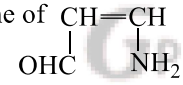
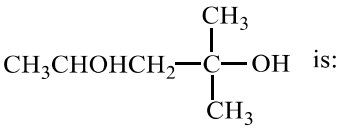
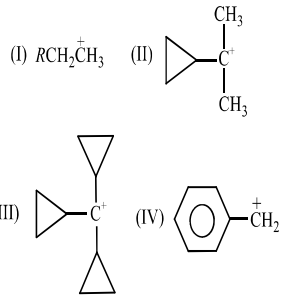
GPLUS EDUCATION

Date :
Time : **CHEMISTRY**
Marks :

ORGANIC CHEMISTRY - SOME BASIC PRINCIPLES AND TECHNIQUES

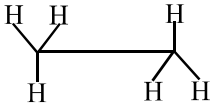
Single Correct Answer Type

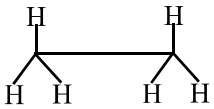
1. 3-phenylpropenoic acid is IUPAC name of :
   a) Mendaleic acid b) Pyruvic acid c) Succinic acid d) Cinnamic acid
2. How many isomers are possible for the compound having molecular formula $C_3H_5Br_3$?
   a) 5 b) 4 c) 6 d) 8
3. The strain in bonds of cyclopropane is :
   a) 0°44′ b) 24°44′ c) 9°44′ d) 5°16′
4. Chlorine in vinyl chloride is less reactive because :
   a) sp^2-hybridized carbon has more acidic character than sp^3-hybridized carbon
   b) C—Cl bond develops partial double bond character
   c) Of resonance
   d) All of the above are correct
5. The alkene that exhibits geometrical isomerism is
   a) Propene b) 2-methyl propene c) 2-butene d) 2-methyl-2-butene
6. Pick out the alkane which differs from the other members of the group
   a) 2,2-dimethyl propane b) Pentane c) 2-methyl butane d) 2, 2-dimethyl butane
7. The IUPAC name of  is :
   a) 1-amino prop-2-enal
   b) 3-amino prop-2-enal
   c) 1-amino-2-formylethene
   d) 3-amino-1-oxoprop-2-ene
8. Detection of sulphur in sodium extract is done by
   a) Lead acetate b) Sodium nitroprusside
   c) Both (a) and (b) d) None of these
9. The IUPAC name for
    is:
   a) 1,1-dimethyl-1,2-butanediol
   b) 2-methyl-2,4-pentanediol
   c) 4-methyl-2,4-pentanediol
   d) 1,3,3-dimethyl-1,3-propanediol
10. In the following carbocations, the stability order is :

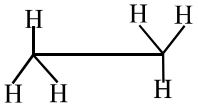


a) III > II > IV > I b) IV > I > II > III c) IV > III > II > I d) III > IV > II > I

11. The shape of the π electron cloud in acetylene is
a) Linear b) Planar c) Cylinder d) Doughtnut
12. Acidified sodium fusion extract on addition of ferric chloride solution gives blood red colouration which confirm the presence of
a) S and Cl b) N and S c) N d) S
13. Conversion of chlorobenzene to phenol involves
a) Electrophilic substitution b) Nucleophilic substitution
c) Free radical substitution d) Electrophilic addition
14. In sulphur detection of an organic compound, sodium nitroprusside solution is added to sodium extract. Formation of violet colour is due to
a) $Na_3Fe(CN)_6$ b) $Na_3[Fe(CN)_5NOS]$ c) $Fe(CNS)_3$ d) None of these
15. The maximum bond energy is present
a) C – H b) C – C c) C – N d) C – O
16. The number of secondary hydrogens in 2, 2-dimethyl butane is
a) 8 b) 6 c) 4 d) 2
17. The name of the compound, $CH_3CH_2CH_2\underset{\underset{O}{\|}}{C}CH_3$ is:
a) 2-pentanone b) Pentanone-2 c) Pentan-2-one d) All are correct
18. Find the non-staggered form(s) of ethane :

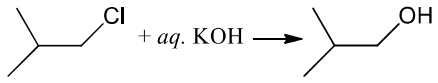
a) 

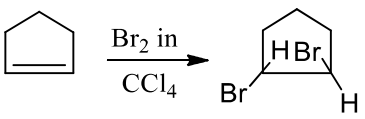
b) 

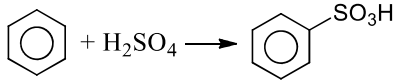
c) 

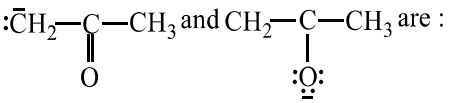
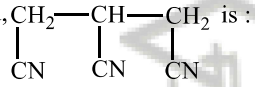
d) None of these

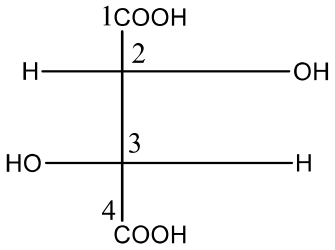
19. With a change in hybridisation of the carbon bearing the charge, the stability of a carbanion increase in the order
a) $sp < sp^2 < sp^3$ b) $sp < sp^3 < sp^2$ c) $sp^3 < sp^2 < sp$ d) $sp^2 < sp < sp^3$
20. The addition reaction among the following is

a) 

b) 

c)  d) All of the above

21.  are :
    a) Resonating structures
    b) Tautomers
    c) Geometrical isomers
    d) Optical isomers
22. The correct definition for organic chemistry is :
    a) Chemistry of carbon compounds
    b) Chemistry of compounds derived from living organisms
    c) Chemistry of hydrocarbons and their derivatives
    d) None of the above
23. Which of the organic compounds will give red colour in Lassaigne test?
    a) NaCNS b) $NH_2 - \overset{\overset{S}{\|}}{C} - NH_2$ c) $NH_2 - \overset{\overset{O}{\|}}{C} - NH_2$ d) None of these
24. The compound formed in the positive test for nitrogen with the Lassaigne solution of an organic compound is
    a) $Fe_4[Fe(CN)_6]_3$ b) $Na_3[Fe(CN)_6]$ c) $Fe(CN)_3$ d) $Na_4[Fe(CN)_5NOS]$
25. IUPAC name of the compound,  is :
    a) 1,2,3-trieyanopropane
    b) Propane-1,2,3-tricarbonitrile
    c) 1,2,3-cyanopropane
    d) Propane tricarbylamine
26. Which of the following reactions proceeds *via* secondary free radical?
    a) $CH_3 - CH = CH_2 \xrightarrow{HBr} CH_3 - \underset{\underset{Br}{|}}{CH} - CH_3$ b) $CH_3 - CH = CH_2 \xrightarrow[UV\ light]{HBr} CH_3 - CH_2 - CH_2Br$
    c) $C_6H_6 \xrightarrow{Br_2/FeBr_3} C_6H_5Br$ d) $C_6H_6 \xrightarrow[UV\ ligh]{Br_2} CH_3 - CH_2Br$
27. The production of an optically active compound from a symmetric molecule without resolution is called :
    a) Walden inversion
    b) Asymmetric synthesis
    c) Partial racemisation
    d) None of these
28. Among the following, which one has more than one kind of hybridization?
    (i) $CH_3CH_2CH_2CH_3$
    (ii) $CH_3CH = CHCH_3$
    (iii) $CH_2 = CH - CH \equiv CH$
    (iv) $CH \equiv CH$
    a) (ii) and (iii) b) (ii) and (i) c) (iii) and (iv) d) (iv)
29. The IUPAC name of C_6H_5COCl is
    a) Benzoyl chloride b) Benzene chloro ketone
    c) Benzene carbonyl chloride d) Chloro phenyl ketone
30. In the compound,



Configuration at C_2 and C_3 atoms are

a) S,S b) R,S c) S,R d) R,R

31. The number of isomeric alkenes with molecular formula C_6H_{12} are

a) 8 b) 10 c) 11 d) 13

32. Which is wrong IUPAC name?

a) $CH_3CH_2CH_2COOCH_2CH_3$ (Ethyl butanoate)

b) $CH_3-\underset{\underset{CH_3}{|}}{CH}\cdot CH_2CHO$ (3-methyl butanal)

c) $CH_3\cdot\underset{\underset{OH}{|}}{CH}\cdot\underset{\underset{CH_3}{|}}{CH}\cdot CH_3$ (2-methyl butanal)

d) $CH_3\,\underset{\underset{CH_3}{|}}{CH}\cdot COCH_2CH_3$ (2-methyl-3-pentan-3-one)

33. Which of the following statements is wrong?

a) In general organic compounds have low m.p. and b.p.

b) Isomerism is common in organic compounds

c) Organic compounds cannot be synthesized in the laboratory

d) The number of organic compound is very large

34. Nitroethane can exhibit one of the following kind of isomerism

a) Metamerism b) Optical activity c) Tautomerism d) Position isomerism

35. Which of the following would show configurational enantiomorphism?

a) NH_3

b) $(CH_3)_3N$

c) Methyl, ethyl, propylamine

d) Methyl, allyl, phenyl, benzyl ammonium iodide

36. Heterolysis of carbon-chlorine bond produces :

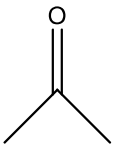
a) Two free radicals

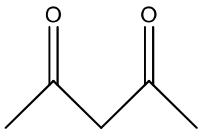
b) Two carbonium ions

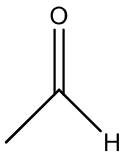
c) Two carbanions

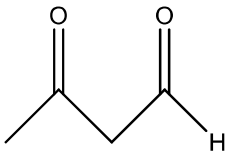
d) One cation and one anion

37. Maximum enol content is in

a) 

b) 

c) 

d) 

38. Which of the following compounds will show metamerism?

a) $CH_3-CO-C_2H_5$ b) $C_2H_5-S-C_2H_5$ c) CH_3-O-CH_3 d) $CH_3-O-C_2H_5$

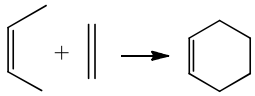
39. The IUPAC name of the compound,

$CH_2=\underset{\underset{CH_3}{|}}{C}-CH_2-C\equiv CH$ is :

a) 2-methylpent-1-en-4-yne

b) 4-methylpent-4-en-1-yne
c) 2-methylpent-2-en-4-yne
d) 4-methylpent-1-en-4-yne

40. Which of the following is elimination reaction

a) 

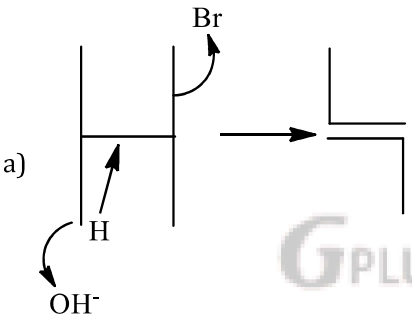
b) $CH_3CH_2CH_2Cl + \text{aq. KOH} \longrightarrow CH_3CH_2CH_2OH$

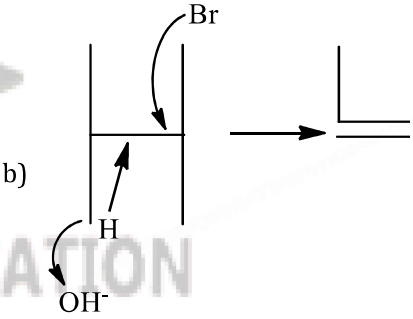
c) $CH_3 - \underset{\underset{H}{|}}{\overset{\overset{{}^+N(CH_3)_3}{|}}{C}} - CH_2\ CH_3 \xrightarrow{\text{Alc.KOH}} CH_3CH = CHCH_3$

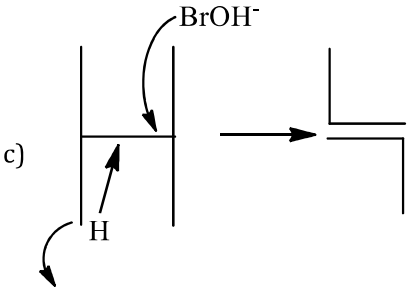
$CH_3 - \underset{\underset{Br}{|}}{CH} - CH_2Br + \text{Alc. KOH}$

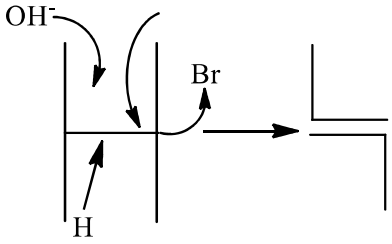
d) $\xrightarrow{\Delta} CH_3\underset{\underset{OH}{|}}{CH} - CH_2OH$

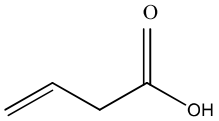
41. Dehydrohalogenation in presence of OH^- is correctly represented by

a) 

b) 

c) 

d) 

42. The IUPAC name of  is

a) But-3-enoic acid b) But-1-enoic acid c) Pent-4-enoic acid d) Prop-2-enoic acid

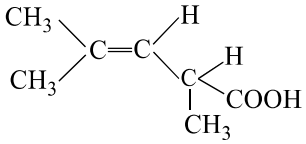
43. On exciting Cl_2 molecules by UV light, we get

a) $Cl^{\bullet}$ b) Cl^+ c) Cl^- d) All of these

44. Mixture of sugar and common salt is separated by crystallisation by dissolving in

a) H_2O b) C_2H_5OH c) C_5O_6 d) None of these

45. The structure,

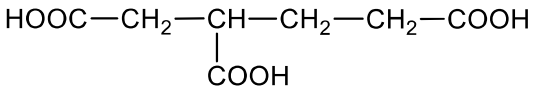


shows :

a) Geometrical isomerism
b) Optical isomerism
c) Geometrical and optical isomerism
d) Tautomerism

46. The general formula for cycloalkanes is :
a) C_nH_{2n+2} b) C_nH_{2n} c) C_nH_{2n-2} d) C_nH_n

47. The IUPAC name of the compound



a) 2(carboxymethyl)-pentane-l,5-dioic acid
b) 3-carboxyhexane-l, 6-dioic acid
c) Butane-l, 2, 4-tricarboxylic acid
d) 4-carboxyhexane-l, 6-dioic acid

48. $Na_2S + Na_2[Fe(CN)_5NO] \rightarrow$ Purple colour. It is due to
a) $Na_4[Fe(CN)_3NOS]$ b) $Na_3[Fe(CN)_5NOS]$ c) $Na_4[Fe(CN)_5NO]$ d) $Na_4[Fe(CN)_5NOS]$

49. The bond that undergoes heterolytic cleavage most easily is
a) $C-O$ b) $C-C$ c) $C-H$ d) $O-H$

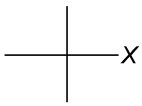
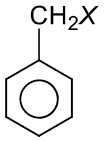
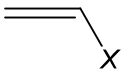
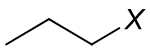
50. Increasing order of stability among the three main conformations (*i.e., Eclipse, Anti, Gauche*) of 2-fluoroethanol is
a) *Eclipse, Gauche, Anti* b) *Gauche, Eclipse, Anti* c) *Eclipse, Anti, Gauche* d) *Anti, Gauche, Eclipse*

51. Phosphorus is estimated as
a) Na_3PO_4 b) P_2O_5 c) P_2O_3 d) $Mg_2P_2O_7$

52. The number of asymmetric carbon atoms and the number of optical isomers in $CH_3(CHOH)_2COOH$ are respectively :
a) 3 and 4 b) 1 and 3 c) 2 and 4 d) 2 and 3

53. Species containing carbon with three bonds and an electron are called :
a) Carbenes b) Caarbanions c) Carbocation d) Free radicals

54. Which of the aldehyde is most reactive?
a) C_6H_5-CHO b) CH_3CHO
c) HCHO d) All the equally reactive

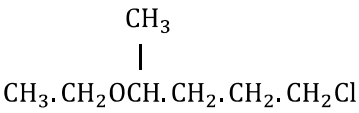
55. Which of the following cannot show S_N1 reaction?
a)  b)  c)  d) 

56. 3-methyl penta-1,3-diene is :
a) $CH_2 = CH(CH_2)_2CH_3$
b) $CH_2 = CHCH(CH_3)CH_2CH_3$
c) $CH_3CH = C(CH_3)CH = CH_2$
d) $CH_3 - CH = CH(CH_3)_2$

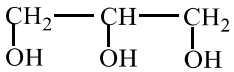
57. Which of the following compounds is optically active?
a) 1 – butanol b) Isopropyl alcohol c) Acetaldehyde d) 2-butanol

58. How many optically active forms are possible for a compound of the formula, $CHO.CHOH.CHOH.CHOH.CH_2OH$?
a) 2 b) 4 c) 3 d) 8

59. "The negative part of the addendum adds on the carbon atom joined to the least number of hydrogen atoms." This statement is called :
    a) Markownikoff's rule
    b) Peroxide effect
    c) Baeyer's strain theory
    d) Thiele's theory
60. The total number of isomeric carbocations possible for the formula $C_4H_9^+$ is :
    a) 3 b) 4 c) 2 d) 5
61. The correct order for homolytic bond dissociation energies. (ΔHin kcal/mol) for CH_4(A), C_2H_6(B) and CH_3Br(C), under identical experimental conditions
    a) C>B>A b) B>C>A c) C>A>B d) A>B>C
62. The sodium extract of an organic compound on treatment with $FeSO_4$ solution, $FeCl_3$ and HCl gives a red solution. The organic compound contains
    a) Both nitrogen and sulphur b) Nitrogen only
    c) Sulphur only d) Halogen
63. *d*-tartaric acid and *l*-tartaric acid are :
    a) Structureal isomers b) Diastereoisomers c) Tautomers d) Enantiomers
64. Which of the following is a pair of functional isomers?
    a) CH_3COCH_3, CH_3CHO b) $C_2H_5CO_2H, CH_3CO_2CH_3$
    c) $C_2H_5CO_2H, CHCO_2C_2H_5$ d) CH_3CO_2H, CH_3CHO
65. Which of the following is an optically active compound?
    a) Lactic acid b) Chloro acetic acid c) *Meso*-tartaric acid d) Acetic acid
66. Give the correct IUPAC name for



    a) 2-ethoxy-5-chloropentane b) l-chloro-4-ethoxy-4-methylbutane
    c) 1-chloro-4-ethoxypentane d) Ethyl-1-chloropentylether
67. The IUPAC name of the compound,



    is :
    a) 1,2,3-trihydrosypropane
    b) 3-hydroxypentane-1,5-diol
    c) 1,2,3-hydroxypropane
    d) Propane-1,2,3-triol
68. Bond energy ……..with the increase in number of lone pairs on the bonded atoms.
    a) Decreases b) Increases c) Does not change d) None of these
69. A liquid decomposes at its normal boiling point. It can be purified by
    a) Sublimation b) Steam distillation
    c) Vacuum distillation d) Fractional distillation
70. On monochlorination of 2-methyl butane, the number of chiral compounds formed are :
    a) 2 b) 4 c) 6 d) 8
71. Stability of which intermediate is not governed by hyperconjugation?
    a) Carbon cation b) Carbon anion c) Carbon free radical d) None of these
72. The ammonia evolved from the treatment of 0.30g of an organic compound for the estimation of nitrogen was passed in 100mL of 0.1M sulphuric acid. The excess of acid required 20mL of 0.5 M sodium hydroxide solution for complete neutralisation. The organic compound is
    a) Acetamide b) Benzamide c) Urea d) Thiourea
73. Conversion of CH_4 to CH_3Cl is an example of which of the following reaction?
    a) Electrophilic substitution b) Free radical addition

c) Nucleophilic substitution d) Free radical substitution

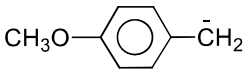
74. Number of possible isomers of glucose are :
a) 10 b) 14 c) 16 d) 20

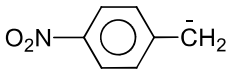
75. The reaction

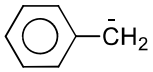
$CH_3CH_2\underset{\underset{Br}{|}}{CHCH_3} \xrightarrow{NaNH_2}$ Butene-1 and butane -2 (major)

The correct statement (s) are
a) 2-butene is Saytzeff product b) 1-butene is Hofmann (s) product
c) The elimination reaction follows Saytzeff rule d) All of the above

76. Consider the following carbanions

(I) 

(II) 

(III) 

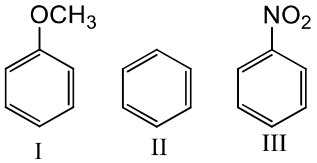
Correct order of stability is
a) I>II>III b) III>II>I c) II>III>I d) I>III>II

77. The stability of 2,3-dimethyl but-2-ene is more than 2-butene. This can be explained in terms of :
a) Resonance b) Hyperconjugation c) Electromeric effect d) Inductive effect

78. Protin solvent is
a) Diethyl ether b) *n*-hexane c) Acetone d) Ethanol

79. Addition of Br_2 on *trans*-butene-2 gives :
a) A racemic mixture of 2,3-dibromobutane
b) Meso form of 2,3-dibromobutane
c) Dextro form of 2,3-dibromobutane
d) Laevo form of 2,3-dibromobutane

80. Among the following compounds (I-III) the correct order of reaction with electrophilic reagand is

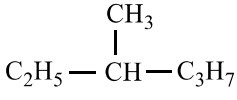


I II III

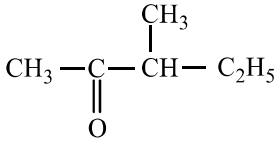
a) II>III>I b) III<I<II c) I>II>III d) I=II>III

81. During $AgNO_3$ test for detection of halogens, sodium extract is boiled with few drops of conc. HNO_3 to decompose
a) NaCN b) Na_2S c) Both (a) and (b) d) None of these

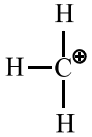
82. Which is true about following?



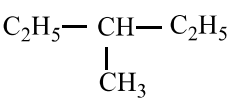
(I)



(II)



(III)



(IV)

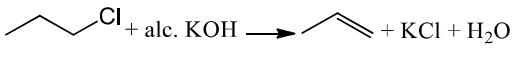
a) Only III is a chiral compound

b) Only II and IV are chiral compounds
c) All four are chiral compounds
d) Only I and II are chiral compounds

83. How many chiral compounds are possible on monochlorination of 2-methyl butane?
a) 2 b) 4 c) 6 d) 8

84. How many isomers of $C_5H_{11}OH$ will be primary alcohols?
a) 5 b) 4 c) 3 d) 2

85. The epoxide ring consists of which of the following?
a) Three membered ring with two carbon and one oxygen
b) Four membered ring with three carbon and one oxygen
c) Five membered ring with four carbon and one oxygen.
d) Six membered ring with five carbon and one oxygen.

86. The reaction which is not the example of nucleophilic substitution among the following is
a) $CH_3C-Br + CH_3OH \longrightarrow CH_3C-OCH_3 + HBr$ b) $CH_3C-Cl + aq.KOH \longrightarrow CH_3C-OH + KCl$
c) 

d) 

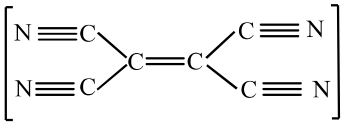
87. Consider the following reaction


Is an example of
a) Substitution b) Elimination c) Addition d) Addition elimination

88. An important chemical method to resolve a racemic mixture makes use of the formation of :
a) *meso* compound b) Enantiomer c) Racemers d) diastereoisomers

89. Red colour complex ion formed on adding $FeCl_3$ to sodium extract when N and S both are present in organic compound is
a) $[Fe(CN)_6]^{4-}$ b) $[Fe(CNS)]^{2+}$ c) $[Fe(CNS)_2]^{+}$ d) $[Fe(CN)_6]^{3-}$

90. $(I)CH_3CH_2Br \xrightarrow{LAH} C_2H_6 and\ (II)$
$(CH_3)_3CBr \xrightarrow{LAH}$ alkene, The reason for this is
a) (I)S_N2(II) E_1 mechanism b) (I) S_N1, (II) E_2 mechanism
c) (I)S_N1, (II) E_1 mechanism d) (I) S_N2,(II) E_2 mechanism

91. How many σ and π-bonds are there in the molecule of tetracyanoethylene?

a) 9σ and 9π b) 5σ and 9π c) 9σ and 7π d) 5σ and 8π

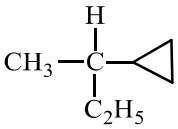
92. Which of the following complex formation indicates presence of sulphur in the organic compound when sodium nitroprusside is added to sodium extract of the compound?
a) $Fe_4[Fe(CN)_6]_3$ b) $Na_2[Fe(NO)(CN)_5]$ c) $Fe_4(CNS)_3$ d) $Na_4[Fe(CN)_5NOS]$

93. Who pointed out the concept hyperconjugation?
a) Nathan and Baker b) Mullikan c) Kekule d) Kolbe

94. Alkyl halide can be converted into alkene by
a) Nucleophilic substitution reaction
b) Elimination reaction
c) Both nucleophilic substitution and elimination reaction
d) Rearrangement

95. The order of reactivities of the following alkyl halides for a S_N2 reaction is :
a) $RF > RCl > RBr > RI$
b) $RF > RBr > RCl > RI$
c) $RCl > RBr > RF > RI$
d) $RI > RBr > RCl > RF$

96. The optically active alkane with lowest molecular weight is :

a) $CH_3CH_2C{\equiv}CH$ b) $CH_3CH_2{-}\underset{\displaystyle CH_3}{\overset{|}{C}}H{-}CH_3$ c)  d) $CH_3CH_2{\cdot}CH_2CH_3$

97. Which type of isomerism is most common among ethers?

a) Metamerism b) Functional c) Chain d) Position

98. With a change in hybridisation of the carbon bearing the charge, the stability of a carbanion increase in the order

a) $sp < sp^2 < sp^3$ b) $sp < sp^3 < sp^2$ c) $sp^3 < sp^2 < sp$ d) $sp^2 < sp < sp^3$

99. A molecule is $R_3C{-}H$. If H is replaced by $Z(R_3C{-}Z)$ and on doing so electron density on $R_3{-}C$ part increases, then Z is :

a) Electron attracting group
b) Electron withdrawing group
c) Electron repelling group
d) Either of the above

100. Which of the following compounds are not arranged on order of decreasing reactivity towards electrophilic substitution?

a) Fluorobenzene > chlorobenzene > bromo benzene
b) Phenol> *n*-propyl benzene> benzoic acid>
c) Chlorotoluene >*para*-nitrotoluene>2-chloro-4-nitro toluene
d) Benzoic acid> phenol>*n*-propyl benzene

101. A mixture of camphor and benzoic acid can be separated by

a) Sublimation b) Extraction with a solvent
c) Chemical method d) Fractional crystallisation

102. Resonance in benzene is accompanied by delocalisation of π-electrons. Each π-electron is attached with :

a) 4 carbon b) 2 carbon c) 3 carbon d) 6 carbon

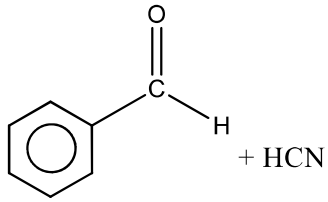
103. Grignard reagent adds to

a) $>C{=}O$ b) $-C \equiv N$ c) $>C{=}S$ d) All of these

104. Resonance energy is more for

a) C_6H_6 b) Cylohexene
c) Cycloheptene d) Cyclohexa -1,2,3-triene

105. The reaction



is an example of

a) Electrophilic addition b) Electrophilic substitution
c) Nucleophilic substitution d) Nucleophilic addition

106. Which of the following is not chiral?

a) 3-bromopentane
b) 2-hydroxy propanoic acid
c) 2-butanol
d) 2,3-dibromopentane

107. The structures $(CH_3)_3CBr$ and $CH_3[CH_2]_3Br$ represent

a) Chain isomerism b) Position isomerism
c) Chain as well as position isomerism d) Functional isomerism

108. Detection of phosphorus in the compound can be done by its conversion into phosphate. Reagent to identify phosphate ion is
a) Sodium nitroprusside b) Ammonium molybdate
c) Potassium ferrocyanide d) Potassium ferricyanide

109. The hemolytic fission of a hydrocarbon results in the formation of:
a) Carbonium ions b) Free radicals c) Carbanions d) Carbenes

110. Which does not have sp^2-hybridised carbon atom?
a) Acetamide b) Acetic acid c) Acetonitrile d) Acetone

111. Methoxy methane and ethanol are
a) Position isomers b) Chain isomers c) Functional isomers d) Optical isomers

112. Which one of the following monoenes does not exhibit geometric isomerism?
a) C_4H_8 b) C_3H_6 c) C_5H_{10} d) C_8H_{16}

113. Addition of Br_2 on $cis-$ butene -2 gives :
a) A racemic mixture of 2,3-dibromobutane
b) Meso form of 2,3-dibromobutane
c) Dextro form of 2,3-dibromobutane
d) Laevo form of 2,3-dibromobutane

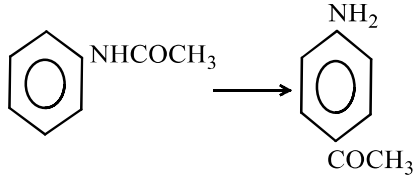
114. When two halogen atoms are attached to two adjacent carbon atoms, the dihaloalkane is called :
a) Alkylidene dihalide b) Alkane dihalide c) Alkylene dihalide d) Alkyl halide

115. The electrophile involved in the sulphonation of benzene is
a) SO_3^+ b) SO_3^{2-} c) H_3O^+ d) SO_3

116. The number of *meso* forms in the following compound is
HOOC. $CH(CH_3)$. CH(OH). CH(Cl). CH(OH)$CH(CH_3)$. COOH
a) 3 b) 4 c) 8 d) 16

117. In Kjeldahl's method, then nitrogen present in the organic compound is quantitatively converted into
a) Gaseous ammonia b) Ammonium sulphate
c) Ammonium phosphate d) Ammonia

118. The reaction;



is called :
a) Substitution reaction
b) Elimination reaction
c) Rearrangement reaction
d) None of the above

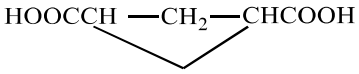
119. The compound which gives the most stable carbonium ion on dehydration is
a) $CH_3CH(CH_3)CH_2OH$ b) $(CH_3)_3COH$ c) $CH_2 = CHCH_2CH_2OH$ d) $CH_3CHOHCH_2 - CH_3$

120. A similarity between optical and geometrical isomerism is that :
a) Each forms equal number of isomers for a given compound
b) If in a compound, one is present then so is the other
c) Both are included in stereoisomerism
d) They have no similarity

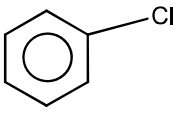
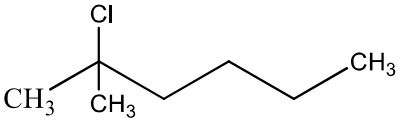
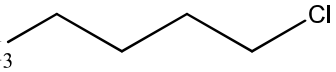
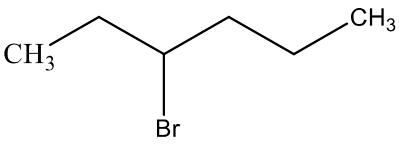
121. Reaction of phenol with chloroforms/sodium hydroxide to give *o*-hydroxy benzaldehyde involves the formation of
a) Dichloro carbene b) Trichloro carbene c) Chlorine atoms d) Chlorine molecules

122. Which kind of fission is favoured by sunlight?
a) Heterolytic fission b) Homolytic fission c) Both (a) and (b) d) None of these

123. The stability of the free radicals allyl, benzyl, 3°, 2°, 1° and CH_3 is in the order
a) Benzyl > allyl >3° > 2° > 1° > CH_3 b) Allyl > 3° > benzyl > 2° > 1° > CH_3
c) 3° > 2° > 1° > CH_3>allyl > benzyl d) 3° > 2° > 1° > CH_3 > allyl = benzyl

124. Which class of compounds can exhibit geometrical isomerism?
a) $C_6H_5CH = NOH$
b) $CH_3CH = CHCH_3$
c) 
d) All of the above

125. The correct order of increasing basicity of the given conjugate bases (R=CH_3) is
a) $RCO\bar{O} < HC \equiv \bar{C} < \bar{R} < \bar{N}H_2$ b) $\bar{R} < HC \equiv \bar{C} < RCO\bar{O} < \bar{N}H_2$
c) $RCO\bar{O} < NH_2 < HC \equiv \bar{C} < \bar{R}$ d) $RCO\bar{O} < HC \equiv \bar{C} < \bar{N}H_2 < \bar{R}$

126. Which of the following shows S_N1 reaction most readily?
a) 
b) 
c) 
d) 

127. Which of the following compounds is optically active?
a) $(CH_3)_2CHCH_2OH$ b) CH_3CH_2OH c) CCl_2F_2 d) $CH_3CHOHC_2H_5$

128. To which ring size cycloalkanes, Baeyer's strain theory is not valid?
a) 3 carbon b) 4 carbon c) 5 carbon d) ≥ 6 carbon

129. The S_N1 mechanism for substitution reaction by nucleophile is favoured by :
a) Low concentration of nucleophile
b) Weak nature of nucleophile
c) Polar solvent
d) All of the above

130. Which of the following orders is not correct regarding the – I effect of the substitutents?
a) $-I < -Cl < -Br < -F$ b) $-\overset{+}{N}R_3 < -\overset{+}{O}R_2$
c) $-\overset{+}{N}R_2 < -OR < -F$ d) $-SR < -OR < -\overset{+}{O}R_2$

