CHEMISTRY

BOOKS - PATHFINDER CHEMISTRY (BENGALI ENGLISH)

GOC-II & III

Question Bank

1. Write formulae for all the isomers of the following. Designate pairs of enantiomers and achiral compounds where they exist. 1-Bromo-4-chlorocyclohexane

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2. Which of the following compounds will exhibit geometrical isomerism?

A. 1-phenyl-2-butene

B. 3-phenyl-1-butene

C. 2-phenyl-1-butene

D. 1,1-diphenyl-1-propane

Answer:

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3. Number of possible geometrical isomers for 2, 4 - hexadiene are?

A. 8

B. 4

C. 3

D. 2

Answer:

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4. In the given compounds count the niumber of chiral centers

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5. In the given compounds count the niumber of chiral centers

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6. Assign R/S configuration for

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7. Assign R/S configuration for

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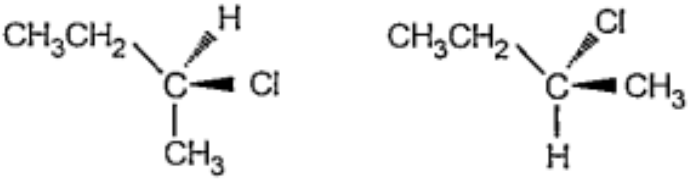
8. What is the relationship between the compounds shown ?



A. Same compound

B. Enantiomers

C. Diastereomers

D. Structural isomers

Answer: A

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9. Total number of stereoismers of the compound 1,3-dichlorocyclohexane is

A. 1

B. 2

C. 3

D. 4

Answer: C

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10. The number of geometrical isomers of $CH_3CH=CH-CH=CH-CH=CHCl$ is

A. 2

B. 4

C. 6

D. 8

Answer: C

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11. Which is the most stable conformation of 2,3 dimethyl butane ?

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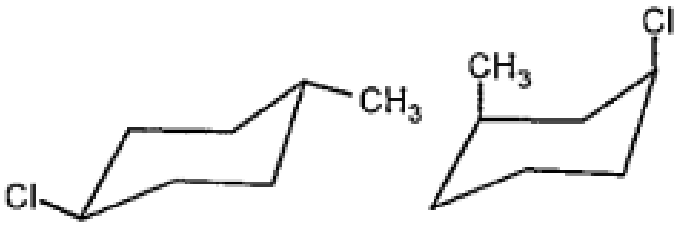
12. What is the relationship between the two structures shown ?



A. Enantiomers

B. Diastereomers

C. Constitutional

D. Conformational isomers

Answer: C

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13. All of the following molecules exhibit geometrical isomerism except

A. HN = NH

B. $H_3CN = NCH_3$

C. $H_3CN = NOH$

D. $H_2C = NH$

Answer: D

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14. Nucleophile :Nu^- : : electrophilie : ?

A. E^+

B. E^-

C. P^+

D. P^-

Answer: A

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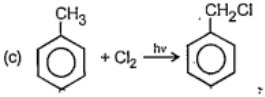
15. What is the correct of the following reactions classified as substitution, addition and elimination respectively ?

(a) $CH_3CHO \xrightarrow{NaHSO_3} CH_3-CH(OH)(SO_3Na)$ (b) $CH_3-CH(OH)-CH_3 \xrightarrow[\Delta]{H_2SO_4} CH_3-CH=CH_2$

(c) 

A. a,b,c

B. b,c,a

C. c,a,b

D. c,b,a

Answer: C

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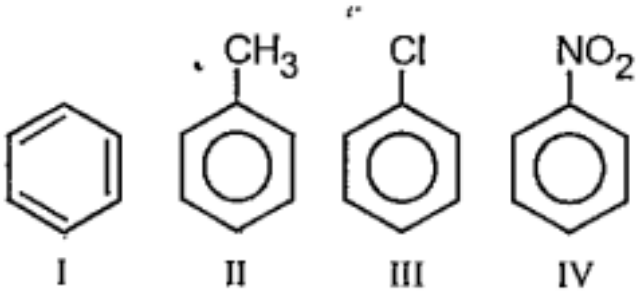
16. Identify the correct order of reactivity in electrophilic substitution reactions of the following compounds



A. $I > II > III > IV$

B. $IV > III > II > I$

C. $II > I > III > IV$

D. $II > III > I > IV$

Answer: C

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17. Isopropyl chloride undergoes hydrolysis

A. SN1 mechanism

B. Both SN1 and SN2 mechanism

C. SN2 mechanism

D. Neither SN1 and SN2 mechanism

Answer: B

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18. Which of the following compound is most reactive towards nucleophilic addition reaction ?

