > I$

C. $III > I > II$

D. $I > II > III$

Answer: A

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41. The increasing order of stability of the following free radicals is:

A.

$$(CH_3)_2\dot{C}H < (CH_3)_3\dot{C} < (C_6H_5)_3\dot{C} < (C_6H_5)_2\dot{C}H$$

B.

$$(C_6H_5)_2\dot{C}H < (C_6H_5)_3\dot{C} < (CH_3)_3\dot{C} < (CH_3)_2\dot{C}H$$

C.

$$(C_6H_5)_3\dot{C} < (C_6H_5)_2\dot{C}H < (CH_3)_3\dot{C} < (CH_3)_2\dot{C}H$$

D.

$$(CH_3)_2\dot{C}H < (CH_3)_3\dot{C}(C_6H_5)_2\dot{C}H < (C_6H_5)_3\dot{C}$$

Answer: D

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42. Which one of the following species is not an electropile?

A. $\overset{+}{NO_2}$

B. H_3O^+

C. CI^+

D. BH_3

Answer: B

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

A. $-CONH_2 > -CHO > -SO_3H > -COOH$

B. $-COOH > -SO_3H > -CONH_2 > -CHO$

C. $-SO_3H > -COOH > -CONH_2 > -CHO$

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

Answer: B

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44. Correct order of nucleophilicity is

A. $CH_3^- < NH_2^- < OH^- < F^-$

B. $F^- < OH^- < CH_3^- < NH_2^-$

C. $OH^- < NH_2^- < F^- < CH_3^-$

D. $F^- < OH^- < NH_2^- < CH_3^-$

Answer: D

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45. Consider the following transformations

I $CH_3^- \rightarrow$

$CH_3^- X \rightarrow$

III $CH_3^- X \rightarrow$

Carbon species formed in I, II and III respectively are

A. carbocation, carbanion and free radical

B. free radical, carbocation, and carbanion

C. free radical, carbanion and carbocation

D. carbanion, carbocation and free radical

Answer: B

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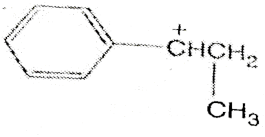
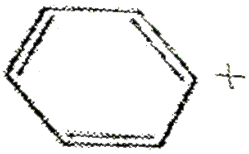
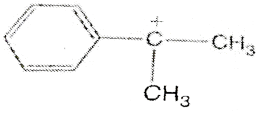
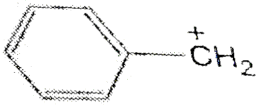
46. Which is the most stable carbocation?

A. 

B. 

C. 

D. 

Answer: C

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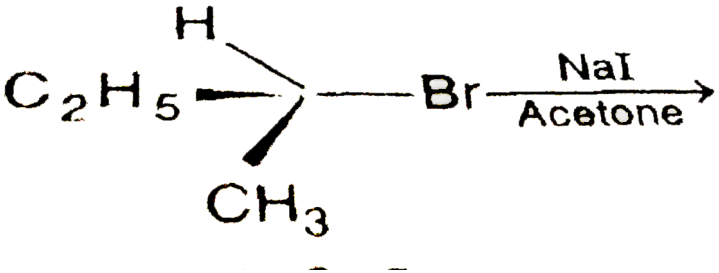
47. Select the correct statement about the following reaction