131. Lactic acid shows optical activity in :
a) Solution state b) Liquid state c) Crystalline state d) In all states

132. In cyclopropane, cyclobutane and cyclohexane, the common group is
a) $-\overset{|}{\underset{|}{C}}-$ b) CH_2 c) $-CH_3$ d) $-\overset{|}{\underset{|}{CH}}$

133. Total number of isomeric aldehydes and ketones that can exist with the molecular formula $C_5H_{10}O$:
a) 5 b) 8 c) 6 d) 7

134. Allyl isocyanide has :
a) 9σ and 4π-bonds
b) 8σ and 5π-bonds
c) 9σ, 3π and 2 non-bonded electrons

d) 8σ, 3π and 4 non-bonded electrons

135. $+I$ effect is shown by

a) $-CH_3$ b) $-Br$ c) $-Cl$ d) $-NO_2$

136. $LiAlH_4$ is used as :

a) Oxidizing agent b) Reducing agent c) A mordant d) A water softener

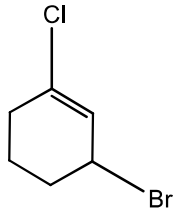
137. 0.765g of an acid gives 0.535g of CO_2 and 0.138 g of H_2O. Then, the ratio of the percentage of carbon and hydrogen is

a) 19:2 b) 18:11 c) 20:17 d) 1:7

138. Which one of the following is the stable structure of cyclohexatriene?

a) Chair form b) Boat form c) Half chair form d) Planar form

139. The IUPAC name of 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

140. Total number of rotational conformers of n-butane are :

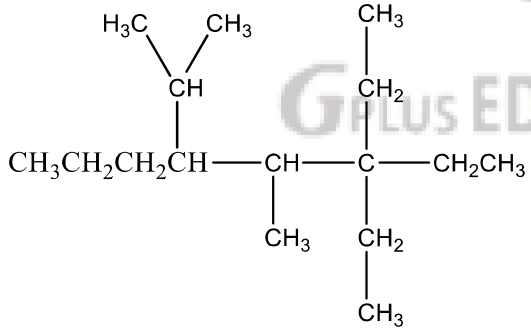
a) 2 b) 6 c) 5 d) 3

141. Sublimation is a process in which a solid

a) Changes into vapour form b) Changes into another allotropic form

c) Changes into liquid form d) None of the above

142. IUPAC name of the compound



a) 5- methyl-4-isopropyl-6, 6'diethyloctane b) 3, 3-dimethyl, 3-ethyl-5- isopropyl octane

c) 3, 3-diethyl-4-methyl-5-(1,1-dimethyl) octane d) 3, 3- diethyl-4-methyl-5-(1'-methylethyl) octane

143. The group named as benzal possesses ……nature.

a) Monovalent b) Bivalent c) Trivalent d) Tetravalent

144. A secondary(2°) carbon is one that is joined to :

a) 1-alkyl group b) 2-alkyl groups c) 3-alkyl groups d) None of these

145. Which type of strain is present in fully eclipsed conformation of butane?

a) Angle strain b) Steric strain c) Both (a) and (b) d) Neither (a) nor (b)

146. 29.5 mg of organic compound containing nitrogen was digested according to Kjeldahl's method and the evolved ammonia was absorbed in 20mL of 0.1 M HCl solution. The excess of the acid required 15mL of 0.1M NaOH solution for complete neutralisation. The percentage of nitrogen in the compound is

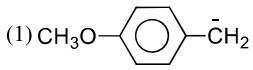
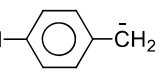
a) 59.0 b) 47.4 c) 23.7 d) 29.5

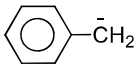
147. The highest electrical conductivity of the following aqueous solutions is of

a) 0.1 M difluoroacetic acid b) 0.1 M fluoroacetic acid

c) 0.1 M chloroacetic acid d) 0.1 M acetic acid

148. Consider the following carbanions

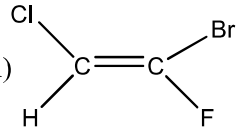
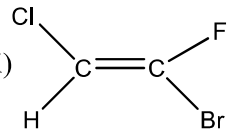
(1)  (2) 

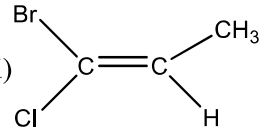
(3) 

Correct order of stability is

a) 1>2>3 b) 3>2>2>1 c) 2>3>1 d) 1>3>2

149. Which of the following compounds (s) has 'Z' configuration?

(i)  (ii) 

(iii) 

a) (i) only b) (ii) only c) (iii) only d) (i) and (iii)

150. Nucleophiles are :

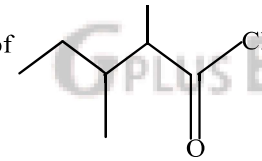
a) Electron loving b) Electron hating c) Nucleus loving d) Nucleus hating

151. Ethyl acetoacetate exhibits :

a) Optical isomerism
b) Geometrical isomerism
c) Tautomerism
d) enantiomerism

152. The total number of cyclic isomers possible for a hydrocarbon with the molecular formula C_4H_6 is

a) 1 b) 3 c) 5 d) 7

153. The IUPAC name of  is :

a) 2-ethyl-3-methylbutanoyl chloride
b) 2,3-dimethylpentanoyl chloride
c) 3,4-dimethylpentanoyl chloride
d) 1-chloro-l-oxo-2,3-dimethylpentane

154. A molecule of urea can show

a) Chain isomerism b) Position isomerism
c) Geometrical isomerism d) Tautomerism

155. Cyclic hydrocarbon molecule (*A*) has all the C and H atoms in single plane. All the C–C bonds have same length, less than 1.54 Å but more than 1.34Å. The ∠ (angle) CCC is :

a) 190°28′ b) 100° c) 180° d) 120°

156. The number of π-electrons present in cyclobutadienyl ion, $(C_4H_3)^-$ is :

a) 8 b) 6 c) 4 d) 2

157. Geometrical isomerism is possible in case of

a) Pentene-2 b) Propane c) Pentane d) Ethene

158. The strongest best among the following is :

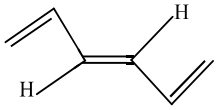
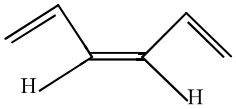
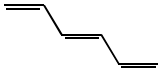
a) NH_4^+
b) $:NH_3$
c) $:\bar{N}H_2$
d) $:\bar{O}H$

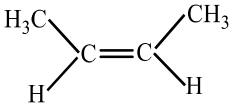
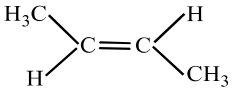
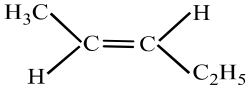
159. Anti-Markownikoff addition of HBr is not observed in :
a) Propene b) Butene-1 c) But-2-ene d) Pent-2-ene

160. The number of 1°, 2° and 3° carbon atoms present in isopentane are respectively :
a) 3, 2, 1 b) 2, 3, 1 c) 3, 1, 1 d) 2, 2,1

161. The restricted rotation about carbon-carbon double bond in 2-butene is due to:
a) Overlap of two p-orbitals
b) Overlap of one p and one sp^2-hybridized orbitals
c) Overlap of two sp^2-hybridized orbitals
d) Overlap of one s and one sp^2-hybridized orbitals

162. Formation of acetylene from ethylene is an example of
a) Addition reaction b) Substitution reaction
c) Elimination reaction d) Condensation reaction

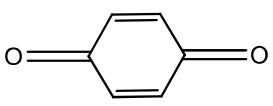
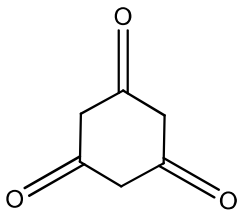
163. The structure of *cis*-*bis* (propenyl) ethane is :
a) 
b) 
c) 
d) 

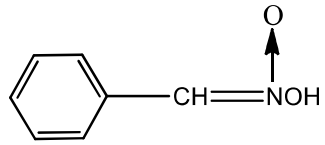
164. The compound which reacts with HBr obeying Markownikoff's rule is:
a) $CH_2 = CH_2$
b) 
c) 
d) 

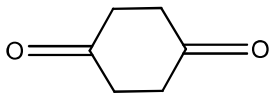
165. A molecule of benzene contains :
a) Twelve sigma-bonds and three pi-bonds
b) Eighteen sigma-bonds and three pi-bonds
c) Twelve pi-bonds and three sigma-bonds
d) Six hydrogen-bonds, six sigma-bonds and three pi-bonds

166. Zn—Cu couple used as reducing agent is :
a) Mixture of Zn and Cu powder
b) Copper deposited on granulated zinc
c) Zn deposited on copper fillings
d) A rod half made of copper and half made of zinc

167. Considering the state of hybridization of carbon atoms, find out the molecule among the following which is linear?
a) $CH_3—CH_2—CH_2—CH_3$
b) $CH_3—CH = CH—CH_3$
c) $CH_3—C \equiv C—CH_3$
d) $CH_2 = CH—CH_2—C \equiv CH$

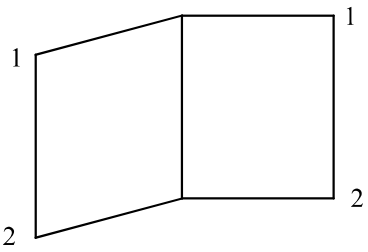
168. Tautomerism is not exhibited by
a) 
b) 

c) 

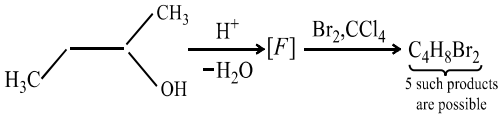
d) 

169. Which of the substance is purified by sublimation?
a) Naphthalene b) Benzoic acid c) Camphor d) All of these

170. The IUPAC name of the following compound is



a) Bicyclo [2,2,0] octane b) Bicyclo [0,2,2] hexane c) Bicyclo [2,1,1] hexane d) Bicyclo [2,2,0] hexane

171. 

How many structures of F are possible?
a) 2
b) 5
c) 6
d) 3

172. Example of chlorinolysis is :
a) $CH_2 = CH_2 \xrightarrow{Cl_2} C_2H_4Cl_2$
b) $CCl_4 + H_2O \longrightarrow COCl_2 + 2HCl$
c) $CHCl_3 + 4NaOH \longrightarrow HCOONa + 3NaCl + 2H_2O$
d) $C_3H_8 \xrightarrow{Cl_2} CCl_4 + C_2Cl_6 + 8HCl$

173. The number of optical enantiomorphs of tartaric acid :
a) 3 b) 2 c) 4 d) 1

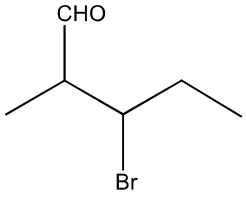
174. IUPAC name of $CH_3 - \underset{\underset{Cl}{|}}{CH} - CH_2 - CHO$ is
a) 3-chlorobutanol b) 3-chlorobutanaldehyde
c) 3-chlorobutanal d) 2-chlorobutanol

175. 4 g of hydrocarbon on complete combustion gave 12.571 g of CO_2 and 5.143 g of water. What is the empirical formula of the hydrocarbon?
a) CH b) C_2H_3 c) CH_2 d) CH_3

176. The compound which contains all the four 1°, 2°, 3° and 4° carbon atoms is
a) 2, 3-dimethylpentane b) 3-chloro-2, 3-dimethylpentane
c) 2, 3, 4-trimethylpentane d) 3, 3-dimethylpentane

177. Which of the following is useful for making pure water from a solution of salt in water?
a) Filtration b) Distillation c) Chromotography d) Steam distillation

178. Which of the following does not contain chiral carbon atom?
a) Lactic acid b) 2-chlorobutanoic acid c) Tartaric acid d) Succinic acid

179. 

The IUPAC name of is

a) 2-methyl-3-bromohexanal
b) 3-bromo-2-methylbutanal
c) 2-bromo-3-bromobutanal
d) 3-bromo-2-methylpentanal

180. CH_3CH_2Cl undergoes homolytic fission, produces

a) $CH_3\overset{\bullet}{C}H_2$ and $\overset{\bullet}{Cl}$
b) $CH_3\overset{\oplus}{C}H_2$ and $\overset{\ominus}{Cl}$
c) $CH_3\overset{\oplus}{C}H_2$ and $\overset{\bullet}{Cl}$
d) $CH_3\overset{\bullet}{C}H_2$ and $\overset{\ominus}{Cl}$

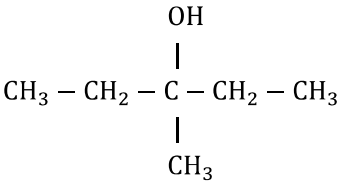
181. Among the following orbital bonds, the angle is minimum between :

a) $sp^3 - sp^3$ bonds
b) p_x and p_y-orbitals
c) H— O— H in water
d) $sp - sp$ bonds

182. Which of the following is the correct order of decreasing S_N2 reactivity? (X=α halogen)

a) $RCH_2X > R_3CX > R_2CHX$
b) $RCH_2X > R_2CHX > R_3CX$
c) $R_3CX > R_2CHX > RCH_2X$
d) $R_2CHX > R_3CX > R_2CH_2X$

183. Write the IUPAC name of

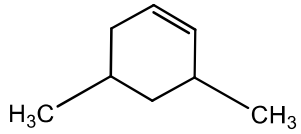


a) 3-methylpentane-3-ol
b) 3-hydroxyhexane
c) 3-hydroxy-3-methyl pentane
d) All of the above

184. Polarization of electron in acrolein may be written as

a) $\overset{-\delta}{CH_2}=CH-\overset{+\delta}{CH}=O$
b) $\overset{-\delta}{CH_2}=CH-CH=\overset{+\delta}{O}$
c) $\overset{-\delta}{CH_2}=\overset{+\delta}{CH}-CH=O$
d) $\overset{+\delta}{CH_2}=CH-CH=\overset{-\delta}{O}$

185. IUPAC name of the following compound is



a) 3, 5-dimethylcyclohexene
b) 3, 5-dimethly-1-cyclohexene
c) 1, 5-dimethly-5-cyclohexene
d) 1, 3-dimethyl-5-cyclohexene

186. In this reaction,

$CH_3CHO + HCN \longrightarrow CH_3CH(OH)CN$

$\xrightarrow{H.OH} CH_3CH(OH)COOH$

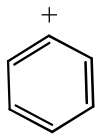
an asymmetric centre is generated. The acid obtained would be

a) 50%D+50%L-isomer
b) 20%D+80%L-isomer
c) D-isomer
d) L-isomer

187. Two crystalline forms of a substance, one being a mirror image of the other are called :

a) Pentane
b) Chain isomers
c) Stereoisomers
d) Functional isomers

188. Which one of the following is an intermediate in the reaction of benzene with CH_3Cl in the presence of anhydrous $AlCl_3$?

a) Cl^+
b) CH_3^-
c) CH_3^+
d) 

189. The number of optical isomers of $CH_3CH(OH)CH(OH)CHO$ is
a) Zero b) 2 c) 3 d) 4

190. The ratio of σ-to π-bonds in benzene is:
a) 2 b) 4 c) 6 d) 8

191. In a S_N2 substitution reaction of the type

$$R{-}Br + Cl^- \xrightarrow{DMF} R{-}Cl + Br^+$$

Which one of the following has the highest relative rate?

a) $CH_3{-}\underset{\displaystyle CH_3}{\underset{|}{CH}}{-}CH_2Br + Cl^-$

b) $CH_3{-}\overset{\displaystyle CH_3}{\overset{|}{\underset{\displaystyle CH_3}{\underset{|}{C}}}}{-}CH_2Br$

c) CH_3CH_2Br

d) $CH_3{-}CH_2{-}CH_2Br$

192. Hyperconjugation is
a) $\sigma-\pi$ delocalisation b) No bond resonance c) $\sigma-\pi$ odd electron d) All of these

193. Which one of the following reactions is a condensation reaction?
a) $HCHO \longrightarrow para$-formaldehyde
b) $CH_3CHO \longrightarrow para$-aldehyde
c) $CH_3COCH_3 \longrightarrow$ mesityl oxide
d) $CH_2 = CH_2 \longrightarrow$ polyethylene

194. Which group has the maximum-Inductive effect?
a) $-NO_2$ b) $-CN$ c) $-COOH$ d) $-F$

195. The correct IUPAC name of the following compound is

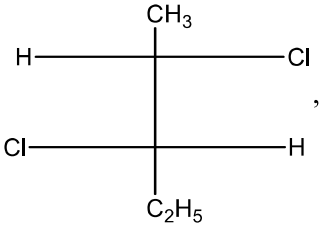
$$CH_3CH_2\underset{\displaystyle CH_3}{\underset{|}{CH}}-\underset{\displaystyle C_2H_5}{\underset{|}{C}} = \underset{\displaystyle C_2H_5}{\underset{|}{C}}-\underset{\displaystyle C_2H_5}{\underset{|}{CH}}CH_2CH_2CH_2CH_3$$

a) 5, 6-dimethyl-8-methyl dec-6-ene b) 6-butyl-5-ethyl-3-methyl oct-4-ene
c) 5, 6-diethyl-3-methyl dec-4-ene d) 2, 4, 5-triethyl non-3-ene

196. Which is incorrect about enantiomorphs?
a) They rotate the plane of polarized light in different directions
b) They have mostly identical physical properties
c) They have same configuration
d) They have different biological properties

197. Which one is the seniormost functional group in the nomenclature of an organic compound if it possesses more than one functional group?
a) —CHO b) —COOH c) —OH d) $\diagup\!\!\diagdown CO$

198. The absolute configuration of the following



, are

are
a) 2S, 3R b) 2S, 3S c) 2R, 3S d) 2R, 3R

199. Which step is chain termination step in the following mechanism?

(i) $Cl_2 \xrightarrow{h\nu} Cl^{\bullet} + Cl^{\bullet}$

(ii) $Cl^{\bullet} + CH_4 \longrightarrow \overset{\bullet}{C}H_3 + HCl$

(iii) $\overset{\bullet}{C}H_3 + Cl_2 \longrightarrow CH_3Cl + Cl^{\bullet}$

(iv) $Cl^{\bullet} + \overset{\bullet}{C}H_3 \longrightarrow CH_3Cl$

a) (i) b) (ii) c) (iii) d) (iv)

200. The reaction intermediate produced, by homolytic cleavage of a bond is called
a) Carbene b) Carbocation c) Carbanion d) Free redical

201. Fractional distillation is useful in distillation of
a) Petroleum b) Coal-tar c) Crude alcohol d) All of these

202. Which of the following species is paramagnetic?
a) A carbocation b) A free radical c) A carbanion ion d) All of these

203. Sulphur trioxide is :
a) An electrophile b) A nucleophile c) A homolytic reagent d) A base

204. In Kjeldahl's method, ammonia from 5g of food neutralizes 30 cm^3 of 0.1 N acid. The percentage of nitrogen in the food is
a) 0.84 b) 8.4 c) 16.8 d) 1.68

205. The number of isomeric alkanes having the molecular formula C_5H_{12} is
a) Three b) Five c) Nine d) Thirty two

206. Select the organic compound which was prepared for the first time in laboratory from its elements :
a) Urea b) CH_3COOH c) C_2H_5OH d) None of these

207. Which of the following compounds can exist in optically active form?
a) 1-butanol b) 2-butanol c) 3-pentanol d) 4-heptanol

208. The compound in which carbon uses only its sp^3 hybrid orbitals for bond formation is
a) $(CH_3)_3COH$ b) $HCOOH$ c) CH_3CHO d) $(H_2N)_2CO$

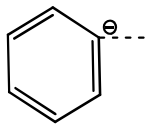
209. How many types of functional group can be present in an amine with the formula C_3H_9N?
a) 1 b) 2 c) 3 d) 4

210. Select the most reactive cycloalkane :
a) Cyclopropane b) Cyclobutane c) Cyclopentane d) Cyclohexane

211. The $-I$ effect is shown by :
a) $-COOH$ b) $-CH_3$ c) $-CH_3CH_2$ d) $-CHR_2$

212. The stability of carbanions in the following ;

(1) $-RC{=}\overset{\ominus}{C}$

(2) 

(3) $R_2C{=}\overset{\ominus}{C}H$

(4) $R_3C-\overset{\ominus}{C}H_2$

is in the order of :
a) (2) > (3) > (4) > (1)
b) (4) > (2) > (3) > (1)
c) (1) > (3) > (2) > (4)
d) (1) > (2) > (3) > (4)

213. Glyoxal is
a) $CH_2OH - CH_2OH$ b) $CHO - CH_2OH$ c) $COOH - CO - COOH$ d) $CHO - CHO$

214. IUPAC name of acraldehyde is
a) But-3-en-1-al b) Propenyl aldehyde

c) But-2-ene-1-al
d) Prop-2-en-1-al

215. The IUPAC name of
$CH_3 - C \equiv CH(CH_3)_2$ is
a) 4-methyl-2-pentyne
b) 4, 4-dimethyl-2-butyne
c) methyl isopropyl acetylene
d) 2-methyl-4-pentyne

216. What information is provided by reaction mechanism?
a) The bonds broken and formed
b) The reaction intermediates
c) The relative rates of discrete steps, especially the slowest one
d) All of the above

217. The enolic from of acetone contains
a) 8σ bonds, 2π-bonds and 1 lone pair
b) 9σ bonds, 1π-bonds and 2 lone pairs
c) 9σ bonds, 2π-bonds and 1 lone pair
d) 10σ bonds, 1π-bonds and 1 lone pair

218. Which of the following acids has the smallest dissociation constant?
a) $CH_3CHFCOOH$ b) FCH_2CH_2COOH c) $BrCH_2CH_2COOH$ d) $CH_3CHBrCOOH$

219. IUPAC name of, $CH_3CH(OH)CH_2CH_2COOH$ is :
a) 4-hydroxypentanoic acid
b) 1-carboxy-3-butanoic acid
c) 1-carboxy-4-butanol
d) 4-carboxy-2-butanol

220. The number of isomers for the compound with the molecular formula $C_2BrClFI$ is
a) 3 b) 4 c) 5 d) 6

221. Among the following the strongest nucleophile is
a) C_2H_5SH b) CH_3COO^- c) CH_3NH_2 d) $NCCH_2^-$

222. Which of the following statements is correct?
a) $+I$ group stabilises a carbocation
b) $+I$ group stabilises a carbanion
c) $-I$ group stabilises a carbocation
d) $-I$ group stabilises a free radical

223. Which of the following species does not exert a resonance effect?
a) $C_6H_5NH_2$ b) $C_6H_5\overset{+}{N}H_3$ c) C_6H_5OH d) C_6H_5Cl

224. The number of different amines corresponding to the formula C_3H_9N is :
a) 2 b) 3 c) 4 d) 5

225. Lactic acid molecule has
a) One chiral carbon atom
b) Two chiral carbon atoms
c) No chiral carbon atom
d) asymmetric molecule

226. The arrangement of atoms that characterises a particular stereoisomer is called :
a) Geometry of isomer b) Configuration c) Conformers d) None of these

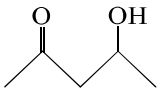
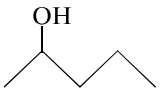
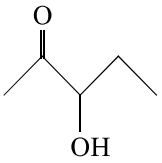
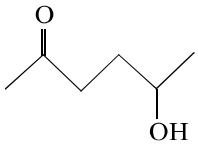
227. An alkane forms isomers if the number of carbon atoms is :
a) ≥ 1 b) ≥ 2 c) ≥ 3 d) ≥ 4

228. Which of the following statements is correct?
a) Desmotropism is another name for tautomerism
b) Allyl carbocation is less stable than isopropyl carbocation
c) $-I$ effect is exhibited by $-\overset{+}{N}H_3$
d) The formula CH_2Cl_2 is non-polar

229. The IUPAC name of $CH_3COCH(CH_3)_2$ is
a) Isopropylmethyl ketone
b) 2-methyl-3-butanone
c) 4-methylisopropyl ketone
d) 3-methyl-2-butanone

230. Qualitative test of halogens in an organic compound is made by
a) Fleming's test b) Beilstein test c) Bayer's test d) Fehling's test

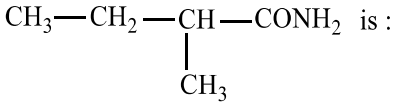
231. Which one of the following will most readily be dehydrated in acidic conditions?

a) 
b) 
c) 
d) 

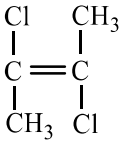
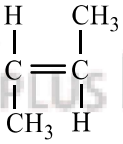
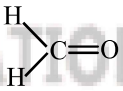
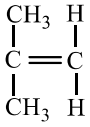
232. The family to which methoxyethene belongs, is :
a) Hydrocarbon b) Ketone c) Unsaturated ether d) Ester

233. Electrophiles are :
a) Electron loving species
b) Electron hating species
c) Nucleus loving reagents
d) Nucleus hating reagents

234. *Iso*-propyl chloride undergoes hydrolysis by
a) S_N1 mechanism b) S_N2 mechanisms
c) $S_N1$and S_N2 mechanisms d) Neither S_N1 nor S_N2 mechanism

235. The IUPAC name of the compound,
 is :
a) 2-ethylbutanamide
b) 2-methylbutanamide
c) 1-amino-2-methylpropane
d) None of the above

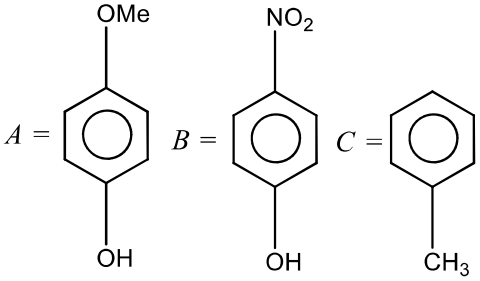
236. Carbon and hydrogen are estimated in organic compounds by
a) Kjeldalhl's method b) Duma's method c) Leibig's method d) Carius method

237. The compound having highest dipole moment is :
a) 
b) 
c) 
d) 

238. A free radical is :
a) Non-existing b) Short lived c) Diamagnetic d) Fairly stable

239. In 2-methyl-l-propanol, the hybrid carbons of sp^3, sp^2 and sp are respectively :
a) 3, 2, 1
b) 4, 3, 0
c) 4, 0, 0
d) 1, 2, 3

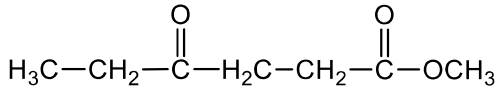
240. In electrophilic aromatic substitution reaction, the nitro group is *meta* directing because it
a) Decreases electron density at *ortho* and *para* positions
b) Decreases electron density at *meta* position
c) Increases electron density at *meta* postion
d) Increases electron density at *ortho* and *para* positions

241. Given,


The decreasing order of the acidic character is

a) *A>B<C* b) *B>A>C* c) *B>C>A* d) *C>B>A*

242. Give the IUPAC name for,

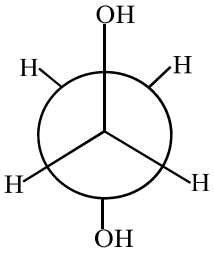
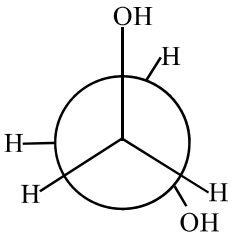
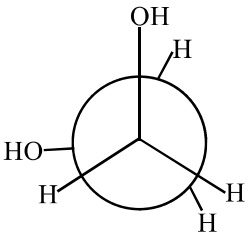
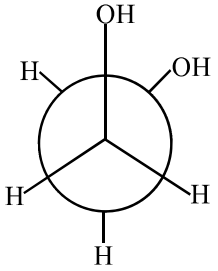


a) Ethyl-4- oxoheptanoate
b) Methyl-4- oxoheptanoate
c) ethyl-4- oxohexanoate
d) Methyl 4- oxohexanoate

243. The total number of acyclic isomers including the stereoisomers with the molecular formula C_4H_7Cl

a) 11 b) 12 c) 9 d) 10

244. Which of the following conformers for ethylene glycol is most stable?

a) 
b) 
c) 
d) 

245. Which of the following compounds is resistant to nucleophilic attack by hydroxy ion?

a) Methylacetate b) Acetonitrile c) Acetamide d) Diethyl ether

246. The stabilization due to resonance is maximum in :

a) Cyclohexane b) Cyclohexene c) 1,3-cyclohexadiene d) 1,3,5-cyclohexatriene

247. A mixture of camphor and benzoic acid can be easily separated by

a) Sublimation b) Extraction with solvent
c) Fractional crystallisation d) Chemical method

248. Fractional crystallisations is carried out to separate a mixture of

a) Organic solids mixed with inorganic solids
b) Organic solids slightly soluble in water
c) Organic solids having small difference in their solubilities in suitable solvent
d) Organic solids having great difference in their solubilities in suitable solvent

249. The type of isomerism observed in urea molecule is :

a) Chain b) Position c) Geometrical d) Functional

250. Which of the following intermediate have the complete octet around the carbon atom?

a) Carbonium ion b) Carbanion c) Free radical d) Carbene

251. The name of, $(CH_3)_2$ HC— O— CH_2— CH_2— CH_3 is :

a) Isopropyl propyl ether
b) Dipropyl ether
c) di-isopropyl ether
d) Isopropyl propyl ketone

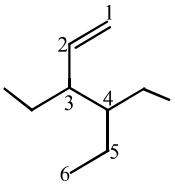
252. A neutral divalent carbon intermediate produced by the removal of two attached atoms is called :

a) Free radical b) Carbanion c) Carbocation ion d) Carbine

253. Which types of isomerism is shown by 2, 3-dichlorobutane?

a) Structural b) Geometric c) Optical d) Diastereo

254. The correct IUPAC name of the compound,



is :

a) 3-(1-ethyl propyl) hex-1-ene
b) 4-Ethyl-3-propyl hex-1-ene
c) 3-Ethyl-4-ethenyl heptane
d) 3-Ethyl-4-propyl hex-5-ene

255. IUPAC name of $(CH_3)_2N - C_2H_5$ is :
a) Dimethyl ethyl amine
b) Dimethylaminomethane
c) Dimethylaminoethane
d) *N*, *N*-dimethylethanamine

256. Among the following compounds, the most acidic is
a) *p*-nitrophenol
b) *p*-hydroxybenzoic acid
c) *o*-hydroxybenzoic acid
d) *p*-toluic acid

257. Electrophiles are :
a) Lewis bases
b) Lewis acids
c) Amphoteric
d) None of these

258. On monochlorination of *n*-pentane, the number of isomers formed is :
a) 4
b) 3
c) 2
d) 1

259. Cyclohexane is :
a) Aliphatic compound
b) Alicyclic compound
c) Aromatic compound
d) Heterocyclic compound

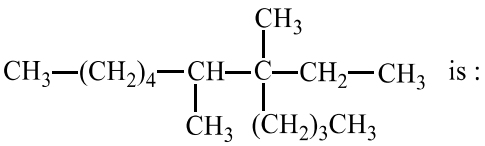
260. Which of the following is a primary halide?
a) Isopropyl iodide
b) Secondary butyl iodide
c) Tertiary butyl bromide
d) Neo hexyl chloride

261. The percentage of '*s*' character of the hybrid orbital of carbon in ethane, ethane and ethyne respectively are :
a) 25, 33, 50
b) 20, 50, 33
c) 25, 50, 75
d) 33, 66, 99

262. Which is a chiral molecule?
a) CH_3Cl
b) CH_2Cl_2
c) $CHBr_3$
d) CHClBrI

263. The stability of a carbonium ion depends upon
a) The bond angle of the attached group
b) The substrate with which it reacts
c) The inductive effect and hyper-conjugative effect of the attached group
d) None of the above

264. The IUPAC name of the compound,


is :

a) 3,4-dimethyl-3-*n*-propylnonane
b) 4-ethyl-4,5-dimethyldecane
c) 6,7-dimethyl-7-*n*-propylnonane
d) 6,7-dimethyl-7-ethyldecane

265. Bromination of alkanes involves
a) Carbanions
b) Carbocations
c) Carbenes
d) Free radicals

266. The isomeric *cis*-2-butene and *trans*-2-butene can be distinguished on the basis of :
   a) Their physical nature
   b) Their reduction products
   c) The products they give on ozonolysis
   d) The products they give on addition to bromine

267. Lassaigne's test is not used for the detection of
   a) Carbon b) Halogens c) Nitrogen d) Sulphur

268. Consider the following carbocations,

   (I) $C_6H_5\overset{+}{C}H_2$ (II) $C_6H_5CH_2\overset{+}{C}H_2$

   (III) $C_6H_5\overset{+}{C}HCH_3$ (IV) $C_6H_5\overset{+}{C}(CH_3)_2$

   a) II<I<III<IV b) II<III<I<IV c) III<I<II<IV d) IV<III<I<II

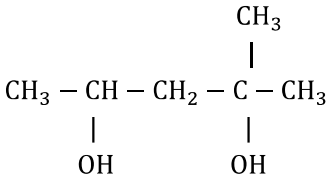
269. The simplest formula of a compound containing 50% of element X (at. wt 10) and 50% of element Y (at. wt. 20) is
   a) XY b) XY_2 c) X_2Y d) X_2Y_2