A. Ethanal

B. Propanal

C. Butanone

D. Propanone

Answer: A

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19. In which compound(s) cis-trans nomenclature cannot be used ?

A. $CH_3 - CH = CH - CH_3$

B. $CH_3 - CH = CH - COOH$

C. ClC(Br)=C(CH3)C2H5

D. $C_6H_5 - CH = CH - CHO$

Answer: C

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20. How many geometrical isomers are possible for given compound

$C_6H_5 - CH = CH - CH = CH - COOH$

A. 3

B. 4

C. 2

D. 1

Answer: B

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21. Which among the following compound will have meso form

A. $CH_2OH - CHOH - CHOH - CHO$

B. $CH_2OH - CHOH - CHOH - COOH$

C. $CH_2OH - (CHOH)_2 - CH_2OH$

D. $C_6H_5 - CHCl = CHOH - CH_3$

Answer: C

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22. Meso tartaric acid is optically inactive due to the presence of

A. Two chiral carbons

B. Molecular asymmetry

C. Internal compensation

D. External compensation

Answer: C

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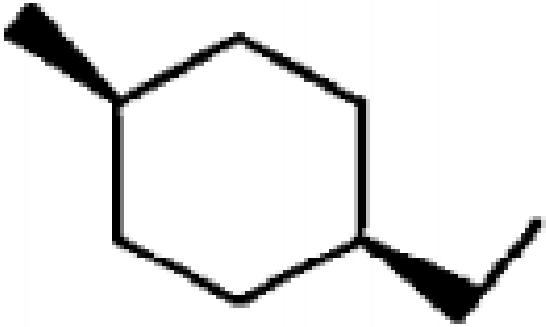
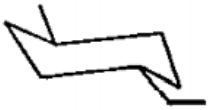
23. Which is the most stable chair form of this compound ?



A.



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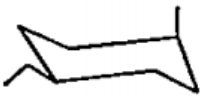
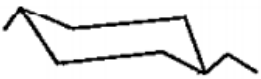


C.



D.

Answer: B

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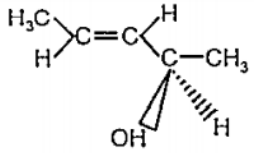
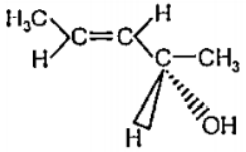
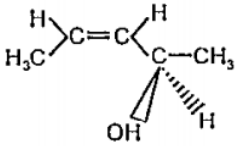
24. Which of the following molecule have (2R 3-Z) configuraion ?



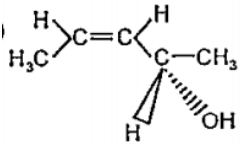
A.



B.



C.



D.

Answer: C

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25. Calculate no. of stereogenic center in the following molecule.

A. 0

B. 1

C. 2

D. 3

Answer: D

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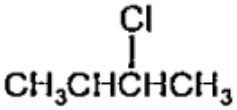
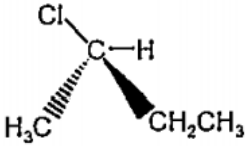
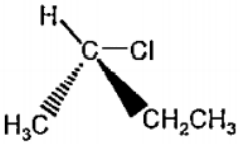
26. The structure of (S)-2- chlorobutane is best represented by :



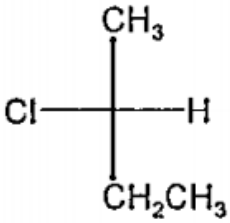
A.



B.



C.



D.

Answer: C

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27. Pure (S) -2- butanol has a specific rotation of + 13.52 degree. A sample of 2-butanol prepared in the lab and purified by distillation has a calculated specific rotation of +6.67 degrees. What can you conclude about the composition ?

A. $50\ \%$ (S), $50\ \%$ impurity

B. $50\ \%\ (S) 50\ \%\ (R)$

C. $50\ \%\ (S), 50\ \%$ racemic

D. Some other mixture

Answer: C

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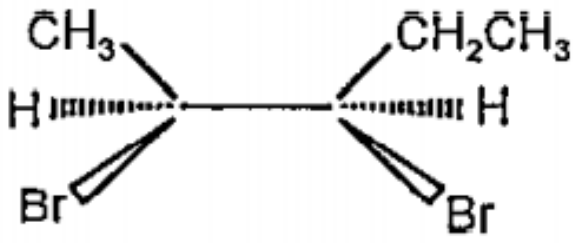
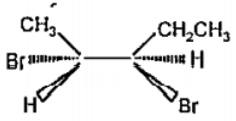
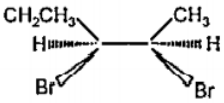
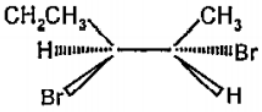
28. Which of the following is not diastereomeric structure of given compound ?