A. it can proceed via S_N 2 mechanism

B. configuration about chiral carbon is retained

C. a racemic mixture is formed

D. reaction is stereospecific

Answer: A

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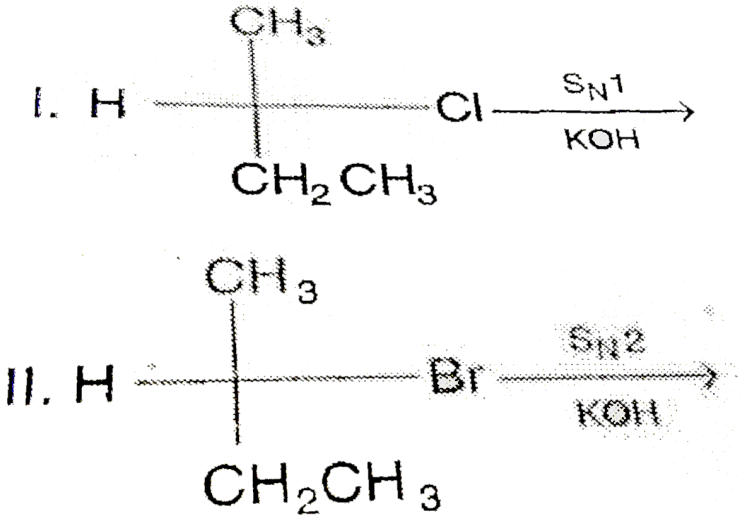
48. Consider the following reactions:



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49. Arrange the following in increasing order of acidic strength

I. H_2SO_4

II. $(CH_3)_3CH(SH)$

III. $CH_3CH_2^+OH_2$

IV. $CH_3CH_2CH_3$

A. $IV < II < I < III$

B. $IV < II < III < I$

C. $IV < I < II < III$

D. $IV < III < II < I$

Answer: A

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50. Choose the correct order of stability of carbocation using concept of hyperconjugation

I $CH_3 - \overset{\overset{CH_3}{|}}{\underset{|}{\overset{\oplus}{C}}} - CH_3$

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

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

IV $\overset{\oplus}{C}H_3$

A. $I < II < III < IV$

B. $IV < III < II < I$

C. $III < IV < II < I$

D. All of the above

Answer: B

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51. Chloroacetic acid is a stronger acid than acetic acid this can be explained using

A. $-M-effect$

B. $-l-effect$

C. $+M-effect$

D. $+l-effect$

Answer: B

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52. CH_3CH_2Cl undergoes homolytic fission to produce

A. $CH_3\dot{C}H_2$ and $\dot{C}I$

B. $CH_3\overset{\oplus}{C}H_2$ and CI^-

C. $CH_3\overset{\oplus}{C}H_2$ and $\dot{C}I$

D. $CH_3\dot{C}H_2$ and CI^-

Answer: A

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53. Which alkenol is stable ?

A. $CH_2 = CH - CH_2 - OH$

B. $CH_2 = CHOH$

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

D. All of these

Answer: B::C

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54. Which of the following is not a free radical ?

A. $CI^{\cdot}$

B. $(C_6H_5)_2\dot{C}H$

C. $:CCI_2$

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

Answer: C

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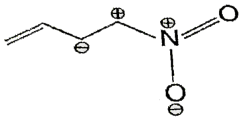
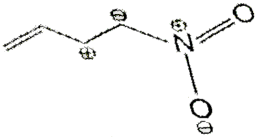
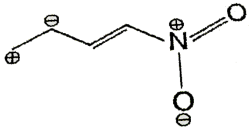
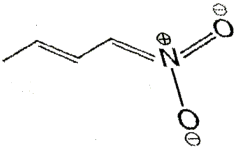
55. Among the following, the least stable resonance structure is :

A. 

B. 

C. 

D. 

Answer: A

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56. Carbocation stability

$\overset{+}{C}H_3 < CH_3\overset{+}{C}H_2 < (CH_3)_2\overset{+}{C}H < (CH_3)_3\overset{+}{C}:$