270. n-pentane, iso-pentane, and *neo* – pentane are examples for isomers of the type
   a) Geometrical b) Optical c) Chain d) Positional

271. Homolytic fission of C— C bond in ethane gives an intermediate in which carbon is ....hybridized.
   a) sp^3 b) sp^2 c) sp d) sp^2d

272. Pick out the correct statement from the following and choose the correct answer from the codes given below
   I. Hexa-1, 5-diene is a conjugated diene
   II. Prop-1, 2-diene is conjugated diene
   III. Hexa-1, 3-diene is a conjugated diene
   IV. Buta-1, 3-diene is an isolated diene
   V. Prop-1, 2-diene is a cumulative diene
   a) I,II b) II, III c) IV, V d) II, V

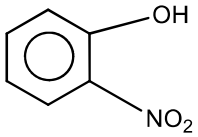
273. The IUPAC name of

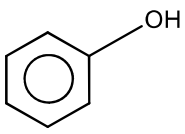


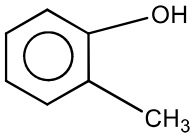
   a) 1, 1-dimethyl-1, 3-butanediol b) 2-methyl-2, 4-pentanediol
   c) 4-methyl-2, 4-pentanediol d) l, 3, 3-trimethyl-1, 3-propane diol

274. Which among the following is the correct IUPAC name of isoamylene?
   a) 1-pentene b) 2-methyl-2-butene c) 3-methyl-1-butene d) 2-mythyl-1-butene

275. Which of the following compounds exhibits geometrical isomerism?
   a) C_2H_5Br b) $(CH)_2(COOH)_2$ c) CH_3CHO d) $(CH_2)_2(COOH)_2$

276. Which one of the following compounds, is most acidic?
   a) $Cl-CH_2-CH_2-OH$ b) 

   c) 

   d) 

277. An organic compound has carbon and hydrogen percentage in the ratio 6:1 and carbon and oxygen percentages in the ratio 3:4. The compound has the empirical formula
   a) C_2H_6O b) CHO_2 c) CH_4O d) CH_2O

278. Among the following the one which does not exhibit functional group isomerism is :

a) C_2H_6O b) C_3H_8O c) C_4H_{10} d) $C_4H_{10}O$

279. How many structural formulae are possible for $C_5H_{11}Cl$?
a) 6 b) 8 c) 10 d) 12

280. Which one of the following is a secondary alcohol?
a) 2-methyl-1-propanol b) 2-methyl-2-propanol c) 2-butanol d) l-butanol

281. Among the following anions $(a)\ \overline{C}H_3\ (b)\ \overline{N}H_2, (c)OH^-, (d)F^-$ the order of basicity is :
a) $a > b > c > d$ b) $b > a > c > d$ c) $c > b > a > d$ d) $c > a > b > d$

282. Electromeric effect is
a) Permanent effect b) Temporary effect c) Resonance effect d) Inductive effect

283. In the following groups, $\underset{I}{-OAC}\ \underset{II}{-OMe}\ \underset{III}{-OSO_2Me}\ \underset{IV}{-OSO_2CF_3}$ the order of leaving group ability is :
a) I > II > III > IV b) IV > III > I > II c) III > II > I > IV d) II > III > IV > I

284. The angle of rotation of plane of polarized light depends upon :
a) The nature of the light beam
b) The number of the molecules
c) The number of asymmetric carbon atoms in the molecule of the substance
d) All of the above

285. Which of the following shows geometrical isomerism?
a) C_2H_5Br b) $(CH_2)(COOH)_2$ c) $(CH)_2(COOH)_2$ d) C_2H_6

286. Which of the following cannot undergo nucleophilic substitution under ordinary conditions?
a) Chlorobenzene b) $Tert$ −butylchloride c) Isopropyl chloride d) None of these

287. The C— C bond length of the following molecules is in the order.
a) $C_2H_6 > C_2H_4 > C_6H_6 > C_2H_2$
b) $C_2H_2 < C_2H_4 < C_6H_6 < C_2H_6$
c) $C_6H_6 > C_2H_2 > C_2H_6 > C_2H_4$
d) $C_2H_4 > C_2H_6 > C_2H_2 > C_6H_6$

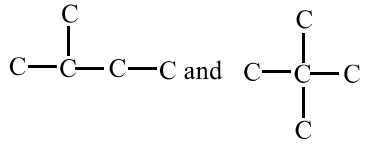
288. Isomerism among compounds due to the migration of a proton is known as :
a) Geometrical b) Optical c) Tautomerism d) Position

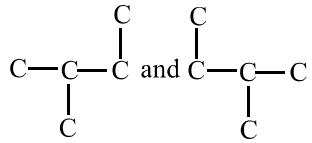
289. Removal of hydrogen atom is easier when it is attached to :
a) 1° carbon b) 2° carbon c) 3° carbon d) Same in all

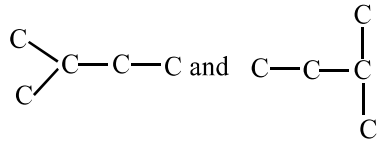
290. The order of stability of carbanions is :
a) $CH_3^- > 1° > 2° > 3°$ b) $3° > 2° > 1° > CH_3^-$ c) $3° > 1° > 2° > CH_3^-$ d) $2° > 3° > 1° > CH_3^-$

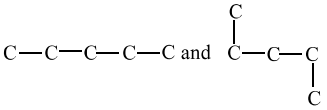
291. Glycerine contains
a) 1° carbon b) 2° carbon
c) 3° carbon d) Both 1° and 2° carbon

292. Which of the following pairs of carbon skeletons in an example of isomerism?

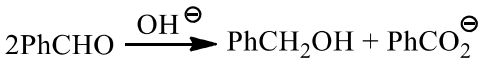
a) 

b) 

c) 

d) 

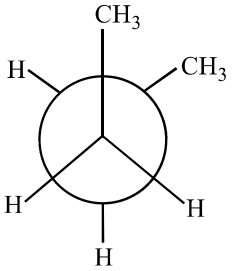
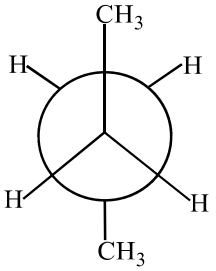
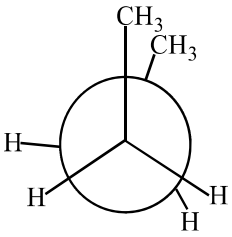
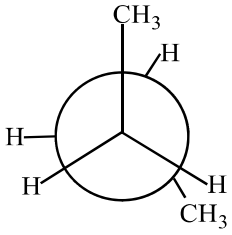
293. In cannizzaro reaction given below



The slowest step is

a) The attack of $::OH^{\ominus}$ at the carboxyl group
b) The transfer of hydride to the carbonyl group
c) The abstraction of proton from the carboxylic group
d) The deprotonation of $PhCH_2OH$

294. In the following the most stable conformation of n-butane is :

a) 
b) 
c) 
d) 

295. S_N1 mechanism for the reaction, $R-X+KOH \longrightarrow ROH+KX$ follow :

a) Carbocation mechanism
b) Carbanion mechanism
c) Free radical mechanism
d) Either of the above

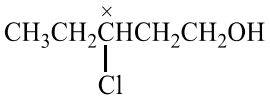
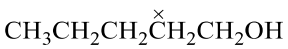
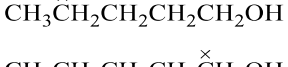
296. An electrophilic reagent must have

a) A vacant orbital
b) An orbital containing one electron
c) An orbital containing two electrons
d) All completely filled atomic orbitals

297. In which of the following structures the number of sigma bonds are equal to the number of π-bonds?

a) 1,2-propadiene
b) 2,3-dicyanobut-2-ene
c) Tetracyanoethylene
d) None of these

298. Which one of the starred carbons is the asymmetric one?

a) 
b) 
c) 
d) 

299. The chemical name of anisole is

a) Ethanoic acid
b) Methoxy benzene
c) Propanone
d) Acetone

300. How many optically active stereomers are possible for butan-2, 3-diol?

a) 1
b) 2
c) 3
d) 4

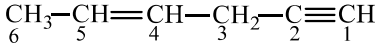
301. Naphthalene molecule contains :

a) 10π-electrons
b) 8π-electrons
c) 12π-electrons
d) 14π-electrons

302. The first organic compound urea was synthesized in the laboratory by:

a) Kekule
b) Liebig
c) Lavoisier
d) Wöhler

303. In the hydrocarbon



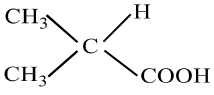
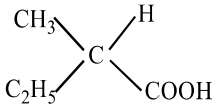
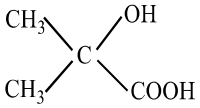
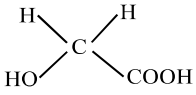
The state of hybridization of carbons 1, 3 and 5 are in the following sequence :

a) sp, sp^3, sp^2 b) sp, sp^2, sp^3 c) sp^3, sp^2, sp d) sp^2, sp, sp^3

304. Which of the following is not a nucleophile?

a) BF_3 b) NH_3 c) CN^- d) OH^-

305. Which of the following compounds can exhibit optical isomerism?

a) 
b) 
c) 
d) 

306. Which is the most stable carbocation?

a) *iso*- propyl cation b) Triphenylmethyl cation
c) Ethyl cation d) *n*-propyl cation

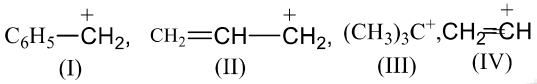
307. The correct structure of 4-bromo-3-methyl-but-1-ene.

a) $Br - CH = C(CH_3)_2$ b) $CH_2 = CH - CH(CH_3) - CH_2Br$
c) $CH_2 = C(CH_3)CH_2CH_2Br$ d) $CH_3 - C(CH_3) = CHCH_2 - Br$

308. IUPAC name of C_6H_5COCl is :

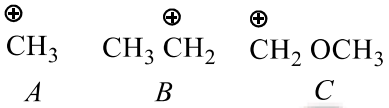
a) Benzoyl chloride
b) Benzenechloro ketone
c) Benzene carbonyl chloride
d) Chloro phenyl ketone

309. Stability order of... is in order



a) IV<III<II<I b) IV<II<I<III c) I<II<III<IV d) IV<I<III<II

310. Relative stabilities of the following carbocations will be in the order



a) C>B>A b) C<B<A c) B>C>A d) C>A>B

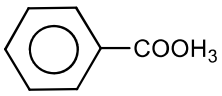
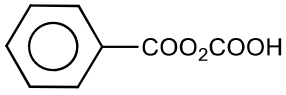
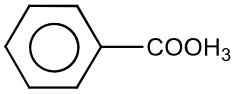
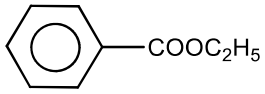
311. Which method is used to separate sugars?

a) Fractional crystallisation b) Sublimation
c) Chromatography d) Benedict's reagent

312. Sublimation can't be used for purification of

a) Benzoic acid b) Camphor c) Urea d) Naphthalene

313. Which of the following is phenyl ethanoate?

a) 
b) 
c) 
d) 

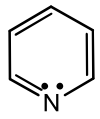
314. Zero inductive effect is shown by :

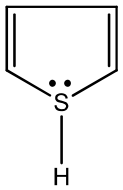
a) C_6H_5— b) — H c) CH_3— d) Cl—

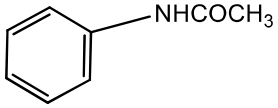
315. Which of the following alkyl halides is used as a methylating agent?

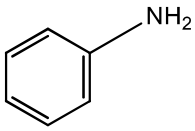
a) C_2H_5Cl b) C_2H_5Br c) C_2H_5I d) CH_3I

316. Which one of the following has the most nucleophilic nitrogen?

a) 

b) 

c) 

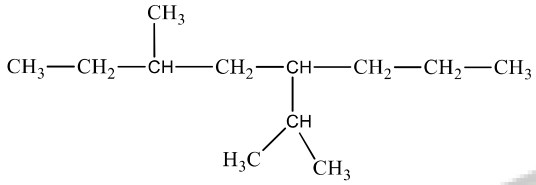
d) 

317. Chlorobenzene is 0, *p*-directing in electrophilic substituting reaction. The directing influence is explained by
a) $+M$ of Ph b) $+I$ of Cl c) $+M$ of Cl d) $-I$ of Ph

318. Which of the following orders regarding relative stability of free radicals is correct?
a) 3°<2°<1° b) 3°>2°>1° c) 1°<2°>3° d) 3°>2°<1°

319. Carbon tetrachloride has no net dipole moment because of :
a) Its planar structure
b) Its regular tetrahedral nature
c) Similar sizes of carbon and chlorine atoms
d) Similar electron affinities of carbon and chlorine

320. IUPAC name of the compound



a) 4-isoprophyl, 6-methyl octane b) 3-methyl, 5-(1-methylethyl) octane
c) 3-methyl, 5-isopropyl octane d) 6-methyl, 4-(1-methylethyl) octane

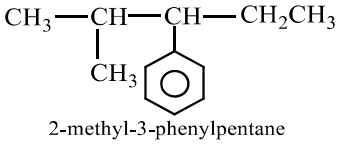
321. The isomers which are interconverted through rotation around a single bond are
a) Conformers b) Diastereomers c) Enantiomers d) Position isomers

322. The number of optical isomers of pent-3-en-2-ol is :
a) 2 b) 4 c) 8 d) 16

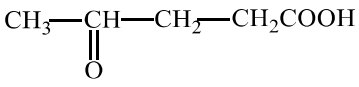
323. Dehydrohalogenation of an alkyl halide is a/an
a) Nucleophilic substitution reaction
b) Elimination reaction
c) Both nucleophilic substitution and elimination reaction
d) Rearrangement

324. The minimum number of carbon atoms which a ketone may contain is :
a) 1 b) 2 c) 3 d) 4

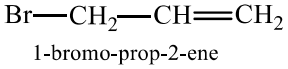
325. Which nomenclature is not according to IUPAC system?

a) 

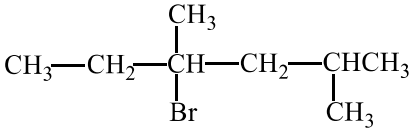
2-methyl-3-phenylpentane

b) 

5-oxohexanoic acid

c) 

1-bromo-prop-2-ene

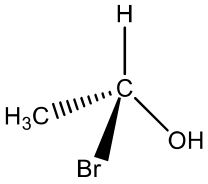
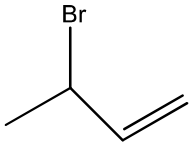
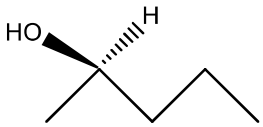
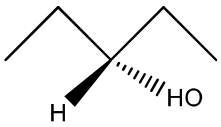
d) 

4-bromo, 2, 4-di-methylhexane

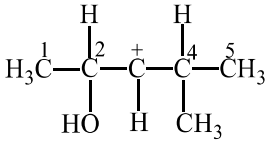
326. What is the formula of tertiary butyl alcohol?
a) $CH_3 - CH(CH_3) - CH_2 - OH$ b) $CH_3 - (CH_2)_2OH$
c) $CH_3 - CH(OH) - CH_2 - CH_3$ d) $(CH_3)_3.C - OH$

327. The IUPAC name of neopentane is
a) 2-methylbutane b) 2,2-dimethylpropane c) 2-methylpropane d) 2,2-dimethyl butane

328. Select the strongest bond :
a) $\geqslant C-C\leqslant$ b) $>C=C<$ c) $-\overset{|}{\underset{|}{C}}-C=$ d) $-C\equiv C-$

329. Which of the following molecules is achiral?
a) 
b) 
c) 
d) 

330. An enantiomerically pure acid is treated with racemic mixture of an alcohol having one chiral carbon. The ester formed will be
a) Optically active mixture b) Pure enantiomer
c) Meso compound d) Racemic mixture

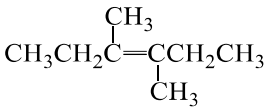
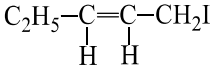
331. In the following carbocation, H/CH_3 that is most likely to migrate to the positively charged carbon is :

a) CH_3 at C–4 b) H at C–4 c) CH_3 at C–2 d) H at C–2

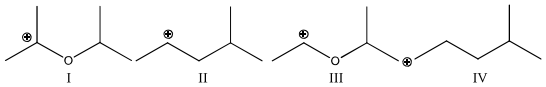
332. The number of π-electrons in benzene molecule is :
a) 3×2 b) 2^3 c) 3×3 d) 3^2

333. Which of the following statements is necessarily true in the case of isomeric organic compounds?
a) They are hydrocarbons
b) They are optically active
c) They yield the same products on complete combustion
d) They have same melting or boiling points

334. $Cis - trans$, isomers generally
a) Contain an asymmetric carbon atom b) Rotate the plane of polarized light
c) Are enantiomorphs d) Contain a double bonded carbon atoms

335. Among the following compounds nitrobenzene, benzene, aniline and phenol, the strongest basic behaviour in acid medium is exhibited by :
a) Phenol b) Aniline c) Nitrobenzene d) Benzene

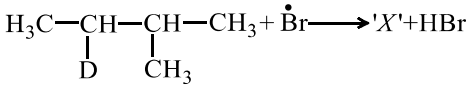
336. Geometrical isomerism is not shown by :
a) 
b) 
c) $CH_2 = C(Cl)CH_3$
d) $CH_3 — CH = CH_2 — CH = CH_2$

337. The correct stability order for the following species as

a) II>IV>I>III b) I>II>III>IV c) II>I>IV>III d) I>III>II>IV

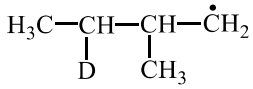
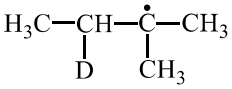
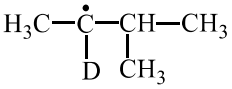
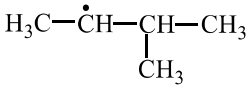
338. An optically active compound is :

a) 1-bromobutane
b) 2-bromobutane
c) 1-bromo-2-methyl propane
d) 2-bromo-2-methyl propane

339. Consider the following reaction,



Identify the structure of the major product '*X*' :

a)  b)  c)  d) 

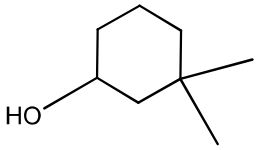
340. In Lassaigen's test, the organic compound is fused with a piece of sodium metal in order to
a) Increase the ionization of the compound
b) Decrease the melting point of the compound
c) Increase the reactivity of the compound
d) Convert the covalent compound into a mixture of ionic compounds

341. Which of the following sodium compound/compounds are formed when an organic compound containing both nitrogen and sulphur is fused with sodium?
a) Cyanide and sulphide
b) Thiocyanate
c) Sulphite and cyanide
d) Nitrate and sulphide

342. The IUPAC name of $CH_3 - CH = CH - C \equiv CH$ is
a) Pent-3-en-1-yne b) Pent-3-en-4-yne c) Pent-2-en-4-yne d) Pent-2-en-3-yne

343. The compound having molecular formula $C_4H_{10}O$ can show :
a) Metamerism b) Functional isomerism c) Positional isomerism d) All of these

344. The IUPAC name of the compound



a) 3, 3-dimethyl-1-hydroxy cyclohexane
b) 1, 1-dimethyl-3- hydroxy cyclohexane
c) 3, 3- dimethy-1- cyclohexanol
d) 1,1-dimethyl-3-cyclohexanol

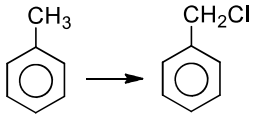
345. In hyperconjugation, the atom involved is :
a) β-H atom b) α-H atom c) γ − H atom d) All of these

346. Reactivity of hydrogen atoms attached to different atoms in alkanes has the order :
a) 3° > 1° > 2° b) 1° > 2° > 3° c) 3° > 2° > 1° d) None of these

347. Which has maximum percentage of chlorine?
a) Pyrene b) PVC c) Chloral d) Ethylidene chloride

348. $H_2C = O$ behaves as :
a) Nucleophile b) Electrophile c) Both (a) and (b) d) None of these

349. The most stable carbocation is :
a) $\overset{+}{C}H_3$ b) $CH_3\overset{+}{C}H_2$ c) $(CH_3)_2\overset{+}{C}H$ d) $(CH_3)_3\overset{+}{C}$

350. 

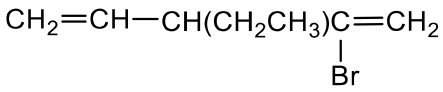
The above reaction proceeds through
a) Free radicals substitution
b) Nucleophilic substitution
c) Electrophilic substitution
d) None of the above

351. Which reaction sequence would be best to prepare 3-chloro-aniline from benzene?
a) Chlorination, nitration, reduction

b) Nitration, chlorination, reduction
c) Nitration, reduction, chlorination
d) Nitration, reduction, acylation, chlorination, hydrolysis

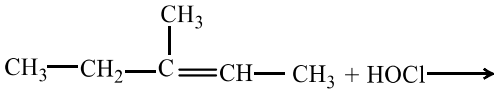
352. Why is light necessary to bring in chlorination reactions of alkane?
a) The dissociation of Cl_2 gives $\dot{C}l$ free radical
b) The Cl_2 molecule absorbs light to show hemolytic bond fission
c) The formation of $\dot{C}l$ free radical propagate the chain reaction
d) All of the above

353. IUPAC name of



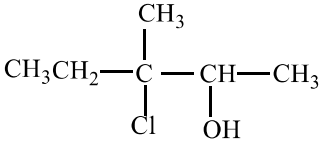
a) 4-bromo-3-ethyl-1,4-pentadiene
b) 2-bromo-3-ethyl-1,4pentadiene
c) 2-bromo-3-ethyl-1-5-pentadiene
d) None of the above

354. The product of reaction,

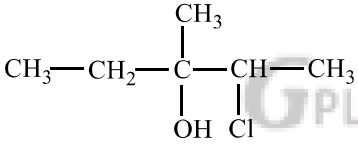


product is :

a)



b)



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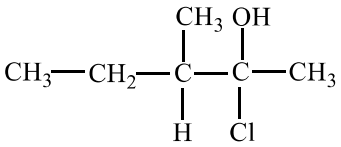
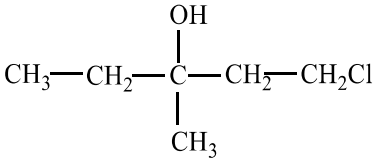
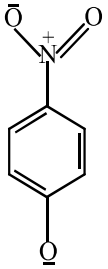


d)

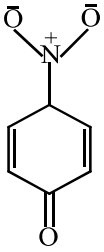


355. The most unlikely representation of resonance structures of *p*-nitrophenoxide ion is :

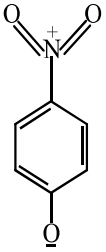
a)



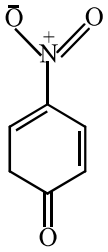
b)



c)



d)



356. For all practical purposes, influence of inductive effect is neglected after :
a) 2nd carbon atom b) 1st carbon atom c) 3rd carbon atom d) None of these

357. $CH_3CH(CH_3)CH_2CH_3 \xrightarrow{Cl_2\ h\nu} C_5H_{11}Cl$

N (isomeric produces) $\xrightarrow{\text{Fractional distillation}}$ M (isomeric product)

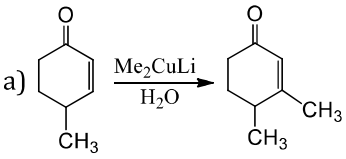
what are the no. of N and M?

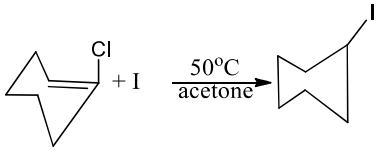
a) 6, 6 b) 6, 4 c) 4, 4 d) 3, 3

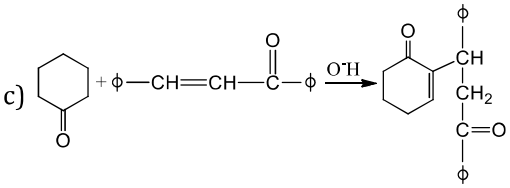
358. Geometrical isomers differ in :

a) Position of functional groups
b) Position of atoms
c) Spatial arrangement of atoms
d) Length of carbon chain

359. Which of the following is an example of substitution reaction?

a) 

b) 

c) 

d) None of the above

360. The study of three dimensional structure of molecule is called :

a) Stereochemistry b) Solid state chemistry c) Chirality d) None of these

361. Orbital interaction between the σ-bonds of a substituent group and a neighbouring π-orbital is known as

a) Hyperconjugation b) Inductive effect
c) Steric effect d) Electric quadrapole interactions

362. The shape of $\overset{\ominus}{C}H_3$ is :

a) Linear b) Planar c) Pyramidal d) None of these

363. Which of the following contains only three pairs of electrons?

a) Carbocation
b) Carbanion
c) Free radical
d) None of these

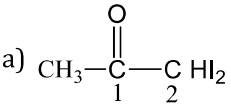
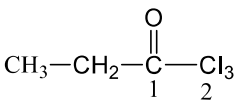
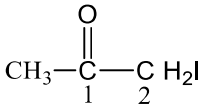
364. 2-hexyne gives *trans*-2-hexene on treatment with

a) Li/NH_3 b) $Pd/BaSO_4$ c) $LiAlH_4$ d) Pt/H_2

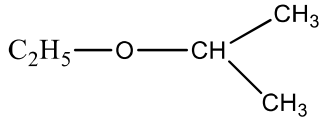
365. Lassaigne's test for the detection of nitrogen fails in

a) $H_2N - CO - NHNH_2.HCl$ b) $NH_2 - NH_2.HCl$
c) $NH_2 - CO - NH_2$ d) $C_6H_5 - NH - NH_2.HCl$

366. Which of the following compounds yields most stable carbanion after rupture $^{(C-C)}_{1\quad 2}$ of bond?

a)  b)  c)  d) None of these

367. The IUPAC name of $C_2H_5 - O - CH$



is

a) Ethoxy propane b) 1, 1-dimethyl ether c) 2-ethoxy *iso*-propane d) 2-ethoxy propane

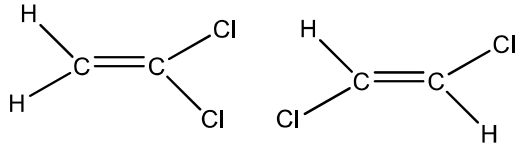
368. The relative adsorption of each component of the mixture is expressed in terms of
a) adsorption factor b) retention factor
c) co-factor d) sorption factor

369. Following reaction,
$(CH_3)_3CBr + H_2O \rightarrow (CH_3)_3COH + HBr$
is an example of
a) Elimination reaction b) Free radical substitution
c) Nucleophilic substitution d) Electrophilic substitution

370. The most stable carbonium ion among the following is
a) $C_6H_5CH_2\overset{+}{C}H_2$ b) $CH_3\overset{+}{C}H_2$ c) $C_6H_5\overset{+}{C}HC_6H_5$ d) $C_6H_5\overset{+}{C}H_2$

371. *t*-butyl alcohol is
a) 2-methyl propane-2-ol b) 2-methyl propane-1-ol
c) 3-methyl butan-1-ol d) 3-methyl butan-2-ol

372. The following compound differ in



a) Configuration b) Conformation c) Structure d) Chirality

373. A compound containing 80% C and 20% H is likely to be
a) C_6H_6 b) C_2H_6 c) C_2H_4 d) C_2H_2

374. Overlap of which of the following atomic orbitals would be maximum to form the strongest covalent bond?
a) $1s - 2s(\sigma)$ b) $1s - 2p(\sigma)$ c) $2p - 2p(\pi)$ d) $2p - 2p(\sigma)$

375. A strong base can abstract an α-hydrogen from :
a) Amine b) Ketone c) Alkane d) Alkene

376. During elimination reactions, the hybrid state of carbon atoms involved in change shows:
a) sp^3 to sp^2 nature
b) sp^2 to sp nature
c) No change in hybridized state
d) Either of the above

377. IUPAC name of C_6H_5CN is :
a) Phenyl nitrile b) Benzene nitrile c) Benzyl nitrile d) Phenyl cyanide

378. Who proposed the tetrahedral mirror image structures to a pair of enantiomers?
a) Kekule b) Wöhler c) van't Hoff d) None of these

379. The S_N1 reactivity of following halides will be in the order
(i) $(CH_3)_3CBr$ (ii)$(C_6H_5)_2CHBr$
(iii)$(C_6H_5)_2C(CH_3)Br$ (iv) $(CH_3)_2CHBr$
(v) C_2H_5Br
a) (v)>(iv)>(i)>(ii)>(iii) b) (ii)>(i)>(iii)>(v)>(iv)
c) (i)>(iii)>(v)>(ii)>(iv) d) (iii)>(ii)>(i)>(iv)>(v)

380. Heterolysis of propane gives :
a) Methyl and ethyl free radicals
b) Methylium cation and ethyl anion
c) Methyl anion and ethylium cation
d) Methylium and ethylium cations

381. Delocalised electrons are present in
a) 1, 3- butadiene b) C_6H_6 c) 1, 3, 5-hexatriene d) All of these

382. Compounds which rotate plane polarised light in clockwise direction are known as :
a) Dextrorotatory

b) Laevorotatory
c) Optically inactive compounds
d) Racemic

383. Carbanions initiate :
a) Addition reactions
b) Substitution reactions
c) Both (a) and (b)
d) None of these

384. Impure glycerine can be purified by
a) Steam distillation
b) Simple distillation
c) Vaccum distillation
d) Extraction with a solvent

385. IUPAC name of urea is :
a) Diaminoketone
b) 1-aminoethanamide
c) 1-aminomethanamide
d) aminoacetamide

386. Which of the following process is not used for the purification of solid impurities?
a) Distillation b) Sublimation c) Crystallisation d) Vaporisation

387. When the hybridization state of a carbon atom changes from sp^3 to sp^2 and finally to sp, the angle between the hybridized orbitals :
a) Is not affected
b) Increases progressively
c) Decreases considerably
d) Decreases gradually

388. The chief reaction product of reaction in between *n*-butane and bromine at 130°C is :

a) $CH_3CH_2 \cdot CH_2 \cdot CH_2Br$ b) $CH_3 \cdot CH_2 \cdot \underset{CH_3}{\underset{|}{CH}}Br$ c) $CH_3 - \underset{CH_3}{\underset{|}{CH}} \cdot CH_2Br$ d) $CH_3 - \underset{CH_3}{\overset{CH_3}{\overset{|}{\underset{|}{C}}}} - Br$

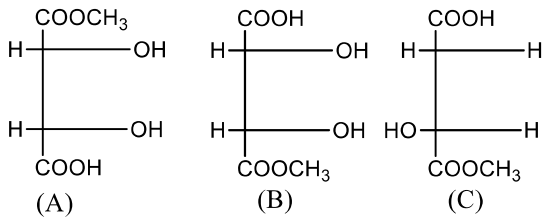
389. Dehydration of alcohol is an example of which type of reaction?
a) Substitution b) Elimination c) Addition d) Rearrangement

390. The IUPAC name of

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

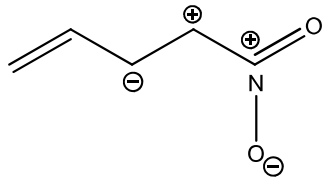
a) 4-hydroxy-1-methylpentanal
b) 4-hydroxy-4-methylpent-2-en-1-al
c) 2-hydroxy-4-methylpent-2-en-5-al
d) 2-hydroxy-3-methylpent-2-en-5-al

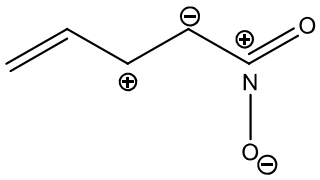
391. The correct statement about the compounds (A), (B) and (C) is

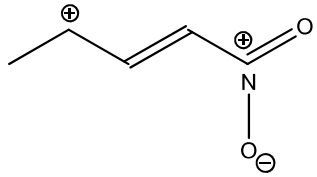


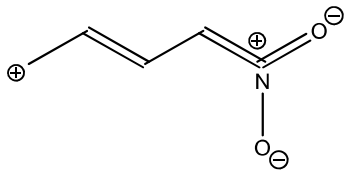
a) (A) and (B) are identical
b) (A) and (B) are diastereomers
c) (A) and (C) are enantiomers
d) (A) and(B) are enantiomers

392. Among the following the least stable resonance structure is

a) 

b) 

c) 

d) 

393. The organic liquid that mix freely with water is :

a) $CHCl_3$ b) CCl_4 c) CS_2 d) C_2H_5OH

394. The increasing order of +ve I-effect shown by H, CH_3, C_2H_5 and C_3H_7 is :

a) $H < CH_3 < C_2H_5 < C_3H_7$

b) $H > CH_3 < C_2H_5 > C_3H_7$

c) $H < C_2H_5 < CH_3 < C_3H_7$

d) None of the above

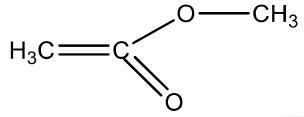
395. The best method for the separation of naphthalene and benzoic acid from their mixture is

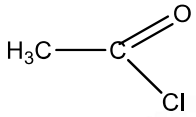
a) Chromatography b) Crystallisation c) Distillation d) Sublimation