A. 

B. 

C. 

D. None of these

Answer: B

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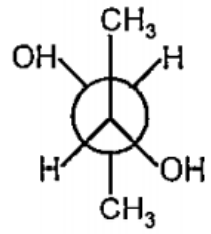
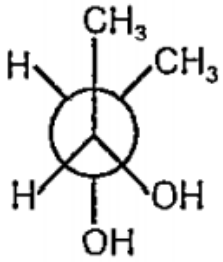
29. Which one of the following is the most stable conformer ?

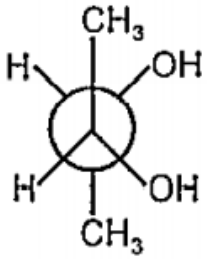
A.



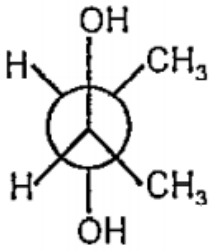
B.



C.



D.



Answer: C

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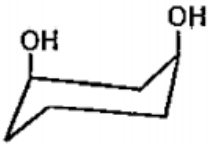
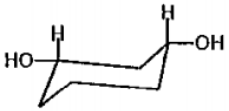
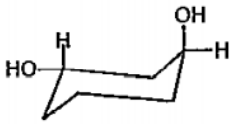
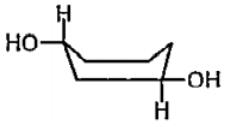
30. Which one of the following is most stable ?

A. 

B. 

C. 

D. 

Answer: A

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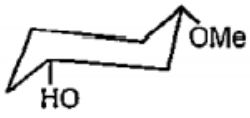
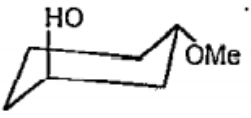
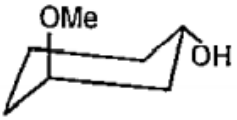
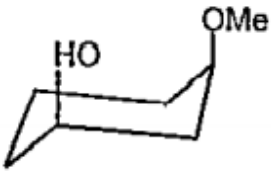
31. Among the following, the most stable isomer is :

A. 

B. 

C. 

D. 

Answer: D

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32. Angle strain in which compound is maximum

A. Propane

B. Cyclopropane

C. n-butane

D. Cyclobutane

Answer: B

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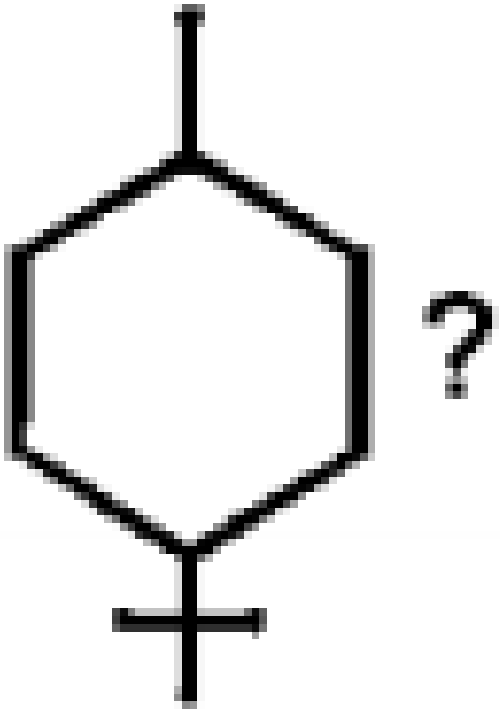
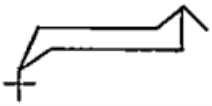
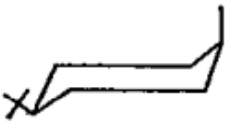
33. Which of the following is most stabilised conformer of

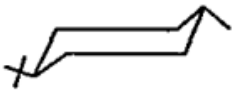


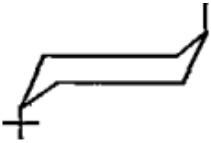
A.



B.



C. 

D. 

Answer: C

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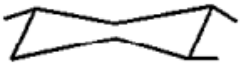
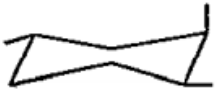
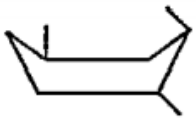
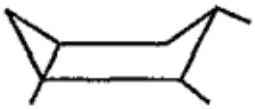
34. Among the structures shown below, which has the lowest potential energy ?