Alkyl radical stability

A. $\dot{C}H(CH_3)_2 < \dot{C}H_3 < \dot{C}H_2CH_3 < \dot{C}(CH_3)_3$

B. $\dot{C}(CH_3)_3 < \dot{C}H(CH_3)_2 < \dot{C}H_3 < \dot{C}H_2CH_3$

C. $\dot{C}(CH_3)_3 < \dot{C}H(CH_3)_2 < \dot{C}H_2CH_3 < \dot{C}H_3$

D. $\dot{C}H_3 < \dot{C}H_2CH_3 < \dot{C}H(CH_3)_2 < \dot{C}(CH_3)_3$

Answer: D

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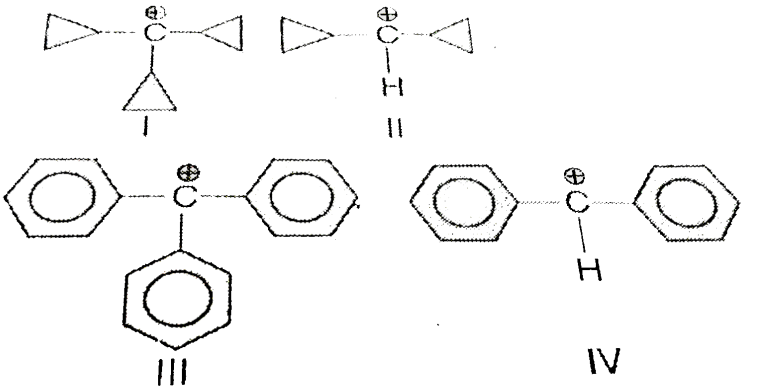
Bitsat

1. Which of the following is correct order of stability of carbocation?



A. $IV > III > II > I$

B. $I > II > III > IV$

C. $III > II > I > IV$

D. $I > III > II > IV$

Answer: d

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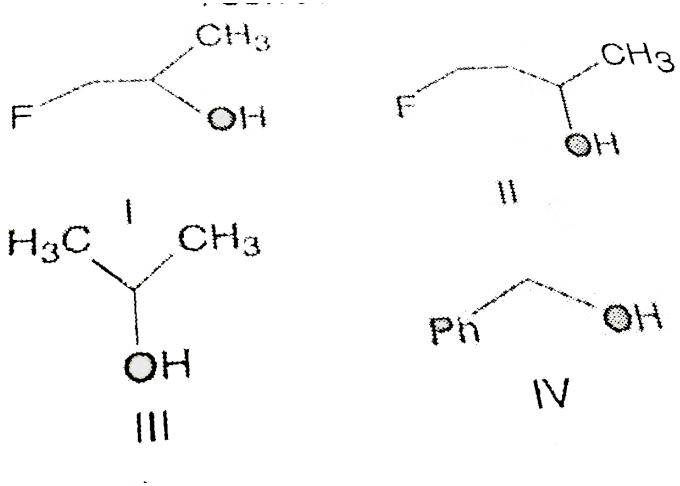
2. Arrange these in correct order of decreasing reactivity



A. $I > II > III > IV$

B. $I > III > II > IV$

C. $IV > III > II > I$

D. $IV > III > I > II$

Answer: c

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3. In which of the following species only one type of hybridisation is present ?

A. $CH_3 - CH_2 - CH = CH_2$

B. $CH_3 - CH = CH - CH_2$

C. $CH_2 = CH - CH - CH_2$

D. $CH_3 - CH = CH - CH_2^-$

Answer: c

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4. Which among the following is likely to show geometrical isomerism?

A. $CH_3CH = NOH$

B. $CH_3CH = CH_2$

C. $CH_2 = CH - CH = CCI_2$

D. $CH_3C(CI) = C(CH_3)_2$

Answer: a

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5. The bond dissociation enthalpies of

$\equiv \underset{sp}{C}H \equiv \underset{sp^2}{C}H - \underset{sp_3}{C}H$

follows the order

A. $sp > sp^2 > sp^3$

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

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

D. $sp > sp^3 > sp^2$

Answer: a

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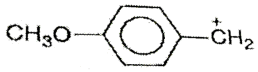
6. Most stable carbonium ion is :

A. 

B. 

C. 

D. 