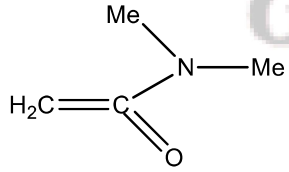
396. The reagent used in dehydrohalogenation process is :

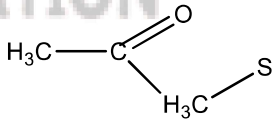
a) Alcoholic KOH b) $NaNH_2$ c) C_2H_5ONa d) All of these

397. The least active electrophile is

a) 

b) 

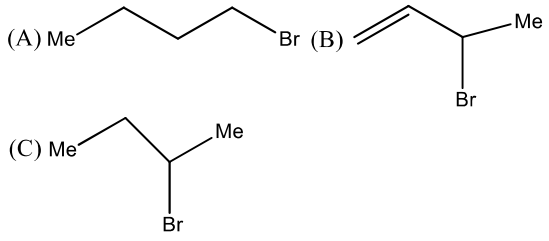
c) 

d) 

398. The isomerism which exists between CH_3CHCl_2 and CH_2ClCH_2Cl is :

a) Chain b) Functional c) Positional d) Metamerism

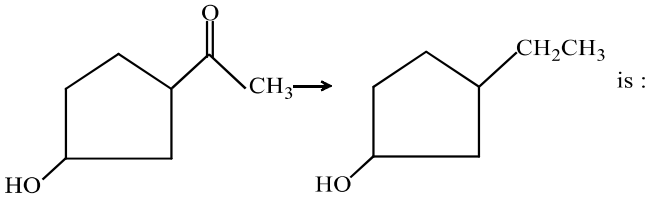
399. Consider the following bromides



The correct order is S_N1 reactivity is

a) (B)>(C)>(A) b) (B)>(A)>(C) c) (C)>(B)>(A) d) (A)>(B)>(C)

400. The appropriate reagent for the following transformation,



is :

a) Zn(Hg), HCl
b) NH_2NH_2, OH^-
c) H_2/Ni
d) $NaBH_4$

401. Hydride shift from C-2 will give the most stable resonance stabilized carbocation as
a) CH_3 at $C-4$ b) H at C – 4 c) CH_3 at $C-2$ d) H at C-2

402. Hyperconjugation involves overlap of the following orbitals
a) σ- σ b) $\sigma-\rho$ c) $p-p$ d) $\pi-\pi$

403. Most stable carbonium ion is
a) $\overset{+}{C}_2H_5$ b) $(CH_3)_3\overset{+}{C}$ c) $(C_6H_5)_3\overset{+}{C}$ d) $C_6H_5\overset{+}{C}H_2$

404. During a nitration of benzene, the attacking electrophile is
a) NO_3^- b) NO_2^- c) NO_2^+ d) HNO_3

405. The (R) and (S) enantiomers of an optically active compound differ in
a) Their reactivity
b) Their optical rotation of plane polarised light
c) Their melting point
d) Their solubility in achiral reagents

406. The number of chiral centres in (+) –glucose
a) 4 b) 3 c) 2 d) 1

407. Hydrogen cyanide and hydrogen isocyanide are :
a) Tautomers
b) Positional isomers
c) Metamers
d) Chain isomers

408. Which of the following hydrocarbons is most unsaturated?
a) C_2H_4 b) C_2H_2 c) C_2H_6 d) $CH_3CH=CH_2$

409. Sometimes the behaviour of a compound is explained by assuming that it exists in a world between two or more different possible structures. This phenomenon is called :
a) Isomerism b) Resonance c) Mutarotation d) Allotropism

410. How many primary amines are possible with the formula $C_4H_{11}N$?
a) 1 b) 2 c) 3 d) 4

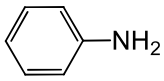
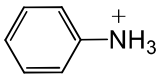
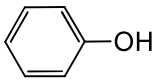
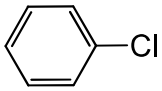
411. Which one of the following pairs represents stereoisomerism?
a) Geometrical isomerism, position isomerism
b) Geometrical isomerism, conformational isomerism
c) Optical isomerism, geometrical isomerism
d) Optical isomerism, metamerism

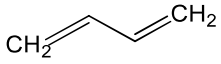
412. The large number of organic compounds is due to:
a) Catenation property of carbon
b) Covalent bond formation
c) Isomerism
d) polymerization

413. The IUPAC name of $CH_3-\underset{\underset{O}{\|}}{C}-\underset{\underset{CH_3}{|}}{CH}-CH_3$ is
a) 2-methyl-3-butanone b) 3-methyl-butan-2-one
c) 3-methyl butanone d) None of these

414. Formic acid is a stronger acid than acetic acid. This can be explained using
a) $+M$effect b) $-I$ effect c) $+I$ effect d) $-M$ effect

415. The energy of C—C triple bond in acetylene in kcal is :
a) 140 b) 192 c) 60 d) 100

416. In which of the following molecules, the resonance effect is not present?
a)  b)  c)  d) 

417. Which of the following represents the given mode of hybridization $sp^2 - sp^2 - sp - sp$ from left to right?
a) $CH_2 = CH - C \equiv CH$ b) $HC \equiv C - C \equiv N$ c) $CH_2 = C - C = CH_2$ d) 

418. The Lassaigne's extract is boiled with dil HNO_3 before testing for halogens because
a) AGCN is soluble in HNO_3 b) Silver halides are soluble in HNO_3
c) Na_2S and NaCN are decomposed by HNO_3 d) Ag_2S is soluble in HNO_3

419. The tautomeric form which is less stable is called :
a) Anion form b) Cation form c) Labile form d) All of these

420. The effect involving the complete transfer of a shared pair of electrons to one of the atoms joined by a multiple bond at the requirement of attacking reagent is called :
a) Inductive effect b) Mesomeric effect c) Electromeric effect d) None of these

421. Which of the following acids does not exhibit optical isomerism?
a) Lactic acid b) Tartaric acid c) Maleic acid d) α-amino acids

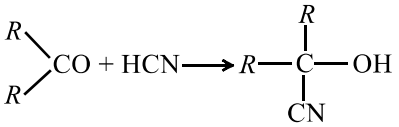
422. Many organic compounds are prepared by using PCl_5 because :
a) OH group of alcohol is easily replaced by chlorine atom
b) Chlorines are added to the unsaturated compounds
c) It removes water from organic compounds
d) Phosphorus atoms are entered in the alcohol

423. Which of the following conformations of cyclohexane is chiral?
a) Twist boat b) Rigid c) Chair d) Boat

424. Which type of isomerism is shown by propanal and propanone?
a) Functional group b) Metamerism c) Tautomerism d) Chain isomerism

425. Identify the product in the given reaction:
$CH_3 - CH = CH_2 + NOCl \longrightarrow$ Product
a) $CH_3CHCl.CH_2.NO$ b) $CH_3CH(NO).CH_2Cl$ c) $CH_3CH_2CH(Cl)(NO)$ d) $CH_2(NO).CH_2.CH_2Cl$

426. A straight chain hydrocarbon has the molecular formula C_8H_{10} . The hybridization for the carbon atoms from one end of the chain to the other are respectively $sp^3, sp^2, sp^2, sp^3, sp^2, sp^2, sp$ and sp. The structural formula of the hydrocarbon would be :
a) $CH_3 - C \equiv C - CH_2 - CH = CH - CH = CH_2$
b) $CH_3 - CH_2 - CH = CH - CH = CH - CH \equiv CH$
c) $CH_3 - CH = CH - CH_2 - C \equiv C - CH = CH_2$
d) $CH_3 - CH = CH - CH_2 - CH = CH - C \equiv CH$

427. Reaction,
 is a :
a) Electrophilic substitution
b) Nucleophilic substitution
c) Electrophilic addition
d) Nucleophilic addition

428. The total number of acylic iosmers including the stereoisomers (geometrical and optical), with the molecular formula C_4H_7Cl is

a) 12 b) 11 c) 10 d) 9

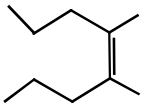
429. The best method to separate the mixture of *ortho* −and−*para* nitrophenol (1:1) is
a) Vaporisation b) Colour spectrum c) Distillation d) Crystallisation

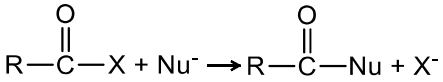
430. Which of the following does not show electrometric effect?
a) Alkenes b) Ethers c) Aldehyde d) Ketones

431. Shifting of electrons of a multiple bond under the influence of a reagent is called :
a) I-effect b) E-effect c) M-effect d) T-effect

432. 0.4 g of a silver salt of a monobasic orgainc acid gave 0.26 g pure silver on ignition. the molecular weight of the acid is (atomic weight of silver=108)
a) 58 b) 37 c) 89 d) 105

433. The S_N2 mechanism for, $R - X + KOH(aq) \longrightarrow R - OH + KX$ follows with :
a) 100% inversion b) 50% inversion c) 40% inversion d) 30% inversion

434. IUPAC name of,  is :
a) 4,5-dimethyl oct-4-ene
b) 3,4-dimethyl oct-5-ene
c) 4,5-dimethyl oct-5-ene
d) None of the above

435. The reaction,

is fastest when X is
a) OCOR
b) OC_2H_5
c) NH_2
d) Cl

436. Which pair represents chain isomers?
a) CH_3CHCl_2 and $ClCH_2CH_2Cl$
b) Propyl alcohol and isopropyl alcohol
c) 2-methylbutane and neopentane
d) Diethylether and dipropylether

437. The empirical formula of an acid is CH_2O_2, the probable molecular formula of the acid may be
a) $C_2H_4O_2$ b) $C_3H_6O_4$ c) $C_2H_2O_4$ d) CH_2O_2

438. The number of valence electrons in the excited carbon atom is :
a) Two in s and two in p-orbitals
b) 4 single p-orbitals
c) One in s and three in p-orbitals
d) None of the above

439. A hydrocarbon contains 10.5 g carbon and 1 g hydrogen. Its 2.4 g has 1 L volume at 1 atm and127°C. Hydrocarbon is
a) C_6H_7 b) C_6H_8 c) C_5H_6 d) C_6H_6

440. The number of stereoisomers possible for a compound of the molecular formula $CH_3 - CH = CH - CH(OH) - Me$ is
a) 3 b) 2 c) 4 d) 6

441. The structural formula of methyl aminomethane is :
a) $(CH_3)_2CHNH_2$ b) $(CH_3)_3N$ c) $(CH_3)_2NH$ d) CH_3NH_2

442. A mixture of oil and water is separated by
a) Filtration b) Fractional distillation
c) Sublimation d) Using separating funnel

443. The stability of

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

(I) (II)

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

(III) (IV)

In the increasing order is

a) III<I<IV<II b) I<II<III<IV c) IV<III<II<I d) II<III<IV<I

444. The number of optically active isomers of tartaric acid are

a) 1 b) 3 c) 4 d) 2

445. The nodal plane in the π-bond of ethene is located in

a) The molecular plane

b) A plane parallel to the molecular plane

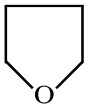
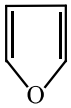
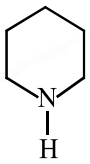
c) A plane perpendicular to the molecular plane which bisects the carbon-carbon sigma bond at right angle

d) A plane perpendicular to the molecular plane which contains the carbon-carbon sigma bond

446. Which of the following has the highest degree of coordination bond?

a) CH_3OH b) $AlCl_3$ c) $(CH_3)_4 \overset{+}{N}\overset{\cdot\cdot}{\underset{\cdot\cdot}{O}}H$ d) $BF_3O(Et)_2$

447. Which of the following is heterocyclic aromatic species?

a)  b)  c)  d) 

448. A mixture of *o*-nitrophenol and *p*-nitrophenol can be separated by

a) Fractional crystallisation b) Sublimation

c) Chemical separation d) Steam distillation

449. The total number of cyclic structural as well as stero isomers possible for a compound with the molecular formula C_5H_{10} is

a) 2 b) 4 c) 6 d) 7

450. State the hybridization of carbon present in triplet carbene

a) sp^3 b) sp^2 c) sp d) None of these

451. Which of the following cannot show electromeric effect ?

a) Alkenes b) Ketones c) Aldehydes d) Ethers

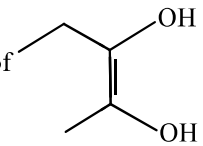
452. Hydride ion transfer takes place in

a) Frankland method b) Wurts reaction

c) Cannizzaro's reaction d) Wolff-Kishner reduction

453. An organic compound contains 29.27% carbon, 5.69 % hydrogen and 65.04% bromine. Its empirical formula is

a) C_3H_5Br b) C_3H_3Br c) $C_2H_4Br_2$ d) C_3H_7Br

454. IUPAC name of  is :

a) but-2-ene-2,3-diol

b) pent-2-ene-2,3-diol

c) 2-methylbut-2-ene-2,3-diol

d) Hex-2-ene-2,3-diol

455. The IUPAC name of $(CH_3)_3C-CH=CH_2$ is
a) 1, 1, 1-trimethyl-2-propene
b) 3, 3, 3-trimethyl-2-propene
c) 2, 2-dimethyl-3-butene
d) 3, 3-dimethyl-1-butene

456. The function of soda lime, a mixture of solid NaOH and solid CaO during decarboxylation of carboxylic acids is :
a) To increase the rate of reaction
b) To decrease the rate of reaction
c) To change the rate of reaction
d) None of the above is correct

457. *t*-butyl chloride reacts with OH^- by S_N1 mechanism and rate $\propto$ [*t*-buty1 chloride]. One of the reasons for this is that
a) Stereochemical inversion takes place
b) *t*- buty1 carbocation is first formed which is more stable
c) The product *t*-butyl alcohol is more stable
d) The intermediate *t*-butyl carbocation is stabilized by solvation

458. Heterolysis of $CH_3CH_2CH_3$ result in formation of
a) $\overset{\oplus}{C}H_3$ and $\bar{C}_2H_5$
b) $\overset{\bullet}{C}H_3$ and $\overset{\bullet}{C}_2H_5$
c) $\bar{C}H_3$ and $\overset{\oplus}{C}_2H_5$
d) CH_3 and C_2H_5

459. Alkyl c yanide $R-C\equiv N$ and alkyl isocyanides $R-N\overset{=}{\rightarrow}C$ are :
a) Tautomers
b) Metamers
c) Functional isomers
d) Geometrical isomers

460. A racemic mixture is a mixture of :
a) *meso* and its isomers
b) *d*-and its *l*-isomers in equal proportions
c) *d*-and its *l*-isomers in different proportions
d) *meso* and *d*-isomers

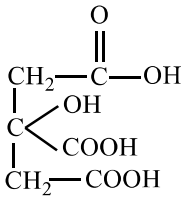
461. A mixture of iodine and sodium chloride can be easily separated by
a) Fractional distillation
b) Steam distillation
c) Chromatography
d) Sublimation

462. The property by virtue of which a compound can turn the plane of polarization of light is known as :
a) Photolysis
b) Phosphorescence
c) Optical activity
d) polarization

463. Correct order of stability is
a) $HC\equiv\bar{C} > CH_2=\bar{C}H > CH_3-\bar{C}H_2$
b) $CH_3-\bar{C}H_2 > CH_2=\bar{C}H > CH\equiv\bar{C}$
c) $CH_3-\bar{C}H_2 > CH\equiv CH \cong CH_2=\bar{C}H$
d) All are equally stable

464. In the estimation of sulphur in an organic compound, fuming nitric acid is used to convert sulphur into
a) SO_2
b) H_2S
c) H_2SO_3
d) H_2SO_4

465. The IUPAC name of compound



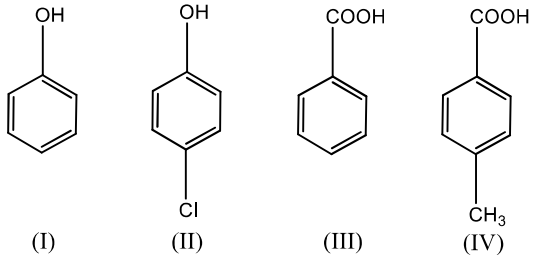
is :
a) 1,2,3-tricarboxy-2,1-propane
b) 3-carboxy-3-hydroxy-1,5-pentanedioic acid
c) 3-hydroxy-3-carboxy-1,5-pentanedioic acid
d) None of the above

466. Which of the following will be chiral?
a) CH_3CHCl_2
b) $CH_3CHBrCl$
c) CD_2Cl_2
d) CH_2ClBr

467. In the dehydration reaction $CH_3CONH_2 \xrightarrow{P_2O_5} CH_3C\equiv N$, the hybridization state of carbon change from

a) lsp^3 *to* sp^2 b) lsp *to* sp c) lsp^2 *to* sp d) lsp *to* sp^3

468. The correct acidity order of the following is



(I) (II) (III) (IV)

a) (III)>(IV)>(II)>(I) b) (IV)>(III)>(I)>(II) c) (III)>(II)>(I)>(IV) d) (II)>(III)>(IV)>(I)

469. Which of the following is not a nucleophile?

a) BF_3 b) CN^- c) OH^- d) NH_3

470. Least stable conformer of cyclohexane is

a) Chair b) Boat c) Twist boat d) Planar hexagon

471. The compound isomeric with acetone is :

a) Propionaldehyde b) Propionic acid c) Ethoxy ethane d) None of these

472. Which of the chloride is less reactive towards hydrolysis?

a) Vinyl chloride b) Allyl chloride c) Ethyl chloride d) t −butyl chloride

473. Glycerol is an alcohol which can be classified as

a) Trihydric b) Monohydric c) Dihydric d) Hexahydric

474. Addition of Br_2 on $CH_2 = CH_2$ in presence of NaCl(aq.) gives :

a) $CH_2Br.CH_2Br$ b) $CH_2Br.CH_2Cl$ c) $CH_2Br.CH_2OH$ d) All of these

475. The electromeric effect in organic compounds is a :

a) Temporary effect
b) Permanent effect
c) Temporary-permanent effect
d) None of the above

476. The function of boiling the sodium extract with conc. HNO_3 before testing for halogen is

a) To make the solution acidic b) To make the solution clear
c) To convert Fe^{2+} to Fe^{3+} d) To destroy CN^- and S^{2-} ions

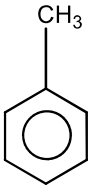
477. Copper wire test of halogens is known as

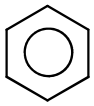
a) Liebig's test b) Lassaigne's test c) Fusion test d) Beilstein's test

478. Which of the following is singlet carbine?

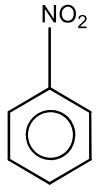
a) $(CH_3)_3C^+$ b) $C_2H_5\ddot{C}—H$ c) $CH_3\ddot{C}HCH_3$ d) $CH_2 = CH—\overset{+}{C}H_2$

479. Which of the following will be easily nitrated?

a) 

b) 

c) CH_3NO_2

d) 

480. Optical isomerism is shown by

a) Propanol-2 b) Butanol-2 c) Ethanol d) Methanol

481. Williamson's synthesis involves

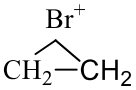
a) S_N1 mechanism b) Nucleophilic addition
c) S_N2 mechanism d) S_E mechanism

482. Free radicals can undergo :

a) Disproportionation to two species
b) Rearrangement to a more stable free radical

c) Decomposition to give another free radical
d) All of the above are correct

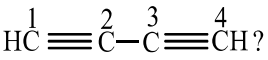
483. During addition of bromine on ethene, the first species formed is

a)  b) $C_2H_4OH^+$ c) $\overset{+}{C}H_2CH_2Br$ d) $C_2H_5^+$

484. Metamers of ethyl propionate are

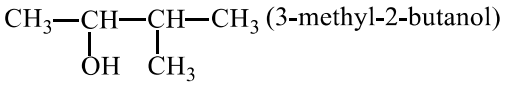
a) C_4H_9COOH and $HCOOC_4H_9$ b) C_4H_9COOH and $CH_3COOC_3H_7$
c) CH_3COOCH_3 and $CH_3COOC_3H_7$ d) $CH_3COOC_3H_7$ and $C_3H_7COOCH_3$

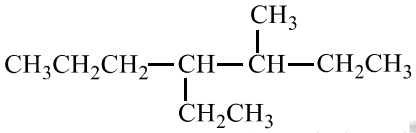
485. Which statement is correct about the hybridization of carbon atoms in,

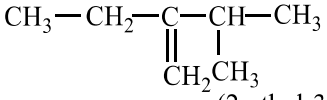


a) C_1 and C_4 are sp^2-hybridized
b) C_2 and C_3 are sp^2-hybridized
c) All are sp-hybridized
d) All are sp^2-hybridized

486. Which one is not is IUPAC system?

a)  (3-methyl-2-butanol)

b) 
(3-methyl-4-ethyl heptane)

c) 
(2-ethyl-3-methyl-but-1-ene)

d) $CH_3 - C \equiv C - CH(CH_3)_2$ (4-methyl-2-pentyne)

487. The compound which exhibits optical isomerism is :

a) $CH_3CHOHCH_3$ b) $(CH_3)_2CHCH_2CH_3$ c) $CH_3CHClCH_2CH_3$ d) $CH_3CCl_2CH_2CH_3$

488. Which of the following applies in the reaction $CH_3CHBrCH_2CH_3 \xrightarrow{\text{Alco.KOH}}$?
(I)$CH_3CH = CHCH_3$(Major product)
(II)$CH_2 = CHCH_2CH_3$(Minoe product)

a) Hofmann's rule b) Saytzeff's rule c) Kharasch effect d) Markownikoff's rule

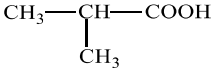
489. Homologous compounds have :

a) Same chemical properties
b) Same molecular weight
c) Same physical properties
d) Same m.p. and b.p.

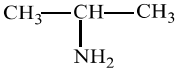
490. How many chiral compound are possible on mono chlorination of 2-methyl butane?

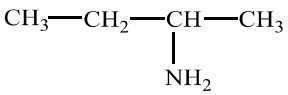
a) 2 b) 4 c) 6 d) 8

491. Which of the following may exist in enantiomorphs?

a) 

b) $CH_3 = CHCH_2CH_2CH_3$

c) 

d) 

492. How many isomers are possible for the alkane C_4H_{10}?
a) 3 b) 5 c) 2 d) 4

493. Which of the following IUPAC names is correct?
a) 2-methyl-3-ethylpentane
b) 2-ethyl-3-methylpentane
c) 3-ethyl-2-methylpentane
d) 3-methyl-2-ethylpentane

494. Ethyl acetoacetate shows, which type of isomerism?
a) Chain b) Optical c) Metamerism d) Tautomerism

495. Enol content is highest in
a) Acetone b) Acetophenone c) Acetic acid d) Acetyl acetone

496. The maximum number of stereoisomers possible for 3-hydroxy-2-methyl butanoic acid is :
a) 1 b) 2 c) 3 d) 4

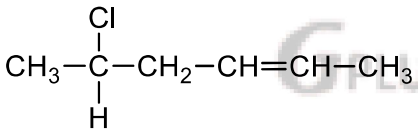
497. Which of the following will exhibit $cis - trans$ isomerism?
a) $CH_2Br - CH_2Br$ b) $CBr_3 - CH_3$ c) $CHBr = CHBr$ d) $CBr_2 = CH_2$

498. Which of the following is most reactive towards electrophilic nitration?
a) Toluene b) Benzene c) Benzoic acid d) Nitrobenzene

499. The number of structural isomers possible for an organic compound with molecular formula C_5H_{12} is :
a) 5 b) 3 c) 4 d) 2

500. Ethylene dichloride and ethylidine chloride are isomeric compounds. The false statement about these isomers is that they
a) React with alcoholic potash and give the same product
b) Are position isomers
c) Contain the same percentage of chlorine
d) Are both hydrolysed to the same product

501. The IUPAC name of



a) 5-chloro-hex-2-ene
b) 2-chloro-hex-5-ene
c) l-chloro-1-methyl-pent-3-ene
d) 5-chloro-5-methyl-pent-2-ene

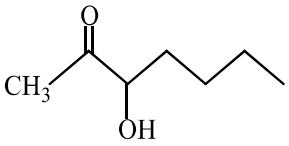
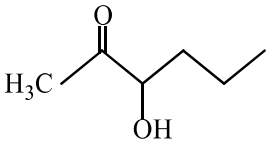
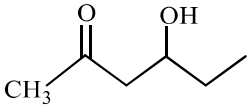
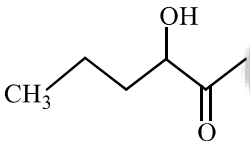
502. Which of the following compounds has incorrect IUPAC nomenclature?
a) $CH_3\ CH_2\ CH_2\ COC_2\ H_5$ (O above COC$_2$H$_5$)
ethylbutanoate
b) CH_3CHCH_2CHO (CH_3 branch)
3-methyl butanal
c) $CH_3CHCCH_2CH_3$ (O above C; CH_3 branch)
2-methyl-3-pentanone
d) $CH_3CHCHCH_3$ (H_3C and OH branches)
2-methyl-3-butanol

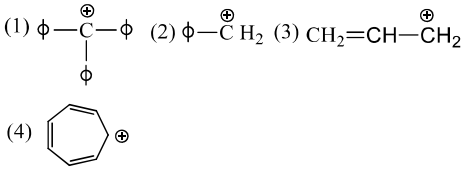
503. The IUPAC name for tertiary butyl iodide is
a) 4-iodo butane b) 2-iodo butane
c) 1-iodo-3-methyl propane d) 2-iodo-2-methyl propane

504. Geometry of methyl free radical is
a) Pyramidal b) Planar c) Tetrahedral d) Linear

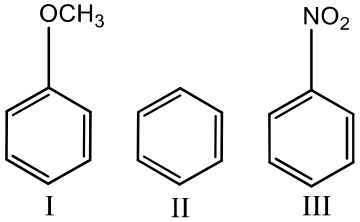
505. Dehydrogenation of ethanol to give ethanal is :
   a) Addition reaction
   b) α-α elimination reaction
   c) α-β elimination reaction
   d) α-γ elimination reaction

506. The arrangement of decreasing order of stability of
$\dot{C}H_3$, $\dot{C}_2H_5$, $(CH_3)_2\dot{C}H$ and $(CH_3)_3\dot{C}$ free radicals is :
   a) $\dot{C}H_3 > \dot{C}_2H_5 > (CH_3)_2\dot{C}H > (CH_3)_3\dot{C}$
   b) $(CH_3)_3\dot{C} > (CH_3)_2\dot{C}H > \dot{C}_2H_5 > \dot{C}H_3$
   c) $\dot{C}_2H_5 > \dot{C}H_3 > (CH_3)_2\dot{C}H > (CH_3)_3\dot{C}$
   d) $(CH_3)_3\dot{C} > (CH_3)_2\dot{C}H > \dot{C}H_3 > \dot{C}_2H_5$

507. Which one of the following compounds will be most readily dehydrated ?
   a) 
   b) 
   c) 
   d) 

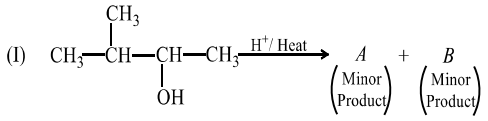
508. 
Correct order of stability is
   a) 1>4>2>3 b) 1>2>3>4 c) 1>2>4>3 d) 1>3>4>2

509. The organic chloro compound, which shows complete stereochemical inversion during and S_N2 reaction, is
   a) CH_3Cl b) $(C_2H_5)_2CHCl$ c) $(CH_3)_3CCl$ d) $(CH_3)_2CHCl$

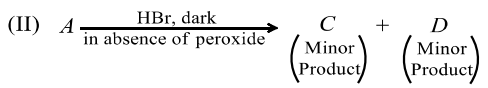
510. Among the following compounds (I-III) the correct order of reaction with the electrophile is

   a) II>III>I b) III<I<II c) I>II>III d) I≈II>III

511. Which of the following is an electrophile?
   a) $:CCl_2$ b) CO_2 c) H_2O d) NH_3

512. In the following reactions,

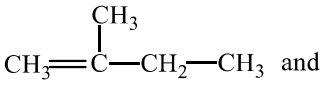


(I) $CH_3-\underset{\underset{OH}{|}}{CH}-CH-CH_3 \xrightarrow{H^+/\text{Heat}} A\ (\text{Minor Product}) + B\ (\text{Minor Product})$



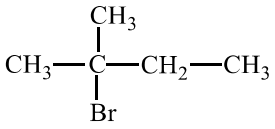
(II) $A \xrightarrow[\text{in absence of peroxide}]{\text{HBr, dark}} C\ (\text{Minor Product}) + D\ (\text{Minor Product})$

the major products (A) and (C) are respectively :

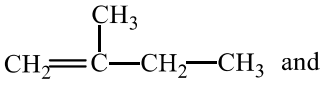


$CH_3=\underset{\underset{CH_3}{|}}{C}-CH_2-CH_3$ and

a)

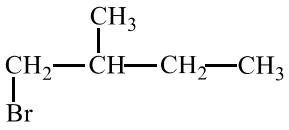


$CH_3-\underset{\underset{Br}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_2-CH_3$

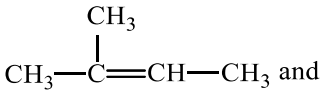


$CH_2=\underset{\underset{CH_3}{|}}{C}-CH_2-CH_3$ and

b)

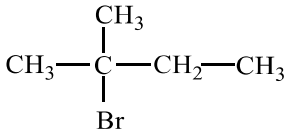


$\underset{\underset{Br}{|}}{CH_2}-\underset{\overset{|}{CH_3}}{CH}-CH_2-CH_3$



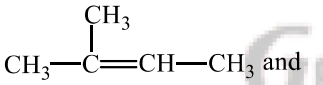
$CH_3-\underset{\underset{CH_3}{|}}{C}=CH-CH_3$ and

c)

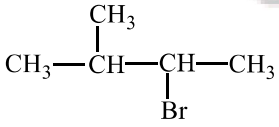


$CH_3-\underset{\underset{Br}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_2-CH_3$

d)



$CH_3-\underset{\underset{CH_3}{|}}{C}=CH-CH_3$ and



$CH_3-\underset{\overset{|}{CH_3}}{CH}-\underset{\underset{Br}{|}}{CH}-CH_3$

513. An organic compound having carbon, hydrogen and sulphur contains 4% of sulphur. The minimum molecular weight of the compound is

a) 500 b) 800 c) 400 d) 100

514. The structure of tertiary butyl carbonium ion is :

a) Pyramidal b) Trigonal planar c) Tetrahedral d) Square planar

515. A carbonium ion contains :

a) A + vely charged carbon centre
b) A –vely charged carbon centre
c) A carbon with odd electron on it
d) None of the above

516. The formula of 3-chloro-2,2-dimethylbutane is :

a) $CH_3CH(CH_3)C(CH_3)_2Cl$ b) $CH_3(CH_3)_2CH_2Cl$ c) $CH_3C(CH_3)_2CH_2Cl$ d) $CH_3CHClC(CH_3)_3$

517. Which shows the easier electrophilic substitution in ring?

a) N-acetyl aniline b) $C_6H_5NH_3Cl$ c) Aniline d) Nitrobenzene

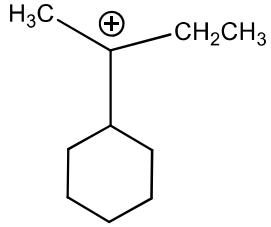
518. The number of isomeric pentyl alcohols possible is

a) Two b) Four c) Six d) Eight

519. Naphthalene can be easily purified by

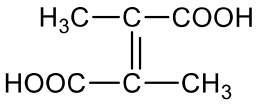
a) Sublimation b) Crystallisation c) Distillation d) Vaporisation

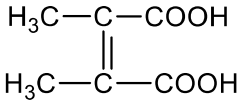
520. The total number of contributing structures showing hyperconjugation (involving – C – H bonds) for the following carbocation is

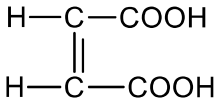


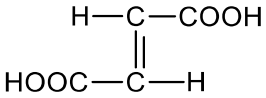
a) Three b) Five c) Eight d) Six

521. What is the structural formula of fumaric acid?

a) 

b) 

c) 

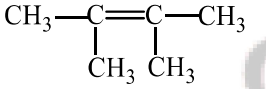
d) 

522. The correct structure of dimethylbutyne is :

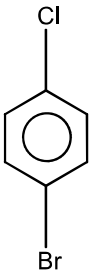
a) $CH_3CH_2 - C \equiv C - CH_2CH_3$

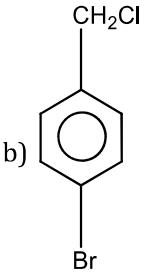
b) $(CH_3)_3C - C - C \equiv CH$

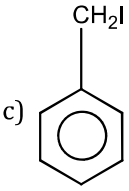
c) $CH_3 - C \equiv CCH(CH_3)_2$

d) 