A. 

B. 

C. 



D.

Answer: A

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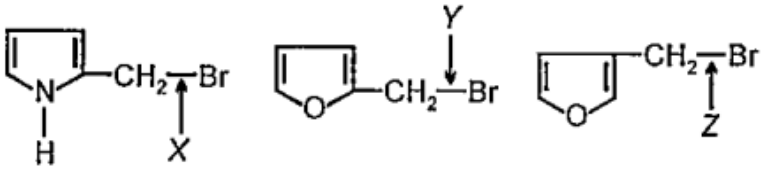
35. Find out correct order of the energy required for heterolytic cleavage of indicated C-Br bonds forming carbocation :



A. $Z > Y > X$

B. $X > Y > Z$

C. $Y > X > Z$

D. $Z > X > Y$

Answer: A

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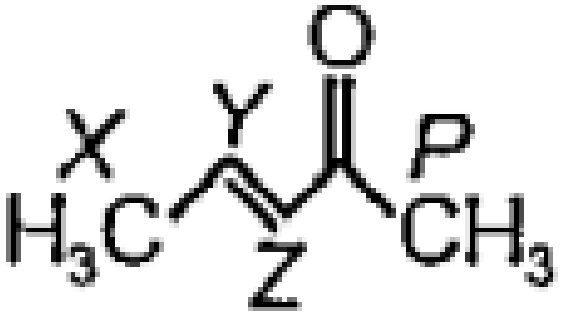
36. The abstraction of proton will be faster in which carbon in the following compound ?



A. X

B. Y

C. Z

D. P

Answer: A

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37. Which of the following can show geometrical isomerism ?

A. 2,2-Dimethylbutane

B. 2,3-Dimethyl-2-butene

C. 1,2-Dimethylcyclohexane

D. 2-Methylpentane

Answer: C

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38. How many chiral carbon atoms are present in 2,3,4-trichloropentane ?

A. Three

B. Two

C. One

D. Four

Answer: A

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39. Which of the following has zero dipole moment ?

A. cis-2-Butene

B. trans-2-Butene

C. 1-Butene

D. 2-Methyl-1-propene

Answer: B

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40. The number of acyclic structural isomers represented by molecular formula C4 H10 O is:

A. 5

B. 6

C. 7

D. 4

Answer: B

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41. The number of structural and configurational isomers of a bromo compound C_5H_9Br formed on addition of HBr to 2-pentyne respectively are

A. 1 and 2

B. 2 and 4

C. 4 and 2

D. 2 and 1

Answer: B

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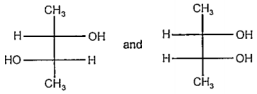
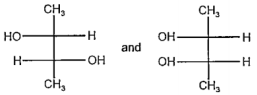
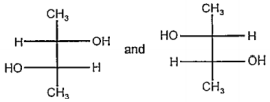
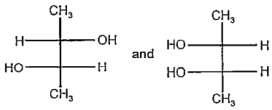
42. Which of the following pairs of compounds are diastereomers ?

A. 

B. 

C. 

D. 

Answer:

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43. Which of the following molecules can act as a nucleophile and an electrophile?

A. CH3 NH2

B. MeCl

C. MeOH

D. MeCN

Answer:

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44. Which of the following compounds will react with ethanolic KCN ?

A. Ethyl chloride

B. Acetyl chloride

C. Chlorobenzene

D. Benzaldehyde

Answer:

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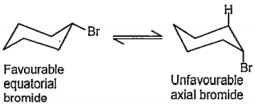
45. Whan cyclohexyl bromide is treated with a base, it does undergo E2 reaction to give cyclohexene, Select correct statement(s) in this reaction

A. Cyclohexyl bromide has the chair conformation with bromine atom equatorial

B. E2 reaction is not possible in this conformation as E2 reaction requires the reacting C-H and C-Br bonds to be antiperiplanar

C. There is changing of conformation to an unfavourable axial conformation



D. There is change of ring to minimise strain

Answer:

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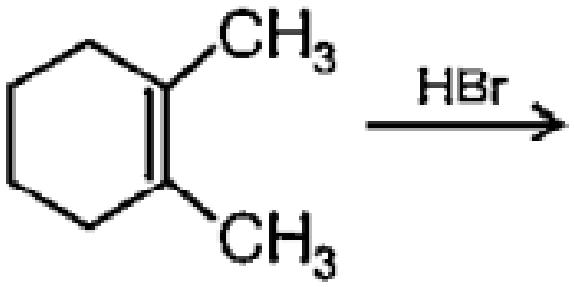
46. Two products formed by addition of HBr to 1,2-dimethyl cyclohexene