Answer: b

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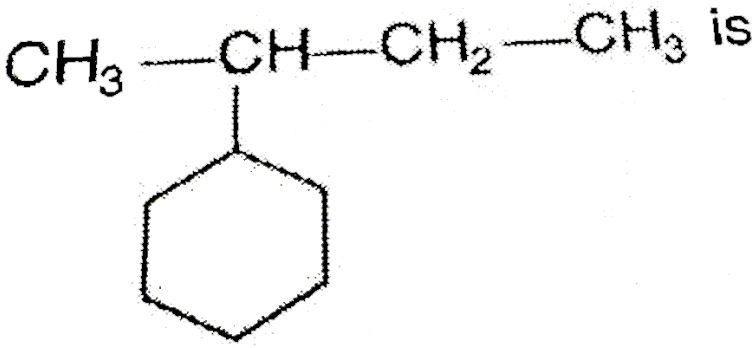
7. Find the correct IUPAC name for the following structure

:



A. 2- phenylbutane

B. 3- phenylbutane

C. 3-cyclohexylbutane

D. 2- cyclohexylbutane

Answer: d

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8. The IUPAC name of

is

A. ethoxypropane

B. 1,1-dimethy ether

C. 2- ethoxysopropane

D. 2- ethoxypropane

Answer: d

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9. The IUPAC name of the compound

$$\underset{|}{\overset{OH}{C}}H_2 - \underset{|}{\overset{NH_2}{C}}H - COOH$$

A. 2-amino -3- hydroxy propanoic acid

B. 1- hydorxy -2- amino propane -3- oic acid

C. 1- amino-2- hydroxy propanioc acid

D. 3-hydroxy-2- amino propanoic acid

Answer: a

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10. The compound which give the most stable carbonium ion on dehydration is

A. $CH_3CH(CH_3)CH_2OH$

B. $(CH_3)_3COH$

C. $CH_2 = CHCH_2CH_2OH$

D. $CH_3CHOHCH_2 - CH_3$

Answer: b

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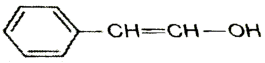
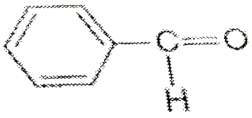
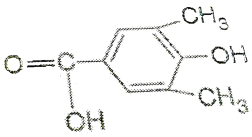
11. Tautomerism is exhibited by

A. 

B. 

C. 

D. 

Answer: a

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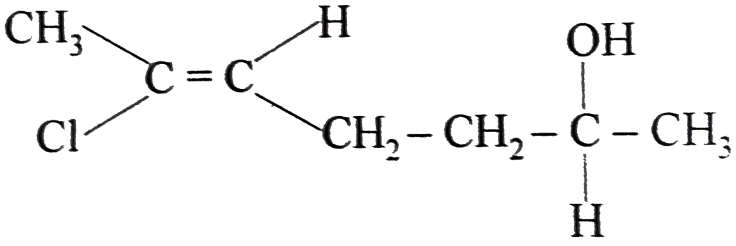
12. The compounds whose stereochemical formula is written below exhibits x geometrical isomers and y optical isomers.



The values of x and y are

A. 4 and 4

B. 2 and 2

C. 2 and 4

D. 4 and 5

Answer: b

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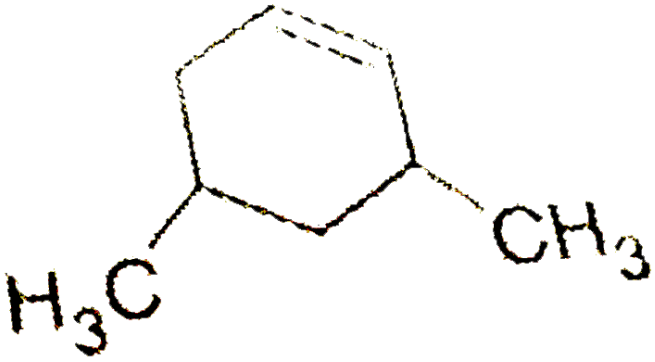
13. The IUPAC name of the following compound is



A. 3,5- dimethylcylohexene

B. 3,5-dimethyl-1- cyclohexena

C. 1,5-dimethyl-5-cyclohexene

D. 1,3-dimethyl-5- cyclohexene

Answer: a

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