523. Which one of the following gives white precipitate with $AgNO_3$?

a) 

b) 

c) 

d) None of these

524. The reaction $(CH_3)_3CBr \xrightarrow{H_2O} (CH_3)_3\,C.OH$ is:

a) Elimination reaction

b) Free radical reaction

c) Substitution reaction

d) Displacement reaction

525. Which of the following is free radical?

a) Cl^+ b) Cl^- c) $\dot{C}l$ d) NO_2

526. An organic compound X having molecular formula $C_6H_7O_2N$ has 6 carbons in a ring system, two double bonds and also a nitro group as substitutent. The X is :

a) Homocyclic but not aromatic

b) Aromatic but not homocyclic

c) Homocyclic and aromatic

d) Heterocyclic

527. Quantitative measurement of nitrogen in an organic compound is done by the method
a) Berthelot method b) Belstein method c) Lassaigne test d) Kjheldahl method

528. During pyrolysis of an alkane, C— C bond breaks faster than the C— H bond because :
a) C— C bond is stronger
b) C— H bond is weaker
c) C— C bond involves π-bond in alkane
d) The bond energy of C— C bond is less than that of C— H bond

529. State of hybridization of carbon atom of carbene in the singlet state is :
a) sp^2 b) sp c) sp^3 d) None of these

530. IUPAC name of $(CH_3)_3CCl$is
a) n-butyl chloride b) 3-chloro butane
c) 2-chloro 2-methyl propane d) t −butyl chloride

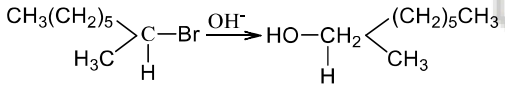
531. Most stable carbocation is formed during the heating of which one of the following compound with conc.H_2SO_4?
a) $(CH_3)_3COH$ b) $C_6H_5CH_2OH$ c) $(CH_3)_2CHOH$ d) $CH_3CH(OH)CH_2CH_3$

532. The number of 1° and 2°carbon atoms in n-pentane are respectively :
a) 2, 3 b) 3, 2 c) 2, 4 d) 1, 3

533. In benzene, all the C − C bonds are of equal length because of :
a) Isomerism b) Resonance c) Tautomerism d) Inductive effect

534. Nitration of benzene is
a) Electrophilic substitution b) Electrophilic addition
c) Nucleophilic substitution d) Nucleophilic addition

535. The following reaction is described as



a) S_E 2 b) S_N 2 c) S_N 1 d) S_N 0

536. Nitrogen containing organic compound when fused with sodium forms
a) Sodium azide b) Sodium cyanide c) Sodamide d) Sodium cyanate

537. Which of the following is strongest nucleophile?
a) Br^- b) $:OH$ c) $:CN$ d) $C_2H_5O:$

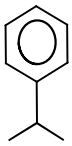
538. In Kjeldahl's method for the estimation of nitrogen, the formula used to
a) % of N $= \frac{1.4\,Vw}{N}$ b) % of N $= \frac{1.4\,VN}{w}$ c) % of N $= \frac{VNw}{1.8}$ d) % of N $= \frac{1.4\,wN}{V}$

539. The most satisfactory method to separate sugars is to use
a) Fractional crystallisation b) Chromatography
c) Benedict's reagent d) Carius method

540. The IUPAC name of an unsymmetrical ether with the molecular formula $C_4H_{10}O$
a) Ethoxy propane b) Methoxy ethane c) Ethoxy ethane d) Methoxy propane

541. S_N1 reaction on optically active substrates mainly gives :
a) Retention in configuration
b) Inversion in configuration
c) Racemic product
d) No product

542. The structures that do not actually exist are called :
a) Tautomers
b) Conformational isomers
c) Canonical structures
d) Optical isomers

543. The correct IUPAC name of,  is :

a) Isopropyl benzene b) Cumene c) Phenyl isopropane d) 2-phenyl propane

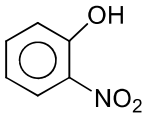
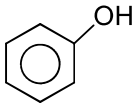
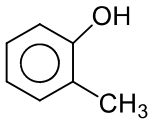
544. When SCN^- is added to an aqueous solution containing $Fe(NO_3)_3$,the complex ion produced is

a) $[Fe(OH_2)_2(SCN)]^{2+}$ b) $[Fe(OH_2)_5(SCN)]^{2+}$ c) $[Fe(OH_2)_8(SCN)]^{2+}$ d) $[Fe(OH_2)(SCN)]^{6+}$

545. Which of the following is the most stable carbocation?

a) $\overset{+}{C}H_3$ b) $R\overset{+}{C}H_2$ c) $R_2\overset{+}{C}H$ d) $R_3\overset{+}{C}$

546. Which one of the following compound is most acidic?

a) $Cl-CH_2-CH_2-OH$ b)  c)  d) 

547. The number of carbon atoms present in neopentane are :

a) Four 1° carbon, one 4° carbon

b) two 1° carbon, two 2° carbon

c) one 1° carbon, three 4° carbon

d) None of the above is correct

548. The Cl—C—Cl angle in 1,1,2,2-tetrachloroethene and tetrachloromethane respectively will be about :

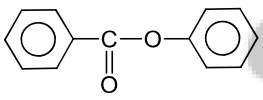
a) 120° and 109.5° b) 90° and 109.5° c) 109.5° and 90° d) 109.5° and 120°

549. $C_6H_5C\equiv N$ and $C_6H_5N\equiv C$ exhibit which type of isomerism?

a) Position b) Functional c) Metamerism d) Dextroisomerism

550. The number of possible enantiomeric pairs that can be produced during monochlorination of 2-methyl butane is :

a) 2 b) 3 c) 4 d) 1

551. In 

Electrophilic substitution occurs at

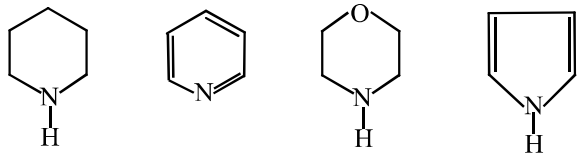
a) *ortho/para* at first ring b) *meta* at first ring

c) *ortho/para* at second ring d) *meta* at second ring

552. In estimation of nitrogen by Duma's method 1.18 g of an orgainc compound gave 224 mL of N_2 at NTP. The percentage of nitrogen in the compound is

a) 20.0 b) 11.8 c) 47.7 d) 23.7

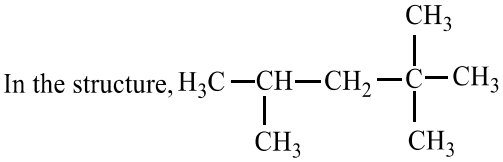
553. In the following compounds,



I II III IV

the order of basicity is :

a) IV > I > III > II b) III > I > IV > II c) II > I > III > IV d) I > III > II > IV

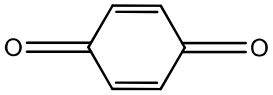
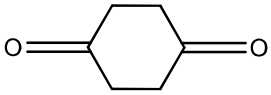
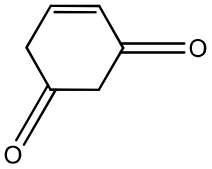
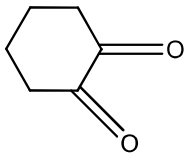
554. In the structure, 

the number of carbons are :

a) One primary, two secondary and one tertiary

b) Four primary, two tertiary and one secondary
c) One primary, one secondary, one tertiary and one quaternary
d) Five primary, one secondary, one tertiary and one quaternary

555. Which of the following does not exhibit tautomerism?

a)  b)  c)  d) 

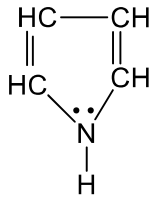
556. Chromatography technique is used for the separation of
a) Small sample of mixture
b) Plant pigments
c) Dyestuff
d) All of the above

557. CH_3CH_2OH and CH_3OCH_3 are the example of
a) Chain isomerism
b) Functional isomerism
c) Position isomerism
d) Metamerism

558. The number of geometrical isomers in case of a compound with the structure, $CH_3 — CH = CH — CH = CH — C_2H_5$ are .
a) Four
b) Three
c) Two
d) five

559. The stability of the carbocation decreases in the order
a) $R_2CH^+ > R_3C^+ > RCH_2^+ > CH_3^+$
b) $R_3C^+ > R_2CH^+ > RCH_2^+ > CH_3^+$
c) $CH_3^+ > R_2CH^+ > RCH_2^+ > R_3C^+$
d) $CH_3^+ > RCH_2^+ > R_2CH^+ > R_3C^+$

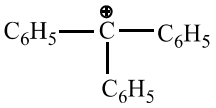
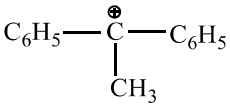
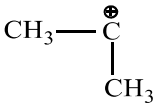
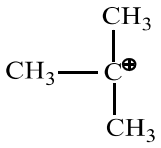
560. How many delocalized π-electrons are there in the compounds



a) 8
b) 2
c) 4
d) 6

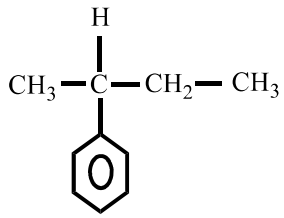
561. What will be the compound if two valencies of carbonyl group are satisfied by two alkyl groups?
a) Aldehyde
b) Ketone
c) Acid
d) Acidic anhydride

562. The most stable carbocation is :

a)  b)  c)  d) 

563. Which of the following belongs to $-I$ group?
a) $-C_6H_5$
b) $-CH_3$
c) $-CH_2CH_3$
d) $-C(CH_3)_3$

564. IUPAC name of following compound,

 is :

a) 2-cyclohexylbutane
b) 2-phenylbutane
c) 3-cyclohexylbutane
d) 3-phenylbutane

565. Which is most commonly used to dry organic liquids?
a) Lithium
b) Sodium
c) Potassium
d) Rubidium

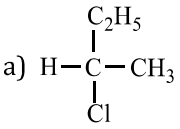
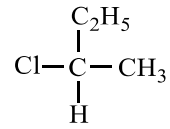
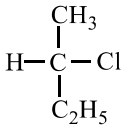
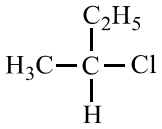
566. In Lassaigne's solution, pink/violet colouration is produced when sodium nitroprusside solution is added. It indicates the presence of
a) Sulphur
b) Nitrogen
c) Chlorine
d) None of these

567. A carbonium ion is formed when a covalent bond between two atoms in an organic compound undergoes :
a) Homolysis b) Heterolysis c) Cracking d) Pyrolysis

568. Racemic mixture is formed by mixing two
a) Isomeric compounds b) Chiral compounds
c) *meso* compounds d) Enantiomers with chiral carbon

569. In a solution, solvent can be separated from solute by one of the following process
a) Decantation b) Filtration c) Distillation d) Sedimentation

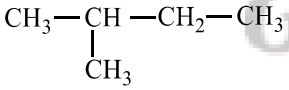
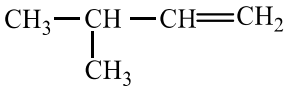
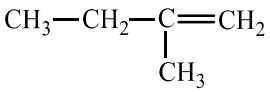
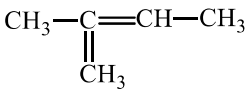
570. Buta-1,3-diene and But-2-yne are :
a) Position isomers b) Functional isomers c) Chain isomers d) Tautomers

571. $CH_3 - CHCl - CH_2 - CH_3$ has a chiral centre. Which one of the following represent its *R*-configuration?
a) 
b) 
c) 
d) 

572. Which of the following statements (s) is (are) not true?
a) Carbanions and carbonium ions, usually exist in ion pairs or else solvated
Acidity increases and basicity decreases in going from left to right across a row of Periodic Table
b) $CH_4 < NH_3 < H_2O < HF(acidity)$
$CH_3^- > NH_2^- > OH^- > F^-$(basicity)
c) $RCOOH$ like $RCOR$ reacts with H_2NOH to give an oxime
d) Decreasing order of ionizing power of solvents is
$CF_3COOH > HCOOH > H_2O > CH_3COOH > CH_3OH > C_2H_5OH > (CH_3)_2SO > CH_3CN$

573. The intermediate during the addition of HCl to propene in the presence of peroxide is :
a) $CH_3\dot{C}HCH_2Cl$ b) $CH_3\overset{+}{C}HCH_3$ c) $CH_3CH_2\dot{C}H_2$ d) $CH_3CH_2\overset{+}{C}H_2$

574. Which of the following represents *neo* −pentyl alcohol?
a) $CH_3CH(CH_3)CH_2CH_2OH$b) $(CH_3)_3C - CH_2OH$ c) $CH_3(CH_2)_3OH$ d) $CH_3CH_2CH(OH)C_2H_5$

575. 2-methyl-2-butene will be represented as :
a) 
b) 
c) 
d) 

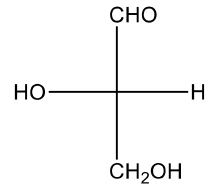
576. The most abundant organic compound in the world is :
a) CH_4 b) Chlorophyll c) Alkaloids d) Cellulose

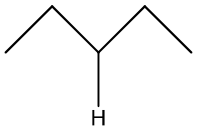
577. The chain initiating species in free radical chlorination of methane is :
a) Cl free radical b) HCl c) CH_3 radical d) Methylene radical

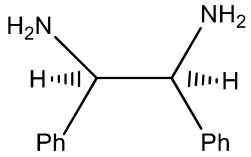
578. Which of the following belongs to $+I$ group?
a) $-OH$ b) $-OCH_3$ c) $-COOH$ d) $-CH_3$

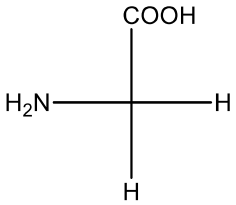
579. Different structures generated due to rotation about, C – C axis, of an organic molecule, are examples of
a) Geometrical isomerism b) Conformational isomerism
c) Optical isomerism d) Structural isomerism

580. Which of the following molecules is expected to rotate the plane of plane-polarised light?

a) 

b) 

c) 

d) 

581. Chromatography was discovered by
a) Kekule b) Pauling c) Rutherford d) Tswett

582. Sodium nitroprusside when added to an alkaline solution of sulphide ions produces a colouration
a) Red b) brown c) Blue d) Purple

583. $(CH_3)_4\overset{+}{N}$ is neither an electrophile, nor a nucleophile because it :
a) Does not have electron pair for donation as well as cannot attract electron pair
b) Neither has electron pair available for donation nor can accommodate electron since all shells of N are fully occupied
c) Can act as Lewis acid and base
d) None of the above

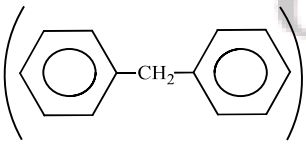
584. Isopentane can form four isomeric mono bromo derivatives. How many of them are optically active?
a) 1 b) 2 c) 3 d) None of these

585. Which one of the following does not show resonance?
a) Carbon dioxide b) Benzene c) Nitromethane d) Propane

586. Select the organic compounds aliphatic in nature but burn with smoky flame :
a) CCl_4 b) $CHCl_3$ c) $C_6H_5CH_2OH$ d) Both (a) and (b)

587. Which of the following is an electrophilic reagent?
a) RO^- b) BF_3 c) NH_3 d) $R\ddot{\underset{\cdot\cdot}{O}}H$

588. The molecular formula of diphenyl methane is $C_{13}H_{12}$.



How many structural isomers are possible when one of the hydrogen is replaced by a chorine atom?
a) 6 b) 4 c) 8 d) 7

589. A mixture of iron fillings and sulphur cannot be separated by
a) Heating b) Magnet
c) Shaking with CS_2 d) Washing in a current of water

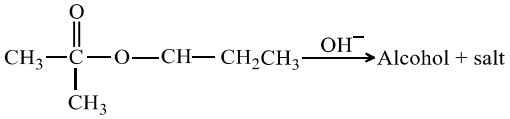
590. Isomers of propionic acid are
a) $HCOOC_2H_5$ and CH_3COOCH_3 b) $HCOOC_2H_5$ and C_3H_7COOH
c) CH_3COOCH_3 and C_3H_7OH d) C_3H_7OH and CH_3COCH_3

591. Reactions involving heterolytic fission are said to proceed *via* :
a) Ionic mechanism b) Polar mechanism c) Both (a) and (b) d) None of these

592. Which of the following orders is true regarding the acidic nature of COOH?
a) Formic acid > acetic acid> propanoic acid b) Formic acid > acetic acid< propanoic acid
c) Formic acid < acetic acid> propanoic acid d) Formic acid > acetic acid< propanoic acid

593. Which behaves both as a nucleophile as well as an electrophile?
a) CH_3OH b) CH_3NH_2 c) CH_3CN d) CH_3Cl

594. Alkaline hydrolysis of an ester (A) gives alcohol and salt



The correct statement about the reaction is :

a) In alcohol configuration about chiral carbon atom is retained

b) In alcohol configuration about chiral carbon atom is inverted

c) Alcohol loses optical activity

d) All statement are incorrect

595. In which case the carbon-carbon bond length is same?

a) 2-butene b) Benzene c) 1-butene d) 1-propyne

596. Incorrect statement is

a) Aniline can be purified by steam distillation

b) Beilstein test is not given by fluorine

c) Kjeldahl's method is used for estimation of sulphur

d) Lassaigen's test is used in the qualitative detection of elements in organic compounds

597. The increasing order of stability of the following free radicals are

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

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

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

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

598. Which one of the following explain, why propene undergo electrophilic addition with HBr, but not with HCN?

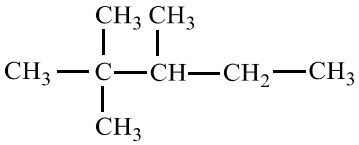
a) Br^- is better nucleophile than CN^-

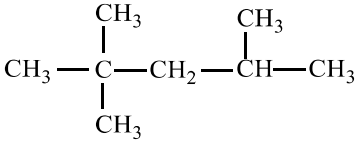
b) HBr being better source of proton as it is stronger acid than HCN

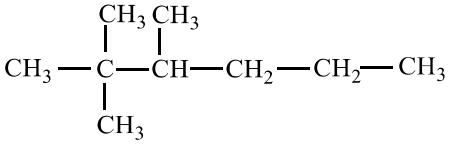
c) HCN attacks preferentially *via* lone pair of nitrogen

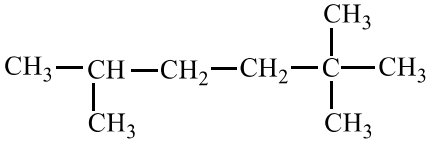
d) The C – Br bond being stronger is formed easily as compared to C – CN bond

599. The structural formula of 2,2,3-trimethyl hexane is :

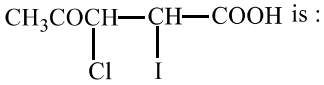
a) 

b) 

c) 

d) 

600. The IUPAC name of the compound,

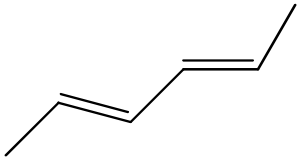


is :

a) 2-iodo-3-chloro-4-pentanoic acid
b) 4-oxo-3-chloro-2-iodo pentanoic acid
c) 4-carboxy-4,3-chloro-2-butanone
d) 3-chloro-2-iodo-4-oxo-pentanoic acid

601. Select the correct statement about the detection of sulphur in organic compounds
a) Sulphur present in organic compound on fusion with sodium is converts to $Na_2S_2O_3$
b) $FeCl_3$ gives purple colour when added to the sodium fusion extract
c) Sodium nitroprusside is used to detect the presence of sulphur
d) All of the above

602. The name of the compound



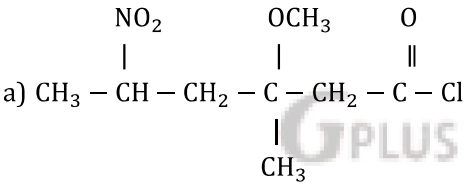
is

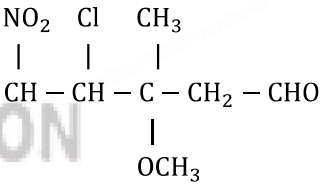
a) (2Z,4Z)-2, 4-hexadiene
b) (2Z-, 4E)-2, 4-hexadiene
c) (2E, 4Z)-2, 4-hexadiene
d) (4E, 4Z)-2, 4-hexadiene

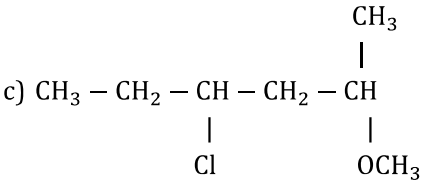
603. Rotation of plane polarized light can be measured by :
a) Manometer b) Calorimeter c) Polarimeter d) Viscometer

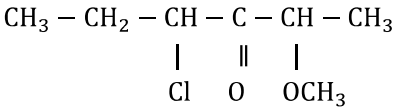
604. A molecule having three different chiral carbon atoms, how many stereoisomers it will have?
a) 8 b) 3 c) 9 d) 6

605. Correct the structural formula of compound-5-nitro-3-methoxy-3-methylhexanoyl chloride is

a) 

b) 

c) 

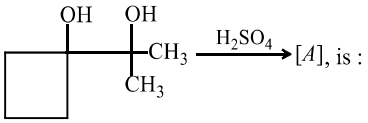
d) 

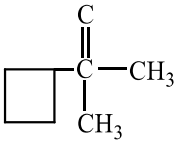
606. Which of the following is the strongest base?
a) Acetamide b) Aniline c) Methylamine d) Dimethylamine

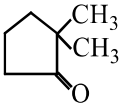
607. The isomeric monosubstitution products theoretically possible for the structure,
$CH_2 = HC - CH_2 - CH_2 - CH = CH_2$ are :
a) 3 b) 2 c) 4 d) 6

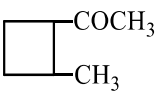
608. Intermediate product formed in the acid catalysed dehydration of *n*-propyl alcohol is :
a) $CH_3 - CH_2 - CH_3$ b) $CH_3 - CH = CH_2$ c) $CH_3—\overset{+}{C}H—CH_3$ d) $CH_3—CH_2—\overset{+}{C}H_2$

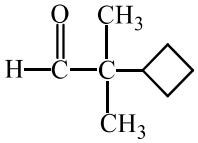
609. Product [*A*] in the reaction :



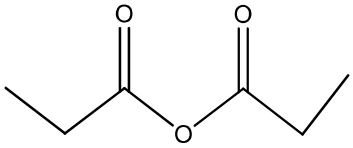
a) 

b) 

c) 

d) 

610. The IUPAC name of the following compound is



a) Propionic anhydride
b) Dipropanoic anhydride
c) Ethoxy propanoic acid
d) Propanoic anhydride

611. Which of the following has the highest nucleophilicity?

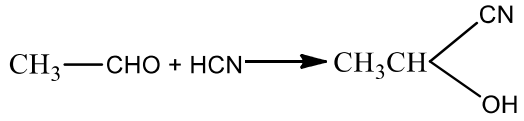
a) F^- b) OH^- c) CH_3^- d) NH_2^-

612. Anthracene is purified by

a) Filtration b) Distillation c) Crystallisation d) Sublimation

613. Which of the following requires radical intermediate?

a) $CH_3 - CH = CH_2 + HBr \longrightarrow CH_3 - \underset{\displaystyle Br}{\underset{|}{CH}} - CH_3$

b) 

c) $CH_3 - CH = CH_2 + HBr \rightarrow CH_3 - CH_2 - CH_2 - Br$

d) $CH_3CHO + NH_2OH \xrightarrow{H^+} CH_3 - CH = N - OH$

614. Chiral molecules are those which:

a) Are not superimposable on their mirror images
b) Are superimposable on their mirror images
c) Show geometrical isomerism
d) Are unstable molecules

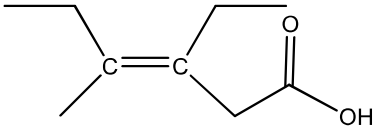
615. Who is called the 'Father of Chemistry'?

a) Faraday b) Priestley c) Rutherford d) Lavoisier

616. With a change in hybridization of the carbon bearing the charge, the stability of a carbanion increase in the order

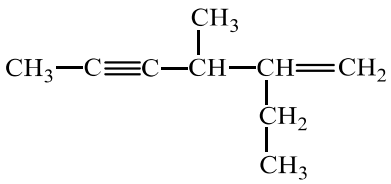
a) $sp < sp^3 < sp^2$ b) $sp < sp^2 < sp^3$ c) $sp^2 < sp < sp^3$ d) $sp^3 < sp^2 < sp$

617. The correct IUPAC name of the acid



a) Z-3-ethyl-4-methyl hex-3-en-1-oic acid
b) *Z*-3-ethyl-4-methyl hexanoic acid
c) *Z*-3, 4-diethylpent-3-en-1-oic acid
d) *E*-3-ethyl-4-methylhex-4-en-1-oic acid

618. IUPAC name of,

 is:

a) 2-ethyl-3-methyl-hexa-l-en-4-yne
b) 5-ethyl-4-methyl-hexa-2-yn-5-ene
c) 3-methylene-4-methylhepta-5-yne
d) 5-methylene-5-ethyl-4-methylhepta-2-yne

619. The total number of alkenes possible by dehydromination of 3-bromo-3-cyclopentylhexane using alcoholic KOH is

a) 1 b) 3 c) 5 d) 7

620. The Cl—C—Cl bond angle in dichloro methane will be :

a) $> 109°28'$ b) $< 109°28'$ c) $109°28'$ d) 120°

621. In the following reaction sequence, the chain initiation steps is :

a) $Cl—Cl \longrightarrow \overset{\bullet}{Cl} + \overset{\bullet}{Cl}$

b) $CH_4 + \overset{\bullet}{Cl} \longrightarrow \overset{\bullet}{C}H_3 + HCl$

c) $\overset{\bullet}{C}H_3 + Cl_2 \longrightarrow CH_3Cl + \overset{\bullet}{Cl}$

d) $\overset{\bullet}{C}H_3 + \overset{\bullet}{Cl} \longrightarrow CH_3Cl$

622. Amongst the following which of the above are true for S_N2 reaction?

(i) The rate of reaction is independent of the concentration of the nucleophile.

(ii) The nucleophile attacks the carbon atom on the side of the molecule opposite to the group being displaced.

(iii) the reaction proceeds with simultaneous bond formation and bond rupture.

a) (i), (ii) b) (i), (iii) c) (i), (ii), (iii) d) (ii), (iii)

623. Predict the nature of principal product in the reaction,

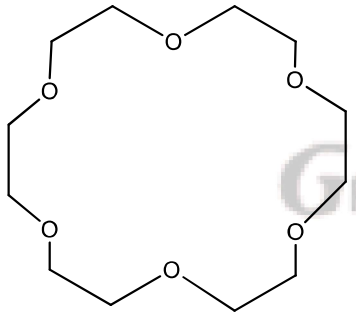
$BrCH_2CH_2CH_2CH_2Br + KOH\ (alc.) \longrightarrow$ Product :

a) 1,3-butadiene b) Cyclobutane c) $BrCH_2CH_2CH = CH_2$ d) None of these

624. The most stable carbanion is

a) $CH_3^{\ominus}$ b) $RCH_2^{\ominus}$ c) $R_3C^{\ominus}$ d) $^{\ominus}CH_2CHO$

625. Crown ethers are named as X-crown-Y. In the following crown ether, X and Y are respectively



a) 6 and 12 b) 18 and 6 c) 24 and 6 d) 6 and 24

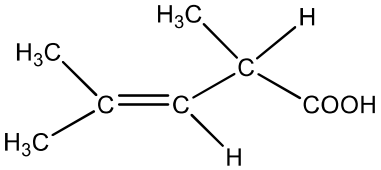
626. Which one of the nitrogen atoms in

$H_2N - NH - \overset{\overset{O}{\|}}{C} - NH_2$ is the most nucleophilic?

I II III

a) III b) I c) II d) All three N atoms

627.



Compound can exhibit

a) Geometrical isomerism b) Tautomerism

c) Optical isomerism d) Geometrical and optical isomerism

628. The order of stability of the alkenes

$R_2C = CR_2, R_2C = CHR, R_2C = CH_2,$

I II III

$RCH = CHR, \quad RCH = CH_2$

IV V

a) I>II>IV>III>V b) I=II>III>IV>V c) II>I>IV>III>V d) V>IV>III>I>II

629. If a compound on analysis was found to contain C = 18.5%, H = 1.55%, Cl = 55.04% and O = 24.81% then its empirical formula is

a) CH_2OCl b) CH_2ClO_2 c) $ClCH_2O$ d) CHClO

630. 2-pentanone and 3-methyl-2-butanone are a pair of ..... isomers.

a) Functional b) Chain c) Positional d) Stereo

631. The number of isomeric ethers with molecular formula $C_4H_{10}O$ is/ are.

a) One b) Two c) Three d) Four

632. Liebig's test is used to estimate

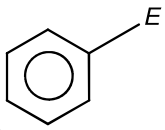
a) H b) C c) C and H Both d) N

633. Number of isomers possible for C_4H_8O is

a) 3 b) 4 c) 5 d) 6

634. Most stable carbonium ion is

a) $\overset{+}{C}_2H_5$ b) $(CH_3)_3\overset{+}{C}$ c) $(C_6H_5)_3\overset{+}{C}$ d) $C_6H_5\overset{+}{C}H_2$

635. 

In a compound electrophilic substitution has occurred. The substitute-E are methyl $-CH_2Cl$, $-CCl_3$ and $-CHCl_2$. The correct increasing order towards electrophilic substitution is

a) $-CH_3 < -CH_2Cl < -CHCl_2 < -CCl_3$ b) $-CH_3 < -CHCl_2 < -CH_2Cl < -CCl_3$

c) $-CCl_3 < -CH_2Cl < -CHCl_2 < -CH_3$ d) $-CCl_3 < -CHCl_2 < -CH_2Cl < -CH_3$

636. In fructose, the possible optical isomers are

a) 12 b) 8 c) 16 d) 4

637. Which structure can be explained by taking ground state configuration of atom?

a) BeH_2 b) BF_3 c) CH_4 d) H_2O

638. Which one of the following carbanions is the least stable?

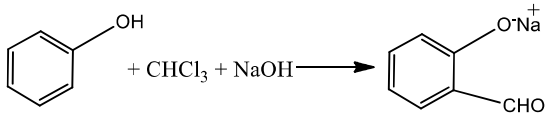
a) $CH_3CH_2^-$ b) $HC \equiv C^-$ c) $(C_6H_5)_3C^-$ d) $(CH_3)_3C^-$

639. Which one of the following is the most energetic conformation of cyclohexane?

a) Boat b) Twisted boat c) Chair d) Half chair

640. The energy difference between the chair and boat form of cyclohexane is :

a) 44 kJ mol^{-1} b) 24 kJ mol^{-1} c) 34 kJ mol^{-1} d) 68 kJ mol^{-1}

641. 