A. are cis and trans-1,2-dimethyl cyclohexyl bromide

B. cannot be regioisomers

C. can also be formed by addition of HBr to 1,6-dimethyl cyclohexene

D. cis and trans products are diastereomers

Answer: D

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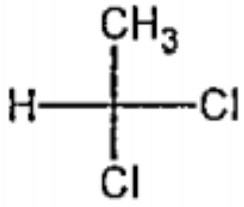
47. Presence of chiral center is not an essential condition to show optical isomerism. Essential condition is compound should show non-superimposable mirror image

Allenes do not contain chiral centre but show optical isomerism when different groups are attached on double bonded carbons.

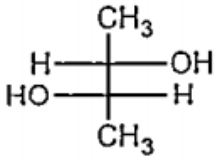
Biphenyls also show optical isomerism when both rings are perpandicular to each other and any ring should not contain plane of symmetry.

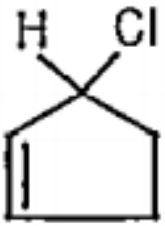
Which of the following compounds is optically inactive ?

A.

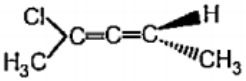


B.





C.



D.

Answer: A

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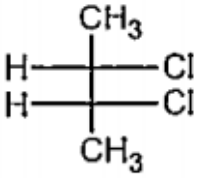
48. Presence of chiral center is not an essential condition to show optical isomerism. Essential condition is compound should show non-superimposable mirror image

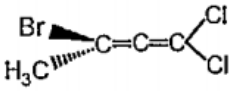
Allenes do not contain chiral centre but show optical isomerism when different groups are attached on double bonded carbons.

Biphenyls also show optical isomerism when both rings are perpandicular to each other and any ring should not contain plane of symmetry.

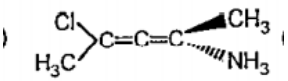
Which of the following compounds can be resolved in enantiomeric form ?



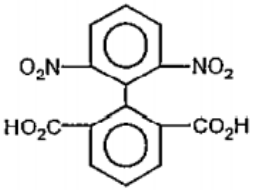
A.



B.



C.



D.

Answer: C

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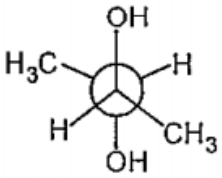
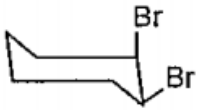
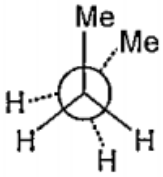
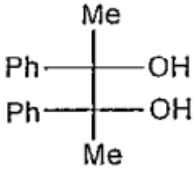
49. Match Column-I with Column-II

Column-I		Column-II
(A)		(P) Meso
(B)		(Q) *Anti* conformer
(C)		(R) *Cis*-isomer
(D)		(S) Eclipsed conformers

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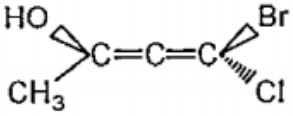
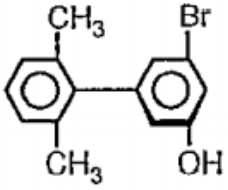
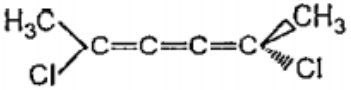
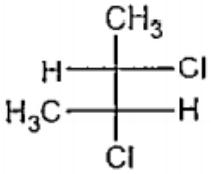
50. Match Column-I with Column-II

Column-I		Column-II
(A)		(P) Plane of symmetry
(B)		(Q) Meso
(C)		(R) Optically active
(D)		(S) Geometrical isomerism