The electrophile involved in the above reaction is

a) Dichloromethyl cation $(\overset{\oplus}{C}HCl_2)$ b) Dichlorocarbene $(:CCl_2)$

c) Trichloromethyl anion $(\bar{C}Cl_3)$ d) Formyl cation $(\overset{\oplus}{C}HO)$

642. Addition of HI on double bond of propene yields isopropyl iodide as major product. It is because the addition proceeds through :

a) More stable carbocation

b) more stable carbanion

c) More stable free radical

d) Homolysis

643. For which of the following parameters the structural isomers C_2H_5OH and CH_3OCH_3 would be expected to have the same values? (Assume ideal behaviour)

a) Heat of vaporisation

b) Vapour pressure at the same temperature
c) Boiling points
d) Gaseous densities at the same temperature and pressure

644. The IUPAC name of  is :
a) Bicyclo (2,1,0) pentane
b) 1,2-cyclopropyl cyclobutane
c) Cyclopentane (4,3)annulene
d) 1,2-methylene cyclobutane

645. The IUPAC name of neopentane is :
a) 2,2-dimethylpropane b) 2-methylpropane c) 2,2-dimethylbutane d) 2-methylbutane

646. In Carius method of 0.099 g orgainc compound gave 0.287 g AgCl. The percentage of chlorine in the compound will be
a) 28.6 b) 71.7 c) 35.4 d) 64.2

647. The most common type of reaction in aromatic compounds is
a) Elimination reaction b) Addition reaction
c) Electrophilic substitution reaction d) Rearragement reaction

648. Select the correct order of basic nature :
a) $CH_3CH_2^- > CH_2 = CH^- > CH \equiv C^- \longrightarrow OH^-$
b) $CH_3CH_2^- > CH \equiv C^- > CH_2 = CH^- > OH^-$
c) $CH_3CH_2^- > OH^- > CH \equiv C^- > CH_2 = CH^-$
d) $OH^- > CH \equiv C^- > CH_2 = CH^- > CH_3 — CH_2^-$

649. Arrange the following carbocations in order of stability

benzyl	allyl	methyl	vinyl
I	II	III	IV

a) IV>III>II>I b) I>II>III>IV c) II>IV>III>I d) III>II>I>IV

650. The prefix name of —SH group in IUPAC system is :
a) Mercapto b) Thiol c) Sulphide d) None of these

651. The correct name for CH_3COCH_2OH is :
a) 2-keto propanol
b) 1-hydroxy propan-2-one
c) Propan-2-one-1-ol
d) 3-hydroxy propan-2-one

652. The maximum number of alkyl groups in C_8H_{18} is :
a) 6 b) 5 c) 4 d) 2

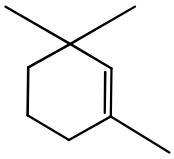
653. The chlorination of methane to give CCl_4 is an example of
a) Addition b) Elimination c) Substitution d) Chain reaction

654. The number of isomers for the aromatic compound of the formula C_7H_8O is :
a) 2
b) 3
c) 4
d) 5

655. The IUPAC name of the compound having the formula $CH \equiv C — CH = CH_2$ is :
a) 1-butene-3-yne b) 3-butene-1-yne c) 1-butyn-3-ene d) But-1-yne-3-ene

656. $H_3C - \underset{\underset{Cl}{|}}{C} = CH - \underset{\underset{CH_3}{|}}{CH} - CH_3$
a) 2-chloro-4-methyl-2-pentene b) 4-chloro-2-methyl-3-pentene
c) 4-methyl-2-chloro-2-pentene d) 2-chloro-4, 4-dimethyl-2-butene

657. Give the IUPAC name of the compound



a) 1,1,3-trimethylcyclohex-2-ene
b) 1,3,3-trimethylcyclohex-1-ene
c) 1,1,5-trimethylcyclohex-5-ene
d) 2,6,6-trimethylcyclohex-1-ene

658. C – H bond energy is about101 kcal/mol for methane, ethane and other alkanes but is only77 kcal/mol for C – H bond of CH_3 in toluene. This is because
a) Of inductive effect due to $-CH_3$ in toluene
b) Of the presence of benzene ring in toluene
c) Of resonance among the structures of benzyl radical in toluene
d) Aromaticity of toluene

659. The reaction $(CH_3)_3C-Br \xrightarrow{H_2O} (CH_3)_3COH$ is
a) Elimination b) Substitution c) Free radical d) Addition

660. 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

661. Fractional distillation is a process by which the separation of different fractions from mixture of solution is carried by making use of the following property of the fractions
a) Freezing point b) Boiling point c) Melting point d) Solubility

662. The maximum number of carbon atoms arranged linearly in the molecule, $CH_3-C\equiv C-CH=CH_2$ is
a) 5 b) 4 c) 2 d) 3

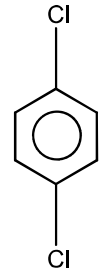
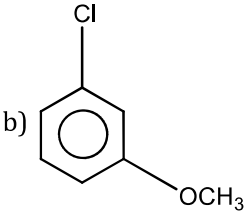
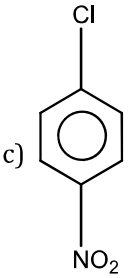
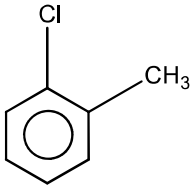
663. α-D-glucose and β-D-glucose have a specific rotation of +112° and +19° respectively. In aqueous solution the rotation becomes +52°. This process is called :
a) Inversion b) Racemization c) Mutarotation d) enolisation

664. Which of the following is an electroplile?
a) Na^+ b) Li^+ c) H^+ d) Ca^{2+}

665. Which of the following is singlet carbine?
a) $CH_3\ddot{C}HCH_3$ b) $C_2H_5\ddot{C}-H$ c) $CH_2=CH-\overset{\oplus}{C}H_2$ d) $(CH_3)_3C^+$

666. Which of the following is the correct order of priority of groups in D-glyceraldehyde?
a) OH(1), CHO(2), CH_2OH(3)and H(4)
b) OH (1), CH_2OH(2), CHO(3)and H(4)
c) CH_2OH(1), CHO(2), OH(3)and H(4)
d) CHO(1), OH(2), CH_2OH(3) and H(4)

667. *o*-hydroxytoluene and benzyl alcohol are :
a) Position isomers b) Keto-enol tautomers c) Chain isomers d) None of these

668. Which of the following would react most readily with nucleophiles?
a) 
b) 
c) 
d) 

669. Which group has the highest + Inductive effect?
a) CH_3- b) CH_3CH_2- c) $(CH_3)_2CH-$ d) $(CH_3)_3C-$

670. The Prussian blue colour obtained during the test of nitrogen by Lassaigne;s test is due to the formation of
a) $Fe[Fe(CN)_6]_3$ b) $Na_4[Fe(CN)_6]$ c) $Fe_3[Fe(CN)_6]_4$ d) $Fe_2[Fe(CN)_6]$

671. How many π-electrons are there in the following structure?

a) 2 b) 4 c) 6 d) 8

672. Which of the following statements is correct?

a) Allyl carbonium ion $(CH_2{=}CH{-}\overset{+}{C}H_2)$ is more stable then propyl carbonium ion

b) Propyl carbonium ion is more stable than the allyl carbonium ion

c) Both are equally stable

d) None of the above

673. Which of the following possesses an *sp*-hybridized carbon in its structure?

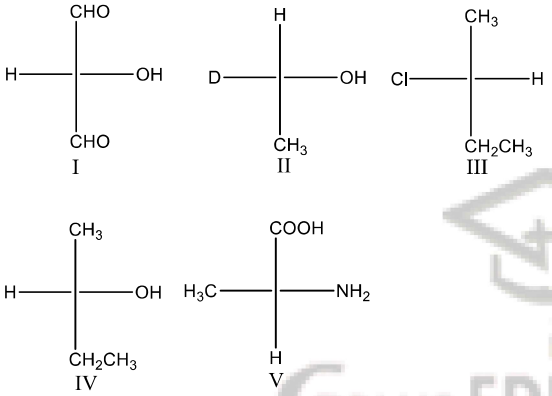
a) $CCl_2 = CCl_2$

b) $CH_2 = C = CH_2$

c) $CH_2 = CH{-}CH = CH_2$

d) $CH_2 = CCl{-}CH = CH_2$

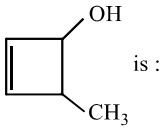
674. Select *R*-isomers from the following



a) I and III b) II, IV and V c) I, II and III d) II and III

675. Di-chloroacetic acid is a stronger acid than acetic acid.
This due to occurrence of

a) Mesomeric effect b) Hyperconjugation c) Inductive effect d) Steric effect

676. The IUPAC name of  is :

a) 3-methyl cyclo-1-buten-2-ol

b) 4-methyl cyclo-2-buten-1-ol

c) 4-methyl cyclo-1-buten-3-ol

d) 2-methyl cyclo-3-buten-1-ol

677. The sodium extract of an organic compound on boiling with HNO_3 and addition of ammonium molybdate of solution gives a yellow precipitate. The compound contains

a) Nitrogen b) Phosphorus c) Sulphur d) Chlorine

678. Unpaired electron in $\dot{C}H_3$ occupies :

a) *sp*-hybrid orbital b) sp^3-hybrid orbital c) *p*-orbital d) sp^2-hybrid orbital

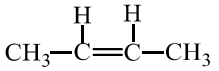
679. In which of the following ways does the hydride ion tend to function?

a) An electrophile b) A nucleophile c) A free radical d) An acid

680. The number of isomers of the compound with molecular formula $C_2H_2Br_2$is

a) 4 b) 3 c) 5 d) 2

681. The treatment of CH_3MgX with $CH_3C \equiv C{-}H$ produces :

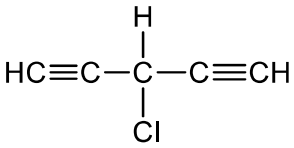
a) CH_4 b) $CH_3-CH=CH_2$ c) $CH_3C\equiv C-CH_3$ d) 

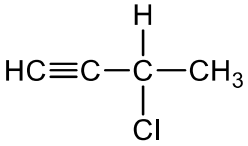
682. The correct decreasing order of priority for the functional groups of organic compounds in the IUPAC system of nomenclature is

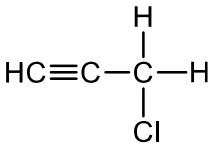
a) $-COOH, -SO_3H, -CONH_2, -CHO$ b) $-SO_3H, -COOH, -CONH_2, -CHO$

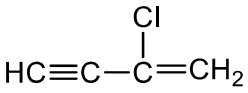
c) $-CHO, -COOH, SO_3H, -CONH_2$ d) $-CONH_2, -CHO, -SO_3H, -COOH$

683. Which of the following is most likely to show optical isomerism?

a) 

b) 

c) 

d) 

684. Which of the following statements is incorrect?

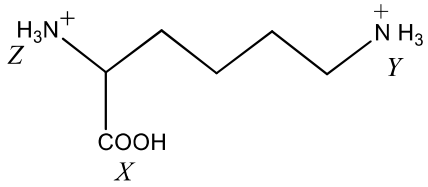
a) The rate of reaction increases with increase in water concentration in the hydrolysis of tertiary butyl bromide in methanol and water

b) The relative nucleophilicity in protic solvent is $CN^- > I^- > \bar{O}H > Br^- > Cl^- > F^- > H_2O$

c) In S_N2 reactions, the order of reactivity of alkyl halides is in the order methyl>primary>secondary> tertiary

d) S_N2 reaction involves carbonium ions

685. Arrange in order of increasing acidic strength.



a) X>Z>Y b) Z<X>Y c) X>Y>Z d) Z>X>Y

686. For the purification, isolation and separation of organic compounds, the latest technique followed is

a) Chromatography b) Steam distillation

c) Fractional crystallisation d) Sublimation

687. Arrange *p*-toluidine (I) N,N-dimethyl-*p*- toluidine (II) *p*- nitroaniline (III) and aniline (IV) in order of decreasing basicity

a) I>IV>III>II b) I>II>III>IV c) II>I>IV>III d) III>I>II>IV

688. The reagent showing addition on alkene against the Markownikoff's rule of :

a) Br_2 b) H_2S c) HF d) HBr

689. Carbocation can undergo :

a) Loss of a proton

b) Addition to multiple bond

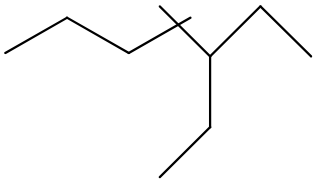
c) Combination with anions

d) All of the above

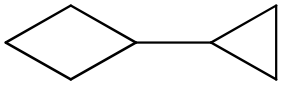
690. Lactic acid is :
   a) Propionic acid
   b) β-hydroxypropanoic acid
   c) α-hydroxypropanoic acid
   d) None of the above

691. Of the following compounds which will have a zero dipole moment?
   a) 1,1-dichloroethylene
   b) *trans*-1,2-dichloroethylene
   c) *cis*-1,2-dichloroethylene
   d) None of the above

692. The IUPAC name of



   a) 1,1-diethyl1-2, 2-dimethylpentane
   b) 4,4-dimethyl-5,5-diethylpentane
   c) 5, 5-diethyl-4,4-dimethylpentane
   d) 3-ethyl-4,4-dimethylheptane

693. 
   The correct IUPAC name is
   a) 1- cyclopropyl cyclobutane
   b) 1, 1-dicyclobutane
   c) 1- cyclobutane-1- cyclopropane
   d) None of the above

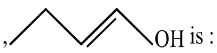
694. Reactivity towards nucleophilic addition reaction of
   I. HCHO II.CH_3CHO
   III. CH_3COCH_3 is
   a) II>III>I b) III>II>I c) I>II>III d) I>III>II

695. Arrange the following compounds in order of their decreasing reactivity with an electrophile, $E^{\oplus}$.
   (A) Chlorobenzene,
   (B) 2,4-dinitrochlorobenzene,
   (C) *p*-nitrochlorobenzene
   a) C>B>A b) B>C>A c) A>C>B d) A>B>C

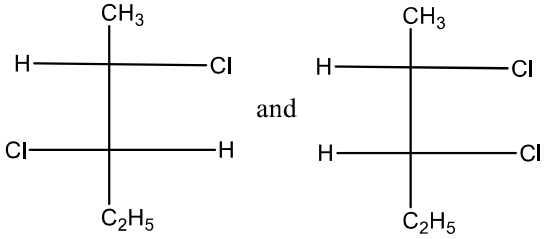
696. Isomerism exhibited by acetic acid and methyl formate is :
   a) Functional b) Chain c) Geometrical d) Central

697. $C_3H_5Cl + aq.\ NaOH \rightarrow C_2H_5OH + NaCl$;
   this reaction is
   a) Electrophilic substitution of I order
   b) Electrophilic substitution of II order
   c) Nucleophilic substitution of I order
   d) Nucleophilic substitution of II order

698. In IUPAC suffix name of —CO*X* is :
   a) Oyl halide b) Halo carbonyl c) Carbamoyl d) None of these

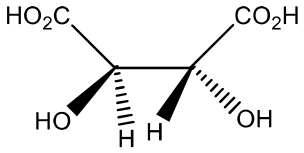
699. IUPAC name of the compound,  is :
   a) but-2-en-l-ol b) l-hydroxy but-l-ene c) 4-hydroxy butene-3 d) But-l-en-l-ol

700. The two optical isomers given below, namely



a) Enantiomers
b) Geometrical isomers
c) Diastereomers
d) Structural isomers

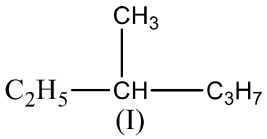
701. The absolute configuration of



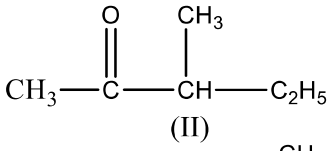
a) S, S
b) R, R
c) R, S
d) S, R

702. Which one of the following compounds is most reactive towards nucleopilic addition?
a) CH_3CHO
b) $PhCOCH_3$
c) PhCOPh
d) CH_3COCH_3

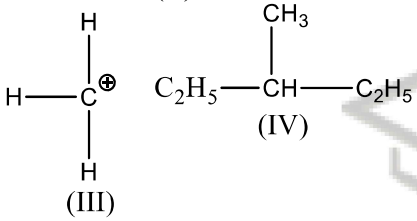
703. Among the following four structures I to IV



(I)



(II)



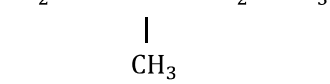
(III)

(IV)

it is true that
a) All four are chiral compounds
b) Only I and II are chiral compounds
c) Only III is a chiral compound
d) Only II and IV are chiral compounds

704. Which of the following is the most stable cation?
a) $F_3C-\overset{\oplus}{C}H_2$
b) $(CH_3)_2\overset{\oplus}{C}H$
c) $\overset{\oplus}{C}H_3$
d) $\overset{\oplus}{C}F_3$

705. Write the IUPAC name of

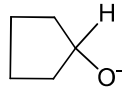


a) 3-methoxy butane
b) 2-methoxy butane
c) 3-methyl-3-methoxy propane
d) Butoxy methane

706. Which of the following species is not electrophilic in nature?
a) $\overset{\oplus}{C}l$
b) BH_3
c) $\overset{\oplus}{H_3O}$
d) $\overset{\oplus}{N}O_2$

707. List the following alkoxide nucleophile in decreasing order of their S_N 2 reactivity

1. Me_3CO^- 2.MaO^- 3.$MeCH_2O^-$ 4. Me_2CHO^- 5.



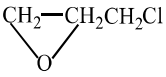
a) 2>3>5>4>1
b) 5>3>2>1>4
c) 1>5>2>3>4
d) 3>5>1>2>3

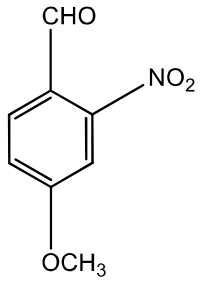
708. The Beilstein test for organic compound is used to detect
a) Nitrogen
b) Sulphur
c) Carbon
d) Halogens

709. Which of the following statements is not characteristic of free radical chain reaction?
a) It gives major product derived from most stable free radical
b) It is usually sensitive to change in solvent polarity

c) It proceeds in three main steps like initiation, propagation and termination
d) It may be initiated by UV light

710. The presence of carbon in an organic compound is detected by heating it with
a) Sodium metal to convert it into NaCN
b) CaO to convert it into CO which burns with a blue flame
c) CuO to convert it into CO_2 which turns lime water milky
d) Cu wire to give a bluish green flame

711. IUPAC name of the compound,  is :
a) 1-choloro-2,3-epoxypropane
b) 3-chloro-1,2-epoxypropane
c) 1-chloroethoxymethane
d) None of the above

712. What is the correct IUPAC name of

a) 4-methoxy-2-nitrobenzaldehyde
b) 4-formyl-3-nitro anisole
c) 4-methoxy-6-nitrobenzaldehyde
d) 2-formyl-5-methoxy nitrobenzene

713. Which one is an elimination reaction?
a) $CH_3CH_3 + Cl_2 \longrightarrow CH_3CH_2Cl + HCl$
b) $CH_3Cl + KOH(aq.) \longrightarrow CH_3OH + KCl$
c) $CH_2 = CH_2 + Br \longrightarrow CH_2BrCH_2Br$
d) $C_2H_5Br + KOH(\text{alc.}) \longrightarrow C_2H_4 + KBr + H_2O$

714. Identify the compound that exhibits tautomerism
a) 2-butene
b) Lactic acid
c) 2-pentanone
d) Phenol

715. Which of the following is an electrophile?
a) H_2O
b) SO_3
c) NH_3
d) ROR

716. The formula of ethanenitrile is :
a) C_2H_5NC
b) C_2H_5CN
c) CH_3CN
d) None of these

717. Which of the following acids shows stereoisomerism?
a) Oxalic acid
b) Tartaric acid
c) Acetic acid
d) Formic acid

718. Among the following compounds which can be dehydrated very easily is
a) $CH_3-CH_2-\underset{\displaystyle OH}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-CH_2-CH_3$
b) $CH_3-CH_2-CH_2-\underset{\displaystyle OH}{\overset{|}{CH}}-CH_3$
c) $CH_3-CH_2-CH_2-CH_2-CH_2OH$

d) $CH_3-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_2OH$

719. Mark the incorrect statement in nitrogen Kjeldahl's method of estimation
a) Nitrogen gas is collected over caustic potash solution
b) Potassium sulphate is used as boiling point elevator of H_2SO_4
c) Copper sulphate or mercury acts as a catalyst
d) Nitrogen is quantitatively decomposed to give ammonium sulphate

720. Which of the following orders is correct regarding the $-I$ effect of the substituents?
a) $-NR_2 > -OR > -F$ b) $-NR_2 < -OR < -F$ c) $-NR_2 > -OR < -F$ d) $-NH_2 < -OR > -F$

721. The ease of dehydrohalogenation of alkyl halide with alcoholic KOH is
a) 3°<2°<1° b) 3°>2°>1° c) 3°<2°>1° d) 3°>2°<1°

722. Lactic acid in which a methyl group, a hydroxyl group, a carboxylic acid group and a hydrogen atom are attached to a central carbon atom shows optical isomerism due to the molecular geometry at the :
a) Carbon atom of the methyl group
b) Carbon atom of the carboxylic acid group
c) Central carbon atom
d) Oxygen of the hydroxyl group

723. Which of the following process is suitable for the purification of aniline?
a) Simple distillation b) Fractional distillation
c) Fractional crystallisation d) Steam distillation

724. Maleic and fumaric acids are :
a) Tautomers b) Geometrical isomers c) Chain isomers d) Functional isomers

725. $CH_3Br + Nu^- \longrightarrow CH_3-Nu + Br^-$ The decreasing order of the rate of the above reaction with nucleophiles (Nu^-) A to D is :
$[Nu^- = (A)PhO^-, (B)AcO^-, (C)HO^-, (D)CH_3O^-]$
a) $D > C > A > B$ b) $D > C > B > A$ c) $A > B > C > D$ d) $B > D > C > A$

726. Which one is least reactive in a nucleophile substitution reaction?
a) CH_3CH_2Cl b) $CH_2=CHCH_2Cl$ c) $CH_2=CHCl$ d) $(CH_3)_3CCl$

727. In methanol solution, bromine reacts with ethylene to yield $BrCH_2CH_2OCH_3$ in addition to 1,2-dibromoethane because :
a) The intermediate carbocation may react with Br^- or CH_3OH
b) The methyl alcohol solvolates the bromine
c) The reaction follows Markownikoff's rule
d) This is a free radical mechanism

728. Number of tertiary carbon atoms in tertiary butyl alcohol is :
a) 1 b) 2 c) Zero d) 4

729. Which step is chain propagation step in the following mechanism?
(i) $Cl_2 \xrightarrow{h\nu} Cl^\bullet + Cl^\bullet$
(ii) $Cl^\bullet + CH_4 \longrightarrow \overset{\bullet}{C}H_3 + HCl$
(iii) $Cl^\bullet + Cl^\bullet \longrightarrow Cl_2$
(iv) $\overset{\bullet}{C}H_3 + Cl^\bullet \longrightarrow CH_3Cl$
a) (i) b) (ii) c) (iii) d) (iv)

730. The IUPAC name of the compound $CH_3-N\equiv C$ is :
a) Ethane nitrile b) Methane isonitrile c) Ethane isonitrile d) None of these

731. IUPAC name of
$CH_3CH_2C(Br)=CH-Cl$ is
a) 2-bromo-1-chloro butene-1 b) 1-chloro-2-bromo butene-1
c) 3-chloro-2-bromo butene-2 d) None of the above

732. Which of the following undergoes nucleophilic substitution exclusively S_N1 mechanism?
a) Benzyl chloride b) Isopropyl chloride c) Chlorobenzene d) Ethyl chloride

733. The sigma bond energy of C—H bond in C_2H_6 is :
a) 99 kcal b) 140 kcal c) 200 kcal d) 60 kcal

734. The general formula $C_nH_{2n}O_2$ could be for open chain
a) Diketones b) Carboxylic acids c) Diols d) Dialdehydes

735. The correct sequence of steps involved in the mechanism of Cannizzaro's reaction is
a) Nucleophilic attack, transfer of $H^-$and transfer of H^+
b) Transfer of H^- , transfer of H^+ and nucleophilic attack
c) Transfer if H^+, nucleophilic attack and transfer of H^-
d) Electrophilic attack by OH^-, transfer of H^+ and transfer of H^-

736. Examine the following statements regarding S_N 2 reaction
(1) The rate of reaction is independents of concentration of nucleophile
(2) The nucleophile attacks the carbon atom on the side of molecule opposite to the group being displaced
(3) The reaction proceeds with simultaneous bond formation and rupture
Which of the above written statements is correct?
a) 1, 2 b) 1, 3 c) 1, 2, 3 d) 2, 3

737. Propanol and propanone are
a) Functional isomers b) Enantiomers c) Chain isomers d) Structural isomers

738. Diastereomers can be separated by :
a) Fractional distillation b) Simple distillation c) Electrophoresis d) All of these

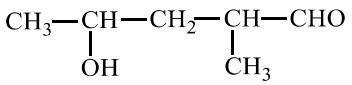
739. Angle strain in cyclopropane is
a) 24°44' b) 9°44' c) 44' d) -5°16'

740. The function of $AlCl_3$ in Friedel-Craft's reaction is
a) To absorb HCl b) To absorb water c) To produce nucleophile d) To produce electrophile

741. In Kjeldahl's method of estimation of nitrogen, $CuSO_4$ acts as
a) Oxidising agent b) Reducing agent c) Catalytic agent d) Hydrolysis agent

742. A mixture of acetone and methanol can be separated by
a) Steam distillation b) Vaccum distillation
c) Fractional distillation d) None of these

743. The IUPAC name of,

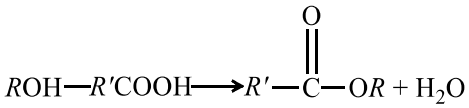


is :
a) 4-hydroxy-1-methylpentanal
b) 4-hydroxy-2-methylpentanal
c) 3-hydroxy-2-methylpentanal
d) 3-hydroxy-3-methylpentanal

744. The oxygen atom in phenol
a) Exhibits only inductive effect
b) Exhibits only resonance effect
c) Has more dominating resonance effect than inductive effect
d) Has more dominating inductive effect than the resonance effect

745. 2-methylpent-3-enoic acid shows :
a) Optical isomerism
b) Geometrical isomerism
c) Both (a) and (b)
d) None of these

746. In the reaction,



water is formed by the combination of :

a) Hydroxyl of acid with alcoholic hydroxyl hydrogen
b) Hydroxyl of alcohol with carboxylic hydrogen
c) Both the above changes
d) None of the above

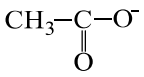
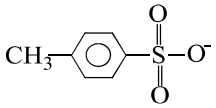
747. Pyridine is :

a) An aromatic compound and a primary base
b) A heterocyclic amino compound and a tertiary base
c) An aromatic amino compound and forms salts
d) A cyano derivative of benzene and secondary base

748. The reason for the loss of optical activity of lactic acid when – OH group is changed by H is that

a) Chiral centre of the molecule is destroyed
b) Molecules acquires asymmetry
c) Due to change in configuration
d) Structural changes occurs

749. The correct order of nucleophilicity among the following is :

a) 
b) CH_3O^-
c) CN^-
d) 

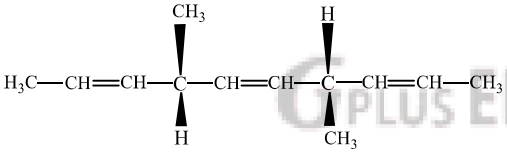
750. Which of the following compounds exhibits rotamers?

a) 2-butene
b) Maleic acid
c) Butane
d) Fumeric acid

751. Ammonia molecule is :

a) A nucleophile
b) An electrophile
c) A homolytic
d) An acid

752. The number of optically active products obtained from the complete ozonolysis of the given compound is :



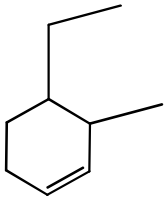
a) 0
b) 1
c) 2
d) 4

753. The structures,

$CH_3—CH(NH_2)—CH_2—CH_2CH_3$ and
$CH_3—CH_2—CH(NH_2)—CH_2CH_3$ represent:

a) Chain isomers
b) Position isomers
c) Stereo isomers
d) mesomers

754. The systematic (IUPAC) name of the compound with the following structural formula shall be

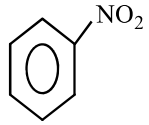


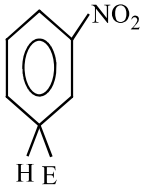
a) 1-ethyl-2-methyl cyclohexene
b) 2-methyl-1-ethyl cyclohexene
c) 3-ethyl-2-methyl cyclohexene
d) 4-ethyl-3-methyl cyclohexene

755. 0.5 g of hydrocarbon gave 0.9 g water on combustion. The percentage of carbon hydrocarbon is

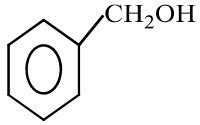
a) 60.6
b) 28.8
c) 80.0
d) 68.6

756. Which one of the following is most reactive towards electrophilic attack?

a) 

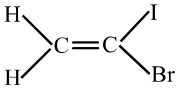
b) 

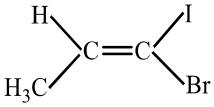
c) 

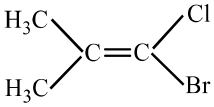
d) 

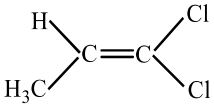
757. Identify, which of the below does not possess any element of symmetry?
a) (+)(-) tartaric acid b) Carbon tetrachloride c) Methane d) *Meso*-tartaric acid

758. Geometrical isomerism is shown by :

a) 

b) 

c) 

d) 

759. When thiourea is heated with metallic sodium, the compound which can't be formed is
a) NaCNS b) NaCN c) Na_2SO_4 d) Na_2S

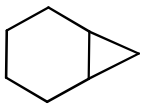
760. An unknown compound *A* has a molecular formula C_4H_6. When *A* is treated with excess of Br_2 a new substance *B* with formula $C_4H_6Br_4$ is formed. *A* forms a white ppt. with ammoniacal silver nitrate solution. *A* may be :
a) But-1-yne b) But-2-yne c) But-1-ene d) But-2-ene

761. The racemisation of optically active compounds is driven by :
a) Entropy b) Enthalpy c) Entropy and enthalpy d) Element of symmetry

762. A cyclic stereoisomer having the molecular formula C_4H_7Cl are classified and tabulated. Find out the correct set of numbers.

	Geometrical	Optical
a)	6	2
b)	4	2
c)	6	0
d)	4	0

763. The correct name for the following hydrocarbon is



a) Tricycle [4.1.0]heptane b) Bicyclo [5.2.1] heptane
c) Bicyclo [4.1.0] heptane d) Bicyclo [4.1.0] hexane

764. Which of the following is the most stable radical?
a) $CH_3^{\bullet}$ b) $RCH_2^{\bullet}$ c) $R_2CH^{\bullet}$ d) $R_3C^{\bullet}$

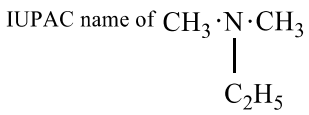
765. The number of 4° carbon atoms in 2,2,4,4-tetramethylpentane :
a) 1 b) 2 c) 3 d) 4

766. Inductive effect involves
a) Delocalisation of σ-electrons b) Displacement of σ-electrons
c) Delocalisation of π −electrons d) Displacement of π-electrons

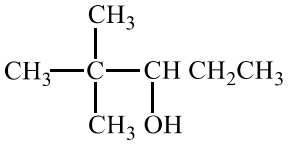
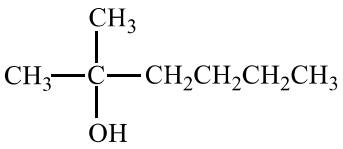
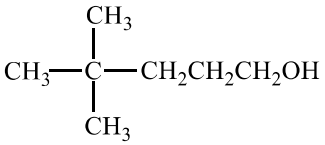
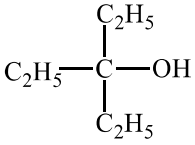
767. Compounds whose molecules are superimposable on their mirror images even though they contain asymmetric carbon atoms or chiral centres are known as :
a) Enantiomers b) Racemers c) Mesomers d) Conformers

768. Percentage of hydrogen is maximum in .
a) C_2H_4 b) CH_4 c) C_2H_2 d) C_6H_6

769. Which of the following has most acidic hydrogen?
a) 3-hexanone b) 2, 4-hexanedione c) 2, 4-hexanedione d) 2, 3-hexanedione

770. IUPAC name of 
a) *N*, *N*- dimethylethanamine
b) *N*-methyl, *N*-ethylmethanamine
c) Dimethyl-ethylamine
d) None of the above

771. Ease of abstraction of hydrogen is greater when attached to :
a) 1° carbon b) 2° carbon c) 3° carbon d) *neo*-carbon

772. *neo*-Heptyl alcohol is correctly represented as :
a) 
b) 
c) 
d) 

773. The IUPAC name for $CH_3COCH(CH_3)_2$ is :
a) 4-methyl isopropyl ketone
b) 3-methyl-2-butanone
c) Isopropyl methyl ketone
d) 2-methyl-3-butanone

774. Steam distillation is based on the fact that vaporisation of organic liquid takes place at
a) Lower temperature than its boiling point
b) Higher temperature than its boiling point
c) Its boiling point
d) Water and organic liquid both undergo distillation

775. IUPAC name of $CH_2 = CH - CH(CH_3)_2$ is :
a) 1,1-dimethyl-2-propene
b) 3-methyl-1-butene
c) 2-vinylpropane
d) 1-isopropyl ethylene

776. The hybridization of central carbon atom in 1,2- propadiene (allene) is
a) sp^3 b) sp^2 c) sp d) None of these

777. The fairly neutral character of CH_3OH is changed to which of the following by adding sodium metal?
a) Acidic b) Neutral c) An electrophile d) A nucleophile

778. The kind of delocalisation involving sigma bond is called
   a) Inductive effect
   b) Hyperconjugation effect
   c) Electromeric effect
   d) Mesomeric effect

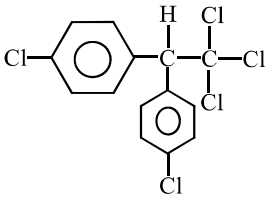
779. In the case of homologous series of alkanes, which one of the following statements is incorrect?
   a) The members of the series have the general formula C_nH_{2n+2}, where n is an integer
   b) The difference between any two successive members of the series corresponds to 14 unit of relative atomic mass
   c) The members of the series are isomers of each other
   d) The members of the series have similar chemical properties

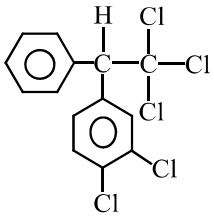
780. Which of the following reagents will be fruitful for separating a mixture of nitrobenzene and aniline?
   a) Aq. $NaHCO_3$ b) H_2O c) Aq. HCl d) Aq. NaOH

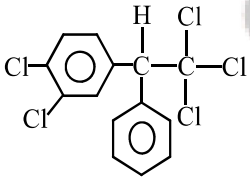
781. The name formic acid was given for HCOOH because it was prepared from :
   a) Acetum b) Ant c) Wood d) Oxalis plant

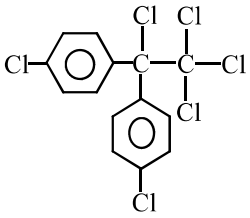
782. 2, 3-dimethyl hexane contains ….. tertiary ….. secondary and ……primary carbon atmos, respectively
   a) 2, 2, 1 b) 2, 4, 3 c) 4, 3, 2 d) 3, 2, 4

783. Which one of the following is the correct formula for dichlorodiphenyltrichloro ethane?

a) 

b) 

c) 

d) 

784. How many sigma and pi bonds are there in the molecule of di cyano ethane $(CN - CH = CH - CN)$?
   a) 3 sigma and 3 pi b) 5 sigma and 2 pi c) 7 sigma and 5 pi d) 2 sigma and 3 pi

785. Out of the following, the alkene that exhibits optical isomerism is
   a) 3-methyl-2-pentene b) 4-methyl-1-pentene c) 3-methyl-1-pentene d) 2-methyl-2-pentene

786. The species which use sp^2-hybrid orbitals in its bonding :
   a) PH_3 b) NH_3 c) CH_3^+ d) CH_4

787. Carbanion can undergo :
   a) Rearrangement
   b) Combination with cation
   c) Addition to a carbonyl group
   d) All of the above are correct

788. An organic compound $C_5H_{11}X$ on dehydrohalogenation gives pentene-2 only. What is halide?

a) $CH_3CH_2CHXCH_2CH_3$ b) $(CH_3)_2CHCHXCH_3$ c) $CH_3CH_2CH_2CHXCH_3$ d) $CH_3CH_2CH_2CH_2CH_2X$

789. Percentage composition of an organic compound is as follows
C=10.06, H=0.84, Cl=89.10
Which of the following corresponds to its molecular formula if the vapour density is 60.0?
a) CH_3Cl b) $CHCl_3$ c) CH_2Cl_2 d) None of these

790. Which of the following is most reactive towards nucleophilic substitution reaction?
a) $CH_2 = CH - Cl$ b) C_6H_5Cl c) $C_6H_5CH_2Cl$ d) $ClCH_2 - CH = CH_2$

791. Which among the following statements is correct with respect to the optical isomers?
a) Enantimoers are non-superimposable mirror images.
b) Diastereomers are superimposable mirror images.
c) Enantimoers are superimposable mirror image.
d) *Meso* forms have no plane of symmetry.