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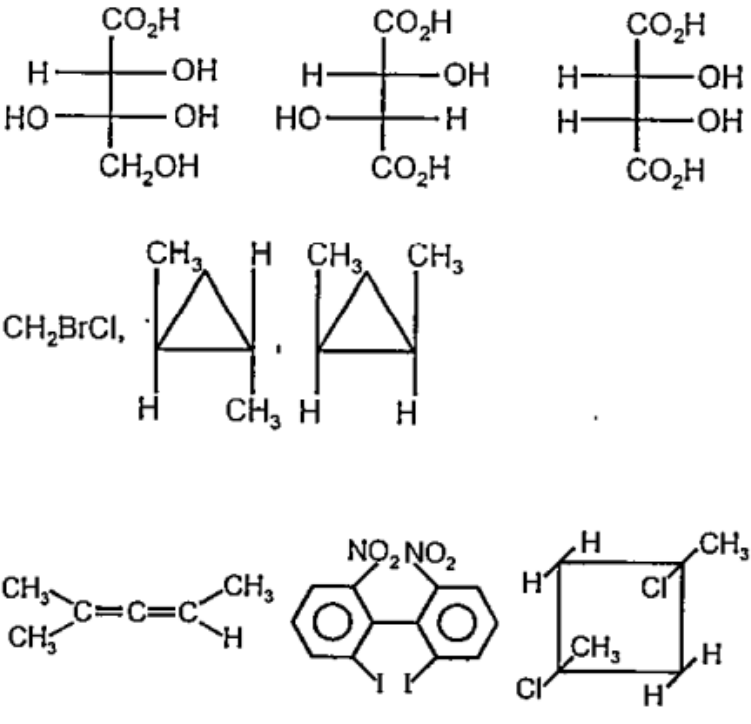
51. How many of the following posses plane of symmetry ?



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52. How many isomers of C_4H_8 are possible ?

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53. How many cyclic C_5H_{10} are possible ?

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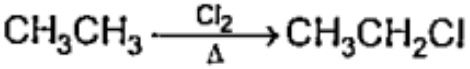
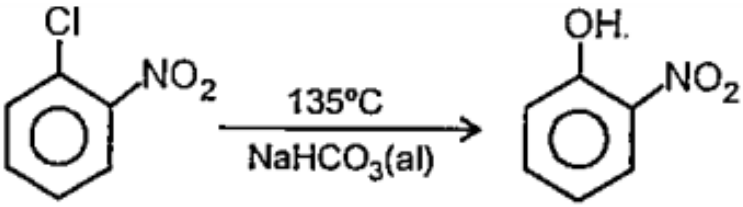
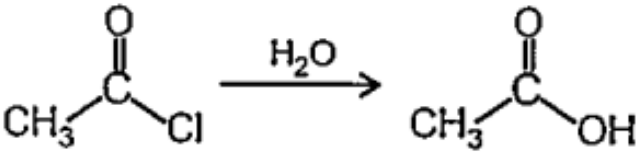
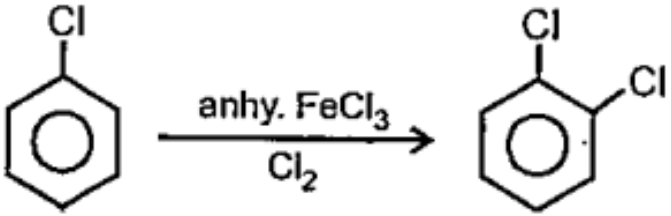
54. How many of the following reactions is/are examples of S_N2 reaction ?









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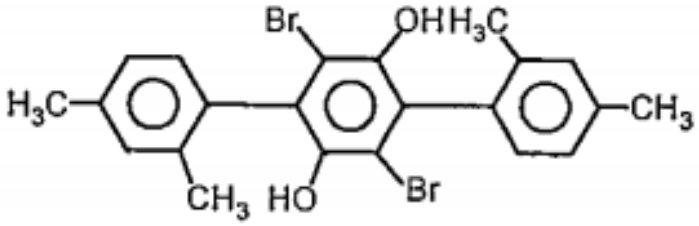
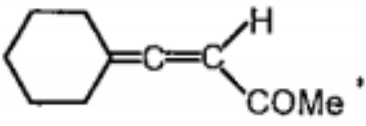
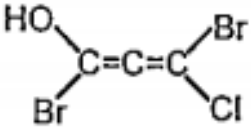
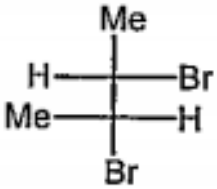
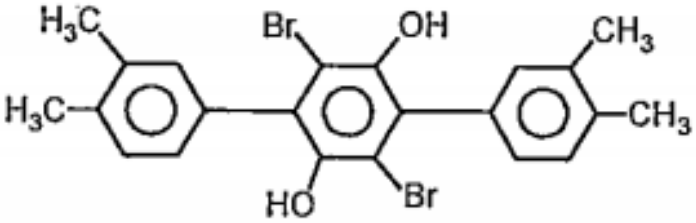
55. The number of compounds that are meso is

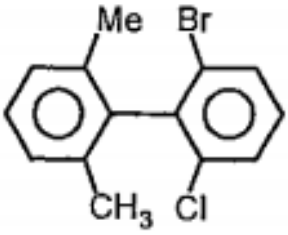












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56. How many stereoisomers can be obtained for the following structure ?