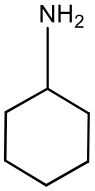
792. Consider thiol anion $(RS^{\ominus})$and alkoxy anion$(RS^{\ominus})$. Which of the following statement is correct?
a) $RS^{\ominus}$ is less basic and less nucleophilic than $RO^{\ominus}$
b) $RS^{\ominus}$ is less basic but more nucleophilic than $RO^{\ominus}$
c) $RS^{\ominus}$ is less basic and more nucleophilic than $RO^{\ominus}$
d) $RS^{\ominus}$ is more basic but less nucleophilic than $RO^{\ominus}$

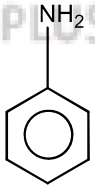
793. The maximum number of alkene isomers for an alkene with molecular formula C_4H_8 is :
a) 2 b) 3 c) 4 d) 5

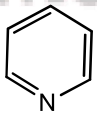
794. The IUPAC name of the compound $(CH_3)_2CH - CH = CH - CHOH - CH_3$ is
a) 5-methyl-hex-3-en-2-ol b) 2-methyl-hex-3-en-5-ol
c) 2-hydroxy-5-nethyl-3-hexene d) 5-hydroxy-2-methyl-3-hexene

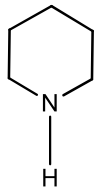
795. The number of isomers in $C_4H_{10}O$ are
a) 7 b) 8 c) 6 d) 5

796. Which alkyl halide is preferentially hydrolysed by S_N1 mechanism?
a) $(CH_3)_3C.Cl$ b) $CH_3CH_2CH_2Cl$ c) CH_3CH_2Cl d) CH_3Cl

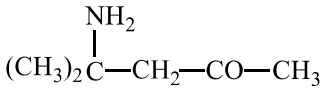
797. Which of the following is most basic?
a) 

b) 

c) 

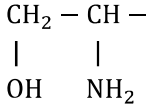
d) 

798. The given compound in IUPAC may be called,



a) Diacetone
b) Acetoneamine
c) Diacetoneamine
d) 4-amino-4-methylpentan-2-one

799. The IUPAC name of the compound,

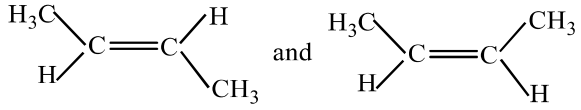


a) 2-amino-3-hydroxy propanoic acid b) 1-hydroxy-2-amino propan-3-oic acid
c) 1-amino-2-hydroxypropanoic acid d) 3-hydroxy-2-amino propanoic acid

800. Which of the following compounds is not chiral?
a) 1-chloro-2-methyl pentane b) 2-chloropentane
c) 1-chloropentane d) 3-chloro-2-methyl pentane

801. If X is halogen the correct order for S_N2 reactivity is :
   a) $R_2CHX > R_3CX > RCH_2X$
   b) $RCH_2X > R_3CX > RCH_2X$
   c) $RCH_2X > R_2CHX > R_3X$
   d) $R_3CX > R_2CHX > RCH_2X$

802. The compound



   can be distinguished by their :
   a) Chlorinated products
   b) Products formed by addition of bromine
   c) Reaction with H_2/Ni
   d) None of the above

803. How many stereoisomers does this molecule have?
   $CH_3CH = CHCH_2CHBrCH_3$
   a) 6 b) 8 c) 4 d) 2

804. What is the number of possible optical isomers in glucose?
   a) 3 b) 4 c) 12 d) 16

805. In which reaction addition takes place according to Markownikoff's rule?
   a) $CH_3CH = CHCH_3 + Br \rightarrow$ b) $CH_2 = CH_2 + HBr \rightarrow$
   c) $CH_3CH = CH_2 + HBr \rightarrow$ d) $CH_3CH = CH_2 + Br_2 \rightarrow$

806. Presence of halogen in organic compounds can be detected using
   a) Leibig's test b) Duma's test c) Kjeldahl test d) Beilstein's test

807. The bond energy for catenation next to carbon is :
   a) N b) S c) Si d) P

808. The hydrolysis of alkyl halides by aqueous NaOH is best termed as :
   a) Electrophilic substitution reaction
   b) Electrophilic addition reaction
   c) Nucleophilic addition reaction
   d) Nucleophilic substitution reaction

809. Which of the following compounds exhibit stereoisomerism?
   a) 3-methyl butyne –1 b) 2-methyl butene –1
   c) 2-methyl butanoic acid d) 3-methyl butanoic acid

810. The + I.E.(inductive effect) is shown by :
   a) CH_3 b) —OH c) F d) $-C_6H_5$

811. In paper chromatography
   a) Mobile phase is liquid and stability phase is solid
   b) Mobile phase is solid and stationary phase is liquid
   c) Both phases are liquids
   d) Both phases are solids

812. Which one of the following is not found in alkenes?
   a) Chain isomerism
   b) Geometrical isomerism
   c) Metamerism
   d) Position isomerism

813. Select the correct statement :
   a) The prefixes are written before the name of compound
   b) The suffixes are written after the name of compound
   c) The IUPAC name of a compound is always written as one word

d) All of the above

814. A compound contains 2 dissimilar asymmetric carbon atoms. The number of optically active isomers is :
a) 2 b) 3 c) 4 d) 5

815. The inductive effect
a) Implies the atom's ability to cause bond polarization
b) Increases with increase of distance
c) Implies the transfer of lone pair of electrons from more electronegative atom to the lesser electronegative atom in a molecule
d) Implies the transfer of lone of electrons from lesser electronegative atom to the more electronegative atom in a molecule

816. IUPAC name of the compound, $ClCH_2CH_2COOH$ is :
a) 3-chloropropanoic acid
b) 2-chloropropanoic acid
c) 2-chloroethanoic acid
d) Chlorosuccinic acid

817. Which one is a nucleophilic substitution reaction among the following?
a) $CH_3CHO + HCN \longrightarrow CH_3CH(OH)CN$
b) $CH_3-CH=CH_2 + H_2O \xrightarrow{H^+} CH_3-\underset{\underset{OH}{|}}{CH}-CH_3$
c) $RCHO + R'MgX \longrightarrow R-\underset{\underset{OH}{|}}{CH}-R'$
d) $CH_3-CH_2-\underset{\underset{CH_3}{|}}{CH}-CH_2Br + NH_3 \longrightarrow CH_3-CH_2-\underset{\underset{CH_3}{|}}{CH}-CH_2NH_2$

818. If there is no rotation of plane polarised light by a compound in a specific solvent, though to be chiral, it means that :
a) It is certainly *meso*
b) It is racemic mixture
c) It is certainly not chiral
d) No such compound

819. Formation of ethylene from acetylene is an example of
a) Elimination reaction b) Substitutions reaction
c) Condensation reaction d) Addition reaction

820. Which of the following is nucleophilic addition reaction?
a) Hydrolysis of ethyl chloride by NaOH b) Purification of acetaldehyde by $NaHSO_3$
c) Alkylation of anisol d) Decarboxylation of acetic acid

821. The reagent used in dehalogenation process is :
a) KOH alc. b) Zn dust + alc. c) Na d) KOH(aq)

822. Benzaldoxime exists in how many forms?
a) 1 b) 2 c) 3 d) 4

823. Resonance arises due to the :
a) Migration of atoms
b) Migration of proton
c) Delocalisation of σ-electron
d) Delocalisation of π-electron

824. In the given structure, which carbon atom is most electronegative?

$CH_3-CH_2-\overset{(I)}{CH}=\overset{\oplus}{\underset{(II)}{C}}H$ (III) (IV)

a) (I) b) (II) c) (III) d) (IV)

825. The following reactions is an example of .... Reaction.

$C_2H_4Br_2 \xrightarrow{Alc.KOH} C_2H_2$

a) Addition b) Dehydrobromination

c) Substitution d) Debromination

826. Which one of the following pair represents stereoisomerism?

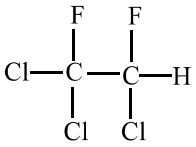
a) Structural and geometrical isomerism

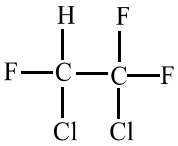
b) Linkage and geometrical isomerism

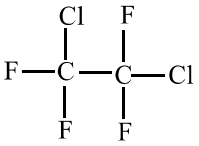
c) Chain and rotational isomerism

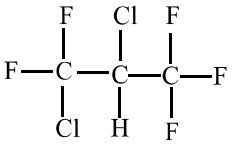
d) Optical and geometrical isomerism

827. Freon-114 is an organic compound. It is chemically called 1,2-dichlorotetrafluoroethane. Its correct structural formula is :

a) 

b) 

c) 

d) 

828. Which of the following compounds is expected to be optically active?

a) $(CH_3)_2CHCHO$ b) $CH_3CH_2CH_2CHO$ c) $CH_3CH_2CHBrCHO$ d) $CH_3CH_2CBr_2CHO$

829. Which of the following is least reactive in a nucleophilic substitution reaction?

a) $(CH_3)_3C-Cl$ b) $CH_2=CHCl$ c) CH_3CH_2Cl d) $CH_2=CHCH_2Cl$

830. During debromination of meso-dibromo-butane, the major compound formed is :

a) n-butane b) l-butene c) cis-2-butene d) $trans-2-butene$

831. What is the empirical formula of a compound having 40% carbon, 6.66% hydrogen and 53.34% oxygen?

a) C_2H_2O b) C_2H_4O c) CH_2O d) CHO

832. Which of the following can act as an nucleophile?

a) BF_3 b) $FeCl_3$ c) $ZnCl_2$ d) C_2H_5MgBr

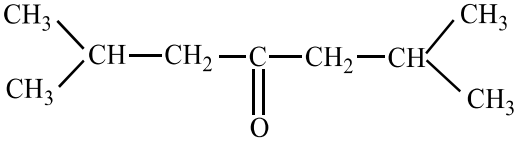
833. The hybrid orbitals at carbon 2 and 3 in the compound $CH_3CH=CHCH_3$ are :

a) sp^3, sp b) sp^2, sp^2 c) sp, sp d) sp^2, sp

834. The alkyl halide that undergoes S_N1 reaction more radily is

a) Ethyl bromide b) Isopropyl bromide c) Vinyl bromide d) n-propyl bromide

835. The IUPAC name of,

 is :

a) 2,4-dimethylhexanone-3

b) 2,6-dimethylheptanone-4

c) 2,6-dimethylhexanone-4

d) 2,6-dimethylheptanone-5

836. In Lassaigne's test, a blue colour is obtained if the organic compound contains nitrogen. The blue colour is due to

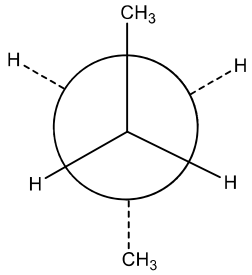
a) $K_4[Fe(CN)_6]$ b) $Fe_4[Fe(CN)_6]_3$ c) $Na_3[Fe(CN)_6]$ d) $Cu_2[Fe(CN)_6]$

837. According to Gahn-Ingold-Prelog sequence rules, the correct order of priority for the given group is

a) $-COOH > -CH_2OH > -OH > -CHO$ b) $-COOH > -CHO > -CH_2OH > -OH$

c) $-OH > -CH_2OH > -CHO > -COOH$ d) $-OH > -COOH > -CHO > -CH_2OH$

838.



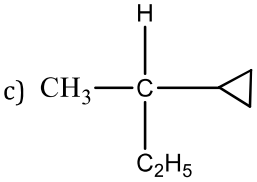
C_2 is rotated anticlockwise 102°C about $C_2 - C_3$ bond. The resulting conformer is

a) Partially eclipsed b) Eclipsed c) gauche d) Staggered

839. Amongst the following compounds, the optically active alkane having lowest molecular mass is

a) $CH_3 - CH_2 - CH_2 - CH_3$

b) $CH_3 - CH_2 - \underset{\displaystyle CH_3}{\overset{\displaystyle |}{CH}} - CH_3$

c) 

d) $CH_3 - CH_2 - C \equiv CH$

840. How many chiral isomers can be drawn from 2-bromo, 3-chloro butane?

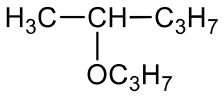
a) 2 b) 3 c) 4 d) 5

841. Glycerol can be separated from spent-lye in soap industry by

a) Steam distillation b) Fractional distillation

c) Distillation under reduced pressure d) Ordinary distillation

842. The IUPAC name of



a) 4-propoxy pentane

b) Pentyl-propyl ether

c) 2-propoxy pentane

d) 2-pentoxy propane

843. Correct gradation of basic charactor

a) $NH_3CH_3NH_2 > NF_3$ b) $CH_3NH_2 > NH_3 > NF_3$

c) $NF_3 > CH_3NH_2 > NH_3$ d) $CH_3NH_2 > NF_3 > NH_3$

844. An organic compound contains 49.3% carbon, 6.84% hydrogen and its vapour density is 73. Molecular formula of compound is

a) $C_6H_9O_3$ b) $C_4H_{10}O_2$ c) $C_3H_5O_2$ d) $C_3H_{10}O_2$

845. Vital force theory of the origin of organic compounds was discarded by :

a) Kolbe's synthesis b) Haber's synthesis c) Wöhler's synthesis d) Berthelot's synthesis

846. In the presence of peroxide, hydrogen chloride and hydrogen iodide do not give anti-Markownikoff addition to alkenes because :

a) Both are highly ionic

b) One is oxidizing and the other is reducing

c) One of the steps are exothermic in both the cases
d) All the steps are exothermic in both the cases

847. Which of the following does not have a resonance structure?
a) Benzene b) Benzaldehyde c) Acetaldehyde d) Benzylamine

848. Which of the following is the correct order of stability of different conformations of butane?
a) Staggered > Gauche > Partially eclipsed > Fully eclipsed
b) Gauche > Staggered > Partially eclipsed > Fully eclipsed
c) Staggered > Fully eclipsed > Partially eclipsed > Gauche
d) None of the above

849. Glucose and fructose are :
a) Chain isomers b) Position isomers c) Functional isomers d) Optical isomers

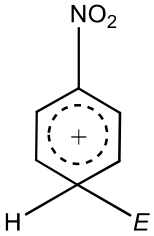
850. The enol form of acetone after treatment with D_2O gives :
a) $CH_3-\overset{\overset{OD}{|}}{C}=CH_2$
b) $CH_3-\overset{\overset{O}{\|}}{C}=CD_3$
c) $CH_2=\overset{\overset{OH}{|}}{C}-CH_2D$
d) $CD_2=\overset{\overset{OD}{|}}{C}-CD_3$

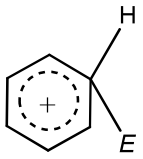
851. Eelipsed and staggered forms of *n*-butane are called a pair of :
a) Diastereomers b) Conformers c) Isomers d) Enantiomers

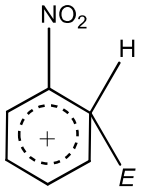
852. Arrange the following in order of increasing dipole moment (I) Toluene (II) *m*-dichlorobenzene (III) *o*-dichlorobenzene (IV) *p*-dichlorobenzene :
a) I < IV < II < III b) IV < I < II < III c) IV < I < III < II d) IV < II < I < III

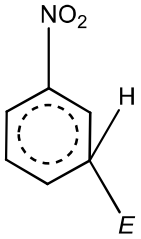
853. In butane, which of the following forms has the lowest energy?
a) Gauche form b) Eclipsed form c) Staggered form d) None of these

854. Molecular mass of a volatile substances may be obtained by
a) Beilstein method b) Lassaigne method
c) Victor Mayer's method d) Leibig's method

855. The electrophile, $E^{\oplus}$ attacks the benzene ring to generate the intermediate σ −complex. Of the following, which σ −complex is of lowest energy?
a) 

b) 

c) 

d) 

856. Which is not deflected by a non-uniform electrostatic field?
a) Water b) Chloroform c) Nitrobenzene d) Hexane

857. The reaction $C_2H_5I + KOH \longrightarrow C_2H_5OH + KI$ is called
a) Hydroxylation substitution b) Electrophilic substitution
c) Nucleophilic substitution d) dehydroiodination

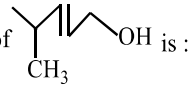
858. Correct order of nucleophilicity is
a) $I^- > Br^- > Cl^- > F^-$ b) $F^- > Cl^- > Br^- > I^-$
c) $Cl^- > F^- > Br^- > I^-$ d) $I^- > Cl^- > Br^- > F^-$

859. Due to the presence of an unpaired electron free radicals are
a) Cations b) Anions c) Chemically inactive d) Chemically reactive

860. Which of the following will have *meso* isomers also?

a) 2-hydroxy propanoic acid
b) 2,3-dichlorobutane
c) 2,3-dichloropentane
d) 2-chlorobutane

861. The addition of HBr on butene-2 in presence of peroxide follow the:
a) Electrophilic addition
b) Free radical addition
c) Nucleophilic addition
d) None of these

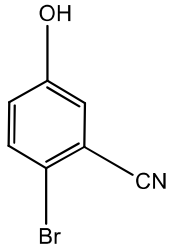
862. IUPAC name of  is :

a) 5-methylhexanol b) 2-methylhexanol c) 2-methylhex-3-enol d) 4-methylpent-2-enol

863. In which of the compounds given below there is more than one kind of hybridization (sp, sp^2, sp^3)for carbon?
(I)$CH_3CH_2CH_2CH_3$ (II)$CH_3CH = CH - CH_3$
(III)$CH_2 = CH - CH = CH_2$ (IV)$H - C \equiv C - H$
a) (II) and (IV) b) (I) and (IV) c) (II) and (III) d) (II)

864. Which represents nucleophilic aromatic substitution reaction?
a) Reaction of benzene with Cl_2 in sunlight
b) Benzyl bromide hydrolysis
c) Reaction of NaOH with dinitrofluorobenzene
d) Sulphonation of benzene

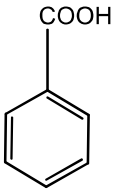
865. The IUPAC name of the following compound, is

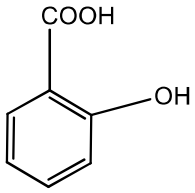


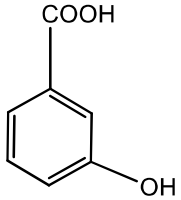
a) 4-bromo-3-cynophenoal
b) 2-bromo-5-hydroxybenzonitrile
c) 2-cyano-4-hydroxybromobenzene
d) 6-bromo-3-hydroxybenzonitrile

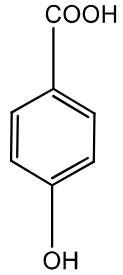
866. Ethoxy ethane and methoxy propane are :
a) Geometrical isomers
b) Optical isomers
c) Functional group isomers
d) Metamers

867. Which of the following aromatic acid is most acidic?

a) 

b) 

c) 

d) 

868. The hybridization of carbon in diamond, graphite and acetylene is in the order:
a) sp^3, sp^2, sp b) sp^2, sp^3, sp c) sp, sp^2, sp^3 d) sp^2, sp, sp^3

869. Which is optically active?
a) Isobutyric acid
b) β-chloropropionic acid
c) Propionic acid

d) α-chloropropionic acid

870. Which of the following statement is wrong?
   a) Using Lassaigne's test nitrogen and sulphur present in organic compound can be tested
   b) Using Beilstein's test the presence of halogen in a compound can be tested
   c) In Lassaigne's filtrate the nitrogen present in a organic compound is converted into NaCN
   d) In the estimation of carbon, an organic compound is heated with CaO in a combustion tube

871. The reaction, $CH_2 = CHCHO \xrightarrow{HX}$ gives :
   a) $CH_3CHXCHO$ b) $CH_2XCHCHO$ c) $CH_2 = CHCHX_2$ d) None of these

872. What kind of isomerism is possible for 1-chloro-2-nitroethene?
   a) Functional group isomerism b) Position isomerism
   c) E/Z isomerism d) Optical isomerism

873. Acetonitrile is
   a) CH_3CN b) CH_3COCN c) C_2H_5CN d) C_6H_5CN

874. Formation of cyanohydrin from a ketone is an example of
   a) Electrophilic addition b) Nucleophilic addition
   c) Electrophilic substitution d) Nucleophilic substitution

875. An organic compound which produces a bluish green coloured flame on heating in presence of copper is
   a) Chlorobenzene b) Benzaldehyde c) Aniline d) Benzoic acid

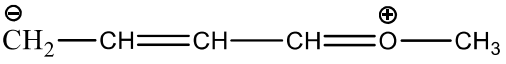
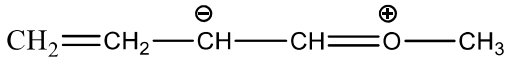
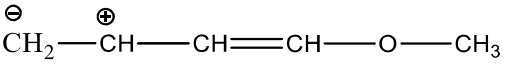
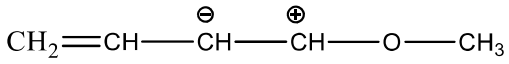
876. The compound abd C—C abd will exist in :
   a) 3 forms b) 4 forms c) 5 forms d) 2 forms

877. Which of the following compounds has the maximum number of π-bonds?
   a) $HC \equiv C - CH = CH_2$ b) $CH_2 = CH - CH = CH_2$
   c) $CH_3CH_2COCH_3$ d) $C_6H_5 - COOH$

878. The C − H bond distance is longest in
   a) C_2H_2 b) C_2H_4 c) C_2H_6 d) $C_2H_2Br_2$

879. The yield in organic reactions is generally poor because the reactions are :
   a) Very fast
   b) Non-ionic
   c) Between covalent compounds
   d) Accompanied by side reactions

880. Which of the following resonating structures of 1-methoxy-1, 3-butadiene is least stable?

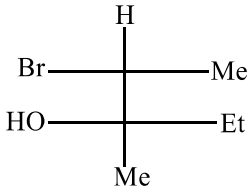
   a) 
   b) 
   c) 
   d) 

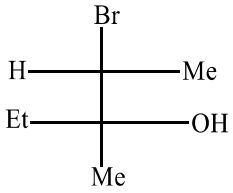
881. A student named the compound as 1,4-butadiene :
   a) The name is correct
   b) He committed an error in the selection of carbon chain
   c) He committed an error in position of double bond
   d) Unpredictable

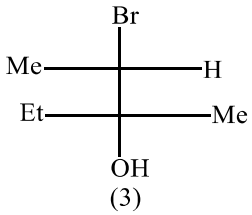
882. The correct IUPAC name of $(C_2H_5)_4$ C is :
   a) Tetraethyl methane b) 2-ethylpentane c) 3,3-diethylpentane d) None of these

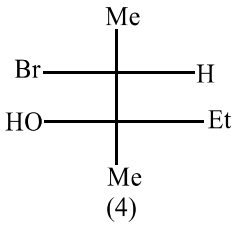
883. The number of different substitution products possible when ethane is allowed to react with bromine is sunlight are :
   a) 9 b) 6 c) 8 d) 5

884. Which of the following structures are superimposable?


(1)

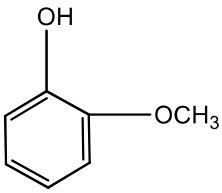

(2)

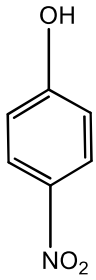

(3)


(4)

a) 1 and 2 b) 2 and 3 c) 1 and 4 d) 1 and 3

885. Phenol is more acidic than

a) 

b) 

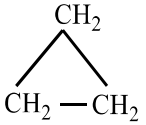
c) C_2H_2

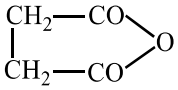
d) Both (a) and (c)

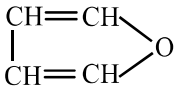
886. During the fusion of an organic compound with sodium metal, nitrogen of the compound is converted into

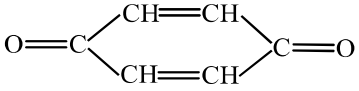
a) $NaNO_2$ b) $NaNH_2$ c) NaCN d) NaNC

887. The structure representing a heterocyclic compound is :

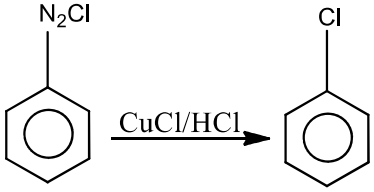
a) 

b) 

c) 

d) 

888. Following reaction is,



a) S_N b) S_E c) El d) EI-CB

889. Which of the following reactions is an example of nucleophilic substitution reaction?

a) $RX + Mg \longrightarrow RMgX$

b) $RX + KOH \longrightarrow ROH + KX$

c) $2RX + 2Na \longrightarrow R-R + 2NaX$

d) $RX + H_2 \longrightarrow RH + HX$

890. How many structural isomers are possible for C_4H_9Cl?
a) 2 b) 4 c) 8 d) 10

891. In which of the following species the central carbon atom is negatively charged?
a) Carbonium ion b) Carbanion c) Carbocation d) Free radicals

892. Select the molecule having only one π-bond :
a) $CH \equiv CH$ b) $CH_2 = CH - CHO$ c) $CH_3 - CH = CH_2$ d) $CH_3 - CH = CHCOOH$

893. Optically active compound among the following is :
a) 2-ethylbutanol-1 b) n-butanol c) 2,2-dimethylbutanol d) 2-methylbutanol-1

894. Which of the following compounds will be most reactive towards nucleophilic addition reaction?
a) $CH_3COCH_2CH_2CH_2CH_3$
b) $CH_3CH_2COCH_2CH_2CH_3$
c) $CH_3CH_2CH_2CH_2CH_2CHO$
d) $CH_3 - CH_2 - CO - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_3$

895. Lactic acid, $CH_3CH(OH)COOH$ molecule shows :
a) Geometrical isomerism
b) Metamerism
c) Optical isomerism
d) Tautomerism

896. n-pentane and neopentane are :
a) Functional isomers b) Geometrical isomers c) Chain isomers d) Position isomers

897. The IUPAC name of acryldehyde is
a) Prop-2-en-1-al b) Propenylaldehyde c) But-2-en-1-al d) Propenal

898. Due to presence of an unpaired electron, free radicals are
a) Cations b) Anions c) Chemically inactive d) Chemically reactive

899. 2-methylpent-3-ene is a chiral because it has :
a) A centre of symmetry
b) A plane of symmetry
c) Symmetry at C_2 carbon
d) Both centre and a plane of symmetry

900. Which of the following molecules contain asymmetric carbon atom?
a) $CH_3CHClCOOH$ b) CH_3CH_2COOH c) $ClCH_3.CH_2COOH$ d) $Cl_2CHCOOH$

901. Cyclobutane and butene-1 are :
a) Chain isomers b) Position isomers c) Ring-chain isomers d) Metamers

902. Which of the following is not true for carbanions?
a) The carbon carrying the charge has eight valence electrons
b) They are formed by heterolytic fission
c) They are paramagnetic
d) The carbon carrying the charge is sp^3 hydridised

903. Which of the following structures permits *cis-trans* isomerism?
a) $X_2C = CY_2$ b) $XYC = CZ_2$ c) $X_2C = CXY$ d) $XYC = CXY$

904. Which one of the following compound will show optical iosmerism?
a) $(CH_3)_2 - CH - CH_2 - CH_3$ b) $CH_3 - CHOH - CH_3$
c) $CH_3 - CHCl - CH_2 - CH_3$ d) $CH_3 - CCl_2 - CH_2 - CH_3$

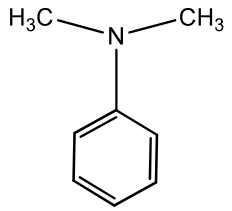
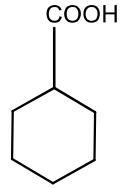
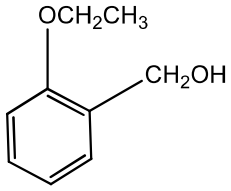
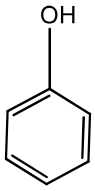
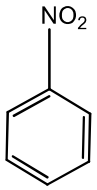
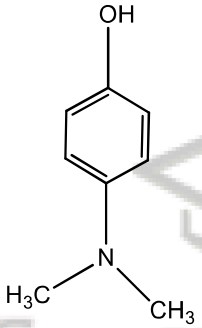
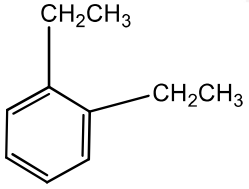
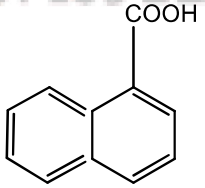
905. The Kolbe's electrolysis proceeds *via*
a) Nucleophilic substitution mechanism b) Electrophilic addition mechanism
c) Free radical mechanism d) Electrophilic substitution reaction

906. Which of the following statements is not correct?
a) Primary carbocation are more stable than secondary ones

b) Secondary free radicals are more stable than primary free radicals
c) Tertiary free radicals are more stable than secondary ones
d) Tertiary carbonium ions are more stable than primary ones

907. Adsorbent is made of ... in TLC
a) Silica gel b) Alumina c) Both (a) and (b) d) None of these

908. Amongst the following, the total number of compounds soluble in aqueous NaOH is

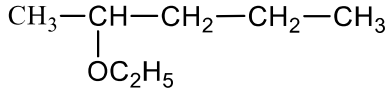









a) 1 b) 2 c) 3 d) 4

909. The ammonia evolved from the treatment of 0.30 g of an organic compound for the estimation of nitrogen was passed in 100 mL of 0.1 M sulphuric acid. The excess of acid required 20 mL of 0.5 M sodium hydroxide solution for complete neutralization. the organic compound is
a) acetamide b) benzamide c) urea d) thiourea

910. The structure remaining after one H is removed from hydrocarbon is :
a) Alkyl group b) Alkenyl group c) Alkynyl group d) All of these

911. C_6H_{12} on addition of HBr in presence and in absence of peroxide gives some product.
It is :
a) Hexene-3
b) 2,3-dimethyl butane-2
c) Symmetrical alkene
d) All of these

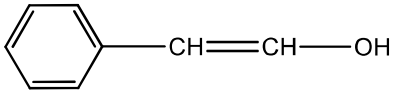
912. 
the IUPAC name is

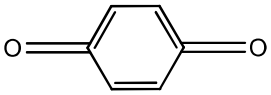
a) 2-ethoxy pentane b) 4-ethoxy pentane c) Pentyl-ethyl ether d) 2-pentoxy ethane

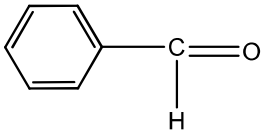
913. A solution of D(+)-2-chloro-2-phenylethane in toluene racemises slowly in the presence of small amount of $SbCl_5$ due to the formation of

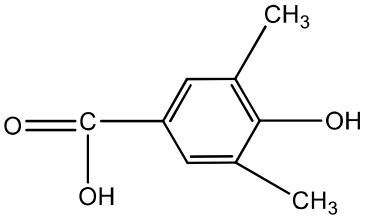
a) Carbanion b) Carbene c) Free radical d) Carbocation

914. Tautomerism is exhibited by

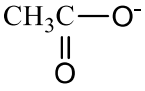
a) 

b) 

c) 

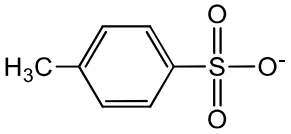
d) 

915. The decreasing order of nucleophilicity among the nucleophilies

(A) 

(B) CH_3O^-

(C) CN^-

(D) 

a) (C), (B), (A), (D)
b) (B), (C), (A), (D)
c) (D), (C), (B), (A)
d) (A), (B), (C), (D)

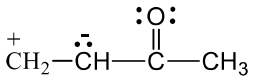
916. Which of the following statements is incorrect?