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57. A 0.1 M solution of an enantiomerically pure chiral compound (A) has an observed rotation of 0.20 in a 1 dm sample tube. The relative molecular mass of the compound is 150.

What is the specific rotation of A ?

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59. A 0.1 M solution of an enantiomerically pure chiral compound (A) has an observed rotation of 0.20 in a 1 dm sample tube. The relative molecular mass of the compound is 150.

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Watch Video Solution

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What is the specific rotation of A ?

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61. $\frac{+0.20}{2} = 0.10^{\circ}$ where μ_i is the dipole moment of a stable conformer of the molecule, $Z - CH_2 - CH_2 - Z$ and x_i is the mole fraction of the stable conformer.

Given : μ_{obs}=1.0D and $x(anti) = 0.82 Drawallthestab \leq conf$ or $mersof$Z-CH_2-CH_2-Z and $calcatethevalueof$mu_((Gauche))`.

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62. Aryl halides are less reactive than alkyl halides towards nucleophilic reagents

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63. When (R)-1-bromo-2butanol reacts with KI in acetone the product is 1-iodo-2-butanol. Would the product be (R) or (S) ?

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64. Which among the given compounds is most stable ?

A. 1-Butene

B. 2, 3-Dimethy-2-butene

C. cis-2-Butene

D. trans-2-Butene

Answer:

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65. How many stereomeric forms are posible for the compound propanone ?

A. 2

B. 3

C. 4

D. none

Answer:

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66. Optical isomerism is shown by :

A. Butan -1-ol

B. Butan -2-ol

C. Butan -1-ene

D. Butan -2-ene

Answer:

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67. Meso tartaric acid is optically inactive due to the presence of

A. two chiral carbons

B. molecular asymmetry

C. molecular symmetry

D. external compensation.

Answer:

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68. The toal number of cofiguartional isomers of the compound $HOH_2C - CH(OH) - CH(OH) - CH_2CH_2OH$ is :

A. 3

B. 4

C. 5

D. 6

Answer:

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69. Total number of optically active isomers of the compound $HOH_2C-(CHOH)^4-CH_3$ is :

A. 8

B. 10

C. 12

D. 16

Answer:

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70. Highest Priority Group according to CIP rule at a Chiral Centre ?

A. -OH

B. -Cl

C. -CH3

D. -H

Answer:

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71. The specific degree of rotation of an optically active compound is expressed as $[\alpha]_{\lambda}^{\gamma}=\frac{\theta}{l}.c$, where l and c are length of the polarimeter tube and concentration of the solution respectively. Units for l and c are respectively :

A. cm, gL^{-1}

B. m, gL^{-1}

C. dm, gL^{-1}

D. mm, gL^{-1}

Answer:

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72. Which is the most stable intermediate?

A. 3º Carbocation

B. 2º Carbocation

C. 1º Carbocation

D. Methyl Group

Answer:

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73. The dihedral angle between two methyl groups of nbutane in the given (skew) and anti forms are :

A. $60^\circ, 0^\circ$

B. $60^\circ, 180^\circ$

C. $0^\circ, 60^\circ$

D. $180^\circ, 60^\circ$

Answer:

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74. Which one of the following is most reactive for addition reaction ?

A. $C_6H_5COCH_3$

B. C_6H_5CHO

C. C_2H_5CHO

D. $CH_2(Cl)CHO$

Answer:

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75. The formation of cyanohydrin from a ketone is an example :

A. electrophilic addition

B. free radical addition

C. nucleophilic addition

D. none of these

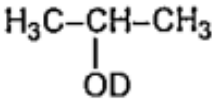
Answer:

Watch Video Solution

76. $CH_3CH = CH_2 \xrightarrow{Cl_2 + H_2O} A$. A is :

A. 

B. 

C. 

D. none of the above

Answer:

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

A. $CH_3 - CH_2 - CH = \mathbb{C}l_2$

B. $CH_3C(Cl) = C(CH_3)_2$

C. $CH_3CH = CH_2$

D. $CH_3CH = NOH$

Answer:

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78. The structure of the lowest molecular mass alkyne capable of showing optical activity is

A. 2- Heptyne

B. 3-Methyl-1-pentyne

C. 3-Methyl-1-butyne

D. 3-Hexyne

Answer:

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79. The number of geometrical isomers in case of a compound with the structure CH3−CH=CH−CH=CH−C2H5 is:

A. 2

B. 4

C. 6

D. 8

Answer:

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80. If a compound has n dissimilar dissymmetric carbon atoms, then the possible number of optical isomers is

A. n/2

B. 2^n

C. $2\sqrt{n}$

D. $\sqrt{2n}$

Answer:

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81. Which of the following represents the best reagent(s) for the electrophilic nitration of benzene?

A. H2SO4

B. HNO3

C. H2SO4/HNO3

D. H_2SO_4/H_2O

Answer:

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82. Which of the following is a reagent for free radical reaction ?

A. $NaBH_4$

B. H_2 / Ni

C. Photochemical Condition

D. H_2SO_4 / Heat

Answer:

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83. What is a cis alkene?

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84. Assign Oxidation Numbers to the central elements in each of the following species ? KMnO4, HClO4, NaH2PO4

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85. Which of the following can cxist in syn and anti form ?

A. $Ph - N = N - OH$

B. $Ph - N = N - Ph$

C. $Ph - CH = N - OH$

D. $Ph_2C = N - OH$

Answer:

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86. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : Propan-2-ol is achiral molecule.

Statement - II : Four groups attached to tetrahedral/carbon are different.

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87. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : In racemisation, product is optically active.

Statement - II : One isomer will rotate light in direction opposite to another.

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88. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : trans-1, 3-Cyclohexanediol is more stable than cis-1, 3-cyclohexanediol.

Statement - II : There is H-bonding in ciscyclohexanediol.

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89. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : The twist boat form of cyclohexane is more stable than boat form.

Statement - II : There is no dipple-dipple interactions in the twist boat form.

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90. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : Sn1 reaction is accompained by racemisation.

Statement - II : Carbocation is formed in this reaction, and attack of nucleophile can be from same side of leaving group and can be from opposite side of leaving group.

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91. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : Nitration of chlorobenzene leads to the formation of ortho and para nitrochlorobenzene.

Statement - II : NO_2 group is a o,p-directing group.

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92. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : Electrophilic substitution reactions in haloarene occur slowly and require drastic conditions.

Statement - II : Haloarene gets activated as compared to benzene.

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93. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : Diastereomers are not mirror image of each other.

Statement - II : Diastereomers may be optically active.

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94. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : Dextro-isomers rotate the plane of polarised light towards right.

Statement - II : Dextro-isomers are represented by putting (D) before their name.

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95. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : All compounds having C=C bond exhibit geometrical isomerism.

Statement - II : Rotation about C=C bond is restricted.

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96. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : Benzaldehyde forms two oximes on reacting with NH_2OH

.

Statement - II : The two oximes arise due to geometrical isomerism around C=N bond.

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97. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : Meso tartaric acid is optically inactive.

Statement - II : Meso tartaric acid has plane of symmetry.

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98. Draw the structure of SF_6

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99. In crystal arrangement of NaCl, the arrangement of Cl^- ion is

A. bcc

B. fcc

C. both fcc and bcc

D. None of these

Answer:

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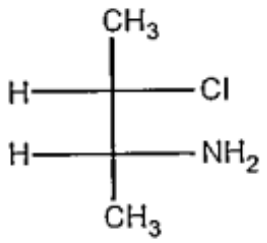
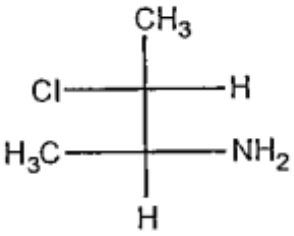
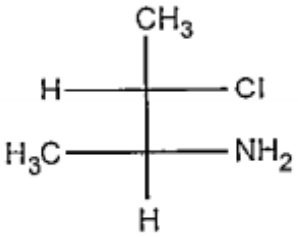
R, S-configuration is a useful tool for determination of enantiomers,diastereomers and homomers. If configuration of all chiral centers are opposite then structures are enantiomers, if all chiral centers have same configuration then they are homomers and if some have same configuration and some have opposite configuration then they are diastereomers.



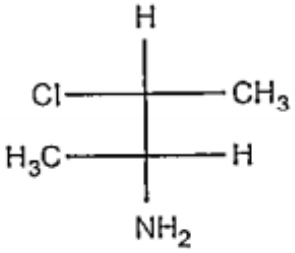
I



II



III



IV

100.

Among above structure find out enantiomeric sturctures :

A. II and III

B. I and II, II and IV

C. I and IV

D. III and IV

Answer:

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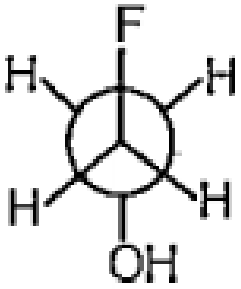
101. Conformations are different arrangements of atoms that are interconverted by rotation