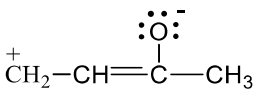
a) S_N 2 reaction proceeds with inversion
b) S_N1 reaction proceeds with racemisation
c) S_N 2 reaction involves transition state
d) In transition state, one end carries δ^+ and another end carries δ^- charge

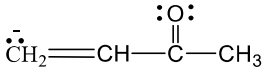
917. The hybridization of carbon atoms in $C-C$ single bond of $HC \equiv C-CH=CH_2$ is

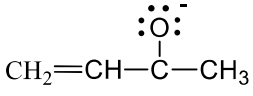
a) $sp^3 - sp$ b) $sp^3 - sp^3$ c) $sp^2 - sp^3$ d) $sp - sp^2$

918. One of the stable resonating forms of methyl vinyl ketone is

a) 

b) 

c) 

d) 

919. 5.6 g of an organic compound on burning with excess of oxygen gave 17.6g of CO_2 and 7.2 g of H_2O. The organic compound is

a) C_6H_6 b) C_4H_8 c) C_3H_8 d) CH_3COOH

920. Base strength of,

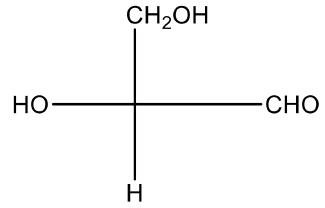
1) $H_3\overset{\ominus}{C}CH_2$

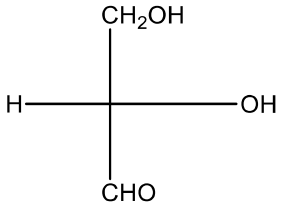
2) $H_2C{=}\overset{\ominus}{C}H$ and

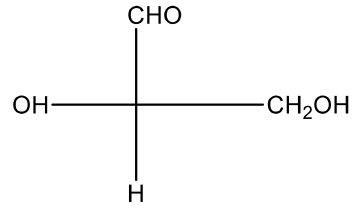
3) $H{-}C{\equiv}\overset{\ominus}{C}$ is in the order of :

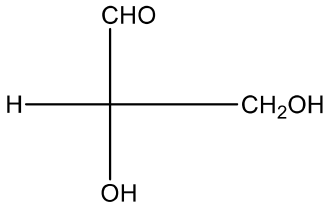
a) (3) > (2) > (1) b) (1) > (3) > (2) c) (1) > (2) > (3) d) (2) > (1) > (3)

921. Which of the following Fischer's projection formula is identical to D-glyceraldehyde?

a) 

b) 

c) 

d) 

922. 1.2g of organic compound of Kjeldahlization liberates ammonia which consumes 30 cm^3 of 1N HCl. The percentage of nitrogen in the organic compound is

a) 30 b) 35 c) 46.67 d) 20.8

923. Among the following the dissociation constant is highest for

a) C_6H_5OH b) $C_6H_5CH_2OH$ c) $CH_3-C\equiv CH$ d) $CH_3NH_3^+Cl^-$

924. How much of sulphur is present in an organic compound, if 0.53g of the compound gave 1.158g of $BaSO_4$on analysis?

a) 10% b) 15% c) 20% d) 30%

925. Which of the following is a dynamic isomerism?

a) Metamerism b) Geometrical isomerism
c) Tautomerism d) Coordinate isomerism

926. Which among the following statements is correct with respect to the optical isomers?

a) Enantiomers are non-superimposable mirror images
b) Diastereomers are superimposable mirror images
c) Enantiomers are superimposable mirror images
d) *Meso* forms have no plane of symmetry

927. The stability order for carbocations given below is :

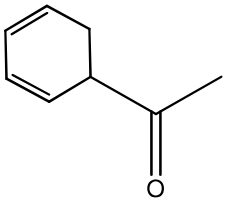
(I) $R\overset{+}{C}H_2$ (II) $R{-}\overset{+}{C}{=}CH_2$ (III) $R{-}\overset{+}{C}H{-}CH_3$

a) I < II < III b) III < II < I c) III < I < II d) II < I < III

928. Duma's method involves the determination of nitrogen content in the organic compound in the form of

a) NH_3 b) N_2
c) NaCN d) $(NH_4)_2SO_4$

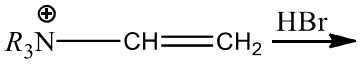
929. The IUPAC name of



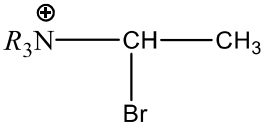
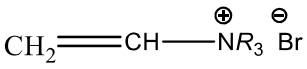
is

a) 1- cyclohexa-2,4-dienylethanone b) 3- cyclohexa-2,4-dienylethanone
c) 1- cyclohexa-3,5-dienylethanone d) 3- cyclohexa-3,5-dienylethanone

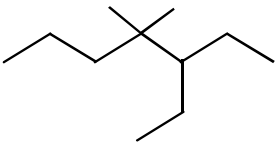
930. In the nucleophilic substitution reactions ($S_N2$or S_N1), the reactivity of alkyl halides follows the sequence
a) R-I>R-Br>R-Cl>R-F
b) R-Cl>R-F>R-Br>R-I
c) R-F>R-Cl>R-Br>R-I
d) R-I>R-F>R-Cl>R-Br

931.  product.

Predominant product is

a) 
b) $R_3N-CH_2-CH_2-Br$
c) 
d) No reaction

932. *n*- pentane and 2-methyl butane are a pair of
a) Enantiomers
b) Stereoisomers
c) Diastereomers
d) Constitutional isomers

933. IUPAC name of compound,  is :

a) 3-ethyl-4,4-dimethyl heptane
b) 1,1-diethyl-2,2-dimethyl pentane
c) 4,4-dimethyl-5,5-diethyl pentane
d) 5,5-diethyl-4, 4-dimethyl pentane

934. IUPAC name of, $(C_2H_5)_2CHCH_2OH$ is :
a) 2-ethylbutanol-1 b) 2-methylpentanol-1 c) 2-ethylpentanol-1 d) 3-ethylbutanol-1

935. Amongst the following the compound that can most readily get sulphonated is
a) Benzene b) Toluene c) Nitrobenzene d) Chlorobenzene

936. In E2 elimination, some compounds follow Hofmann's rule which means:
a) The double bond goes to the most substituted carbon
b) The compound is resistant to elimination
c) No double bond is formed
d) The double bond goes mainly towards the least substituted carbon

937. How many asymmetric carbon atoms are present in
(i) 1, 2-dimethylcyclohexane
(ii) 3-methylcyclopentane and
(iii) 3-methylcyclohexene?
a) Two, one , one b) One, one, one c) Two, none, two d) Two, none One

938. Which of the following is a chiral compound?
a) Hexane
b) *n*-butane
c) Methane
d) 2,3,4,trimethyl hexane

939. How many structures can compound with molecular formula C_7H_9N have?
a) 5 b) 4 c) 3 d) 2

940. The maximum number of possible optical isomers in 1-bromo-2-methyl cyclobutane is
a) 4 b) 2 c) 8 d) 16

941. Which of the following types of reaction occurs when a substituent has got a double bond with evently distributed π electron cloud?
a) Electrophilic addition
b) Nucleophilic addition

c) Any of the (a) and (b)
d) None of the above

942. Vinyl alcohol and acetaldehyde are :
a) Geometrical isomers b) Keto-enol tautomers c) Chain isomers d) None of these

943. 0.25 g of an organic compound on Kjeldahl's analysis gave enough ammonia to just neutralise $10cm^3$ of 0.5M H_2SO_4. The percentage of nitrogen in the compound is
a) 28 b) 56 c) 14 d) 112

944. Stereoisomers (geometrical or opticals) which are neither superimposable nor mirror image to each other are called :
a) Enantiomers b) Mesomers c) Tautomers d) Diastereomers

945. Which one of the following will show optical isomerism?

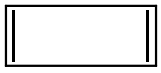
a) $HO-\underset{\displaystyle H}{\overset{\displaystyle H}{\overset{|}{\underset{|}{C}}}}-CO_2H$ b) $H_3C-\underset{\displaystyle OH}{\overset{\displaystyle H}{\overset{|}{\underset{|}{C}}}}-CO_2H$ c) $H_3C-\underset{\displaystyle H}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-CO_2H$ d) $H_3C-\underset{\displaystyle Cl}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-CO_2H$

946. The ion formed by the reaction of HNO_2 and H_2SO_4 is
a) Nitronium ion b) Nitrosonium ion c) Nitrite ion d) Nitrate ion

947. Chloroacetic acid is a stronger acid than acetic acid. This can be explained using
a) $-M$ effect b) $-I$ effect c) $+M$effect d) $+I$ effect

948. The basicity of aniline is less than that of cyclohexylamine. This is due to
a) +R effect of – NH_2 group b) -I effect of – NH_2 group
c) -R effect of –NH_2 group d) Hyperconjugation effect

949. The compound is an example of :



a) Aromatic compound
b) Heterocyclic compound
c) Annulene
d) Xanthates

950. Dehydration of alcohol usually goes by
a) E1 mechanism b) E2 mechanism c) E1 cb mechanism d) S_N2 mechanism

951. Geometrical isomerism is possible in
a) Acetone-oxime b) Isobutene c) Acetophenone-oxime d) Benzophenone-oxime

952. Ethers are isomeric with
a) Aldehydes b) Ketones
c) Both aldehydes and ketones d) Alcohols

953. S_N1 reaction is fastest in

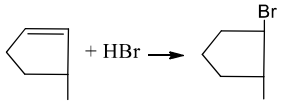
a) CH_3CH_2Cl b) $\begin{matrix} H_3C \\ \diagdown \\ \quad CH-Cl \\ \diagup \\ H_3C \end{matrix}$ c) $\begin{matrix} CH_3 \\ | \\ CH_3-C-Cl \\ | \\ CH_3 \end{matrix}$ d) $\begin{matrix} CH_3-CH-Cl \\ | \\ \quad CH_2 \\ \quad | \\ \quad CH_3 \end{matrix}$

954. Vinyl chloride undergoes
a) Only addition reactions b) Only elimination reactions
c) Both (a) and (b) d) Substitution reactions

955. Fischer projection indicates :

a) Horizontal substituents above the plane
b) Vertical substituents above the plane
c) Both horizontal and vertical substituents below the plane
d) Both horizontal and vertical substituents above the plane

956. The reaction,



Is an example of
a) Nucleophilic substitution
b) Electrophilic addition
c) Elimination reaction
d) Nucleophilic addition

957. Acetone and propen-2-ol are :
a) Positional isomers b) Leto-enol tautomers c) Geometrical isomers d) Chain isomers

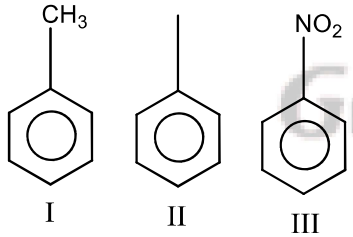
958. The number of stereoisomers obtained by bromination of $trans-2-$butene is?
a) 1 b) 2 c) 3 d) 4

959. The compound which forms one monochloro product when treated with chlorine is :
a) n-pentane b) Isopentane c) neo-pentane d) None of these

960. Reactivity towards nucleophilic addition reaction of
(I)HCHO (II)CH_3CHO (III)$CH_3COCH_3$is
a) II>III>I b) III>II>I c) I>II>III d) I>II<III

961. Maleic acid and fumaric acid are
a) Position isomers b) Geometric isomers c) Enantimoers d) Functional isomers

962. The ease of nitration of the following three hydrocarbons follows the order



a) II=III≈I b) II>III>I c) III>II>I d) I=III>II

963. Which represents the condensed formula for pentanes?
a) $CH_3(CH_2)_3CH_3$ b) $(CH_3)_3CCH_3$ c) $(CH_3)_2CHCH_2CH_3$ d) All of these

964. Which of the substance is purified by sublimation?
a) Benzoic acid b) Camphor c) Naphthalene d) All of these

965. The halogen compound which most readily undergoes nucleophilic substitutions is
a) $CH_2 = CHCl$ b) $CH_3CH = CHCl$
c) $CH_2 = CHC(Cl) = CH_2$ d) $CH_2 = CHCH_2Cl$

966. Which of the following order is correct regarding the acidity of carboxylic acids?
a) $Cl_3CCOOH > Cl_2CHCOOH > ClCH_2COOH$ b) $Cl_3CCOOH > Cl_2CHCOOH < ClCH_2COOH$
c) $Cl_3CCOOH < Cl_2CHCOOH > ClCH_2COOH$ d) $Cl_3CCOOH < Cl_2CHCOOH < ClCH_2COOH$

967. An S_N2 reaction at an asymmetric carbon of a compound always gives
a) A mixture of diastereomers b) A single stereoisomer
c) An enantiomer of the substrate d) A product with opposite optical rotation

968. The IUPAC name of the compound, $CH_3CH = CHC \equiv CH$ is :
a) Pent-4-yn-2-ene b) Pent-3-en-1-yne c) Pent-2-en-4-yne d) Pent-1-yn-3-ene

969. Reaction of methyl bromide with aqueous sodium hydroxide involves
a) Racemisation b) S_N1 mechanism
c) Retention of configuration d) S_N2 mechanism

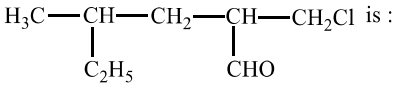
970. An organic compound X(mol. formula $C_6H_5O_2N$) has six carbons in a ring system, three double bonds and also a nitro group as substituent. X is :
   a) Homocyclic but not aromatic
   b) Aromatic but not homocyclic
   c) Homocyclic and aromatic
   d) heterocyclic

971. The compounds CH_3NH_2 and $CH_3CH_2.NH_2$ are :
   a) Isomers b) Isobars c) Homologous d) Allotropes

972. The following compound will undergo electrophilic substitution more readily than benzene
   a) Nitrobenzene b) Benzoic acid c) Benzaldehyde d) Phenol

973. Which of the following elements can't be detected by direct tests?
   a) N b) O c) S d) Br

974. IUPAC name of ,

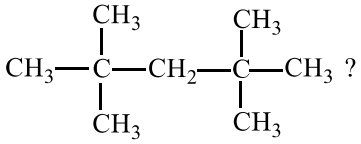


   a) 2-chloromethyl-4-methyl-hexanal
   b) 1-chloro-4-ethyl-2-pentanal
   c) 1-chloro-4-methyl-2-hexanal
   d) 1-chloro-2-aldo-4-methyl hexane

975. Position isomerism is shown by :
   a) o-nitrolhenol and p-nitrophenol
   b) Dimethyl ether and ethanol
   c) Pentan-2-one and pentan-3-one
   d) Acetaldehyde and acetone

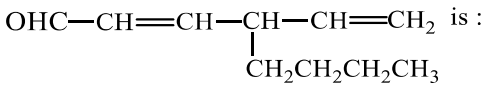
976. Formulae of phenyl carbinol and chloral are respectively :
   a) $C_6H_5.CH_2CH_2OH$ and $CHCl_2CHO$
   b) $C_6H_5CH_2OH$ and CCl_3CHO
   c) C_6H_5OH and $CH_2Cl.CHO$
   d) C_6H_5CHO and $CHCl_2CHO$

977. How many primary carbon atoms are there in the compound,



   a) 6 b) 2 c) 4 d) 3

978. IUPAC name of,



   a) 4-butyl-2,5-hexadien-l-al
   b) 5-vinyloct-3-en-l-al
   c) 5-vinyloct-5-en-8-al
   d) 3-butyl-1,4-hexadien-6-al

979. The molecular formula of a saturated compound is $C_2H_4Br_2$.
   This formula permits the existence of :
   a) Functional isomers b) Optical isomers c) Positional isomers d) $cis-trans$ isomers

980. Which of the following solvents are aprotic?
   (A)NH_3 (B)SO_2
   (C)CH_3CN (D)CH_3CO_2H
   a) A,B,C b) A,C,D c) B,C d) A,C

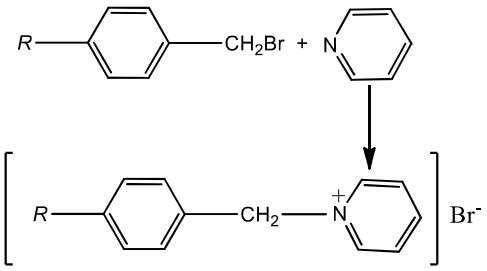
981. The reaction of sodium ethoxide with iodoethane to from diethyl is termed as
   a) Electrophilic substitution b) Nuclephilic substitution
   c) Electrophilic addition d) Radical substitution
982. The sodium extract of an organic compound on acidification with acetic acid and addition of lead acetate solution gives a black precipitate. The organic compound contains
   a) Nitrogen b) Halogen c) Sulphur d) Phosphorus
983. The IUPAC name of the compound $CH_3CONHBr$ is
   a) 1-bromoacetamide b) ethanoylbromide c) N-bromoethanamide d) None of these
984. The silver salt of a monobasic acid on ignition gave 60% of Ag. The molecular weight of the acid is
   a) 37 b) 57 c) 73 d) 88
985. The IUPAC name of compound,

$$C_2H_5 - \underset{\underset{CH_2}{\|}}{C} - CH_2OH$$ is

   a) 2-ethylprop-2-en-1-ol b) 2-hydroxymethylbutan -1-0l
   c) 2-methylenebutan-1-0l d) 2-ethyl-3-hydroxyprop-1-ene
986. How many optically active stereoisomers are possible for butane-2, 3-diol?
   a) 0 b) 1 c) 2 d) 3
987. Removal of a hydride ion from a methane molecule will give a:
   a) Methyl radical b) Carbonium ion c) Carbanion d) Methyl group
988. Which of the following will have a *meso*-isomer also?
   a) 2-chlorobutane b) 2, 3-dichlorobutane
   c) 2, 3-dichloropentane d) 2-hydroxypropanoic acid
989. Which chlorine atom is more electronegative in the following?

   a) $CH_3 - Cl$ b) $CH_3 - CH_2 - Cl$ c) $H - \underset{\underset{CH_3}{|}}{\overset{CH_3}{|}}{C} - Cl$ d) $CH_3 - CH_2 - \underset{\underset{CH_3}{|}}{\overset{CH_3}{|}}{C} - Cl$

990. The resonating structures :
   a) Differ only in the arrangement of electrons
   b) Differ in number of paired and unpaired electrons
   c) Differ largely in their energy contents
   d) Do not lie in the same plane
991. The optical isomers, which are not enantiomers, are called
   a) Conformer b) Diastereomer c) Mirror images d) None of these
992. α-D-(+)-glucose and β-D-(+)-glucose are :
   a) Enantiomers
   b) Conformers
   c) Epimers
   d) Anomers
993. Which of the following orders is correct regarding the acidity of carboxylic group?
   a) $CH_3CH_2CH(Cl)COOH > CH_3CH(Cl)CH_2COOH > ClCH_2CH_2CH_2COOH$
   b) $CH_3CH_2CH(Cl)COOH < CH_3CH(Cl)CH_2COOH < ClCH_2CH_2CH_2COOH$
   c) $CH_3CH_2CH(Cl)COOH > CH_3CH(Cl)CH_2COOH < ClCH_2CH_2CH_2COOH$
   d) $CH_3CH_2CH(Cl)COOH < CH_3CH(Cl)CH_2COOH > ClCH_2CH_2CH_2COOH$
994. The rate of the reaction,



is influenced by the hyper conjugation effect of group *R*. If *R* sequentially is

I. CH_3-

II. CH_3-CH_2-

III. $H_3C-CH(CH_3)-$

IV. $H_3C-C(CH_3)_2-$

the increasing order of speed of the above reaction is

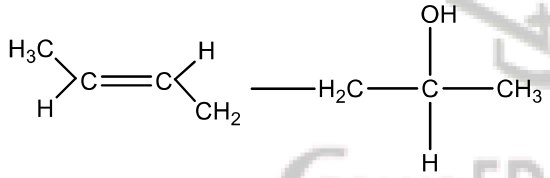
a) IV, III, II, I

b) I, II, III, IV

c) I, IV, III, II

d) III, II, I, IV

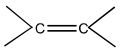
995. The compound, whose stereo-chemical formula is written below, exhibits x geometrical isomers and y optical isomers



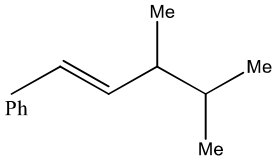
The values of x and y are

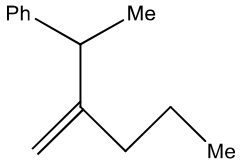
a) 4 and 4 b) 2 and 2 c) 2 and 4 d) 4 and 2

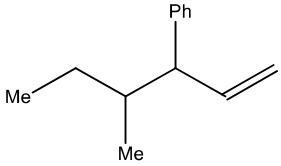
996. Geometrical isomerism is shown by

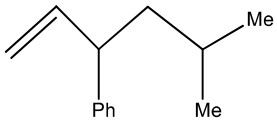
a) $-C\ -C-$ b)  c) $-C\equiv C-$ d) None of these

997. Which one of the following is *s*-butyl phynylvinyl methane?

a) 

b) 

c) 

d) 

998. Arrange the carbanions,

$(CH_3)_3\bar{C}, \bar{C}Cl_3, (CH_3)_2\bar{C}H, C_6H_5\bar{C}H_2$, in order of their decreasing stability

a) $C_6H_5\bar{C}H_2 > \bar{C}Cl_3 > (CH_3)_2\bar{C} > (CH_3)_2\bar{C}H$ b) $(CH_3)_2\bar{C}H > \bar{C}Cl_3 > C_6H_5CH_2 > (CH_3)_3\bar{C}$

c) $\bar{C}Cl_3 > C_6H_5\bar{C}H_2 > (CH_3)_2\bar{C}H > (CH_3)_3\bar{C}$ d) $(CH_3)_3\bar{C} > (CH_3)_2\bar{C}H > \bar{C}H_2 > \bar{C}Cl_3$

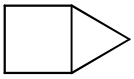
999. $RX + I^- \rightarrow R-I + X^-$ is an example of … reaction.

a) Nucleophilic addition b) Nucleophilic substitution

c) Electrophilic addition d) Elimination

100 Bicyclo (1,1,0) butane is

0.

a)  b)  c)  d) 

100 The basic strength of

1. $CH \equiv \overline{C}, CH_2 = \overline{C}H, CH_3\overline{C}H_2$

I II III

Will be in order

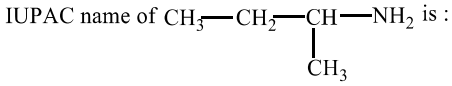
I II III

a) I <II<III b) II<III<I c) III<II<I d) III<I<II

100 Which of the following is most reactive towards elimination reaction?

2.

a) $RCOO^-$ b) CN^- c) NO_3^- d) RO^-

100 IUPAC name of  is :

3.

a) 1-methyl-1-aminopropane

b) 2-aminobutane

c) 2-methyl-3-aminopropane

d) None of the above

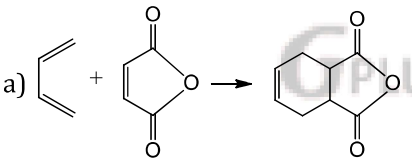
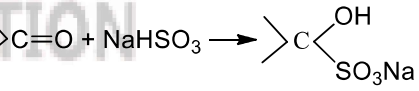
100 The number of isomeric hexanes is

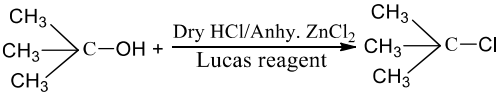
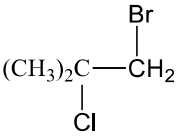
4.

a) 5 b) 2 c) 3 d) 4

100 The substitution reaction among the following is

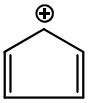
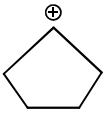
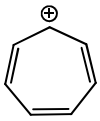
5.

a)  b) 

c)  d) 

100 The most stable carbocation is

6.

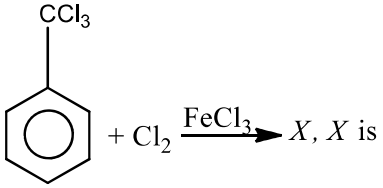
a)  b)  c)  d) 

100 Among the following alkenes (I) 1-butene, (II) *cis*-2-butene, (III) *trans*-2-butene the decreasing order of

7. stability is :

a) III > II > I b) III > I > II c) I > II > III d) II > I > III

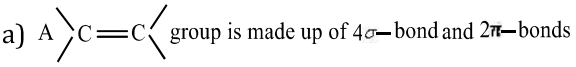
100 For the reaction,

8. 

a) Chloro benzene and carbon tetrachloride b) *meta* chloro benzotrichloride

c) *ortho, para* chloro benzotrichloride d) None of the above

100 Which of the following statements is not correct?

a)  group is made up of 4σ–bond and 2π–bonds

b) A σ-bond is stronger than π-bond

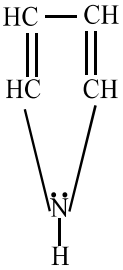
c) A σ-bond can exist independently of π-bond

d) A double bond is stronger than a single bond

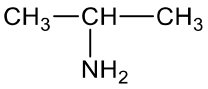
101 The number of sp^3- hybrid carbons in 2-butyne is :

a) 4 b) 3 c) 2 d) 1

101 How many π-electrons are there in following?



a) 2 b) 4 c) 6 d) 8

101  IUPAC name of is

a) Dimethyl amine

b) 2-amino propane

c) Isopropylamine

d) 2-propanamine

101 An organic compound having molecular mass 60 is found to contain C=20%, H=6.67% and N=46.67% while rest is oxygen. On heating it gives NH_3 along with a solid residue. The solid residue gives violet colour with alkaline copper sulphate solution. The compound is

a) $CH_3CH_2CONH_2$ b) $(NH_2)_2CO$

c) CH_3CONH_2 d) CH_3NCO

101 How many chiral carbon atoms are present in 2, 3, 4- trichloropentane?

a) 4 b) 1 c) 2 d) 3

101 Which one of the following compounds is most polar?

a) CH_2I_2 b) CH_2F_2 c) CH_2Cl_2 d) CH_2Br_2

101 Geometrical isomerism is not shown by

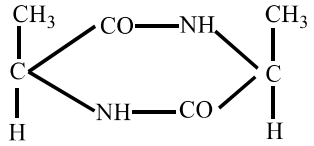
a) 1, 1-dichloro-1-pentene b) 1,2-dichloro-1-pentene

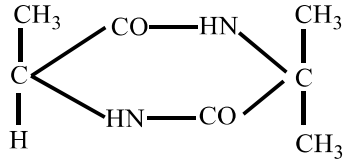
c) 1, 3-dichloro-2-pentene d) 1, 4-dichloro-2-pentene

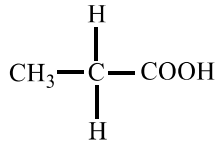
101 The change in optical rotation with time of freshly prepared solution of sugar is known as:

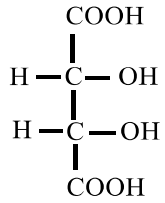
a) Specific rotation b) Inversion c) Rotatory motion d) Mutarotation

101 Which of the following does not show stereo isomerism?

a) 

b) 

c) 

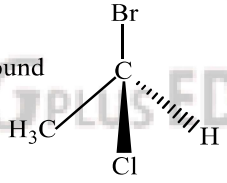
d) 

101 One of the following compounds exhibit geometrical iosmerism
9.

a) $CH_3CH_2CH_2CH_3$ b) $CH_3 - HC(CH_3) - H(C)CH_3 - CH_3$
c) $CH_3 - HC(CH_3) - CH_3$ d) $CH_3CH = CH - CH_3$

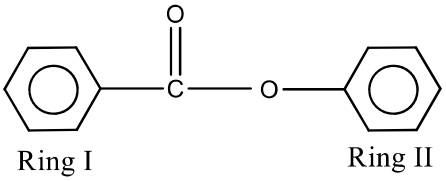
102 Which one of the following shows functional isomerism?
0.

a) C_2H_4 b) C_3H_6 c) C_2H_5OH d) CH_2Cl_2

102 **1.** The chirality of the compound 

a) R b) S c) Z d) I

102 In the compound
2.



electrophilic substitution occurs at

a) *ortho/para* position at ring I b) *meta* position at ring I
c) *ortho/para* position at ring II d) *meta* position at ring II

102 In the reaction of phenol with chloroform and aqueous solution of NaOH at 70°C, the electrophile attacking
3. the ring is

a) $CHCl_3$ b) $CHCl_2$ c) $: CCl_2$ d) $COCl_2$

102 The production of an optically active compound from a symmetric molecule without resolution in termed
4. as :

a) Walden inversion
b) Partial racemisation
c) Asymmetric synthesis
d) Partial resolution

102 5. An organic compound on heating with CuO produces CO_2 but no water. The organic compound may be

a) Carbon tetrachloride b) Chloroform c) Methane d) Ethyl iodide

102 6. Which of the following statement is not applicable to Beilstein test?

a) Green or bluish green flame is due to the formation of volatile cupric halides
b) It does not tell us to which halogen is present in the organic compound
c) It is very sensitive test can be easily performed
d) It is a sure test for the presence of halogen

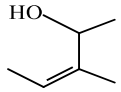
102 7. Essential oils can be isolated by

a) Crystallization b) Steam distillation c) Sublimation d) Distillation

102 8. Mesomeric effect involves delocalisation of

a) Pi-electrons b) Sigma electrons c) Protons d) None of these

102 9. The IUPAC name of the compound,



is :

a) 1,2-dimethyl-2-butenol
b) 3-methylpent-3-en-2-ol
c) 3,4-dimethyl-2-buten-4-ol
d) 2,3-dimethyl-3-pentenol

103 0. Which of the following species is paramagnetic in nature?

a) Carbonium ion b) Free radical c) Carbene d) Nitrene

103 1. Isobutyl chloride is :

a) $CH_3CH_2CH_2CH_2Cl$ b) $(CH_3)_2CHCH_2Cl$ c) $CH_3CH_2CHClCH_3$ d) $(CH_3)_3\ C-Cl$

103 2. How many isomers will C_3H_6 have?

a) 1 b) 2 c) Zero d) 4

103 3. Which one of the following compounds is capable of existing in a *meso* form?

a) 3, 3-dibromopentane b) 4-bromo-2-pentanol
c) 3-bromo-2-pentanol d) 2, 3-dibromopentane

103 4. Geometrical isomerism is caused :

a) By restricted rotation around $C = C$ bond
b) By the presence of one asymmetric carbon atom
c) Due to different groups attached to the same functional group
d) By swing of hydrogen atom between two polyvalent atoms

103 5. Lassaigne's test is used for the detection of

a) Carbon only b) Hydrogen only
c) Oxygen only d) Nitrogen, sulphur and halogens

103 6. Which of the following is arranged according to the nature indicated?

a) Electrophile
b) Electrophile
c) Electrophile – CH_3OH, N_3^-. Nucleophile – NO_2^+, Br^+

d) Electrophile – Br^+, N_3^-, Nucleophile – CH_3OH,

103 7. The number of possible alkynes with molecular formula C_5H_8 is

a) 3 b) 4 c) 5 d) 6

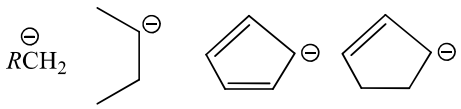
103 8. Example of geometrical isomerism is

a) 2-butanol b) 2-butene c) Butanal d) 2-butyne

103 9. Which of the following is an example of elimination reaction?

a) Chlorination of methane
b) Dehydration of ethanol
c) Nitration of benzene
d) Hydroxylation of ethylene

104 0. The order of stability of the following carbanion is



I II III IV

a) I>II>III>IV b) I>III>II>IV c) IV>III>II>I d) III>IV>I>II

104 1. Which nomenclature in IUPAC is not correct?

a) Pentyne-3 b) Pentyne-2 c) Hexyne-3 d) None of these

104 2. The C—C bond angle in cyclopropane is :

a) 60° b) 120° c) 109°28′ d) 180°

104 3. Absolute alcohol cannot be obtained by simple fractional distillation because

a) Pure C_2H_5OH is unstable
b) C_2H_5OH forms hydrogen bonds with water
c) Boiling point of C_2H_5OH is very close to that of water
d) Constant boiling azeotropic mixture is formed with water

104 4. Racemic compound has

a) Equimolar mixture of enantiomers b) 1:1 mixture of enantiomer and diastereomer
c) 1:1 mixture of diastereomers d) 1:2 mixture of enantiomers

104 5. In case of a homologous series each member differs from the preceding or the succeeding member by :

a) a CH_2 group b) a CH_3 group c) Two hydrogen atoms d) Four hydrogen atoms

104 6. Vaccum distillation is used to purify liquids which

a) Are highly volatile b) Are explosive in nature
c) Decompose below their boiling points d) Have high boiling point

104 7. The number of isomeric structures for C_2H_7N would be :

a) 4 b) 3 c) 2 d) 1

104 8. The IUPAC name of $CH_3 - CH_2 - CHO$

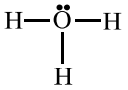
a) Propanal-1 b) 2-methylbutanal c) Butanal-1 d) Pentanal-1

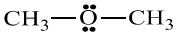
104 9. Which of the following is the weakest base?

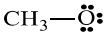
a) Ethyl amine b) Ammonia c) Dimethyl amine d) Methyl amine

105 The structure which has positive charge on the oxygen atom :

0.

a) 

b) 

c) 

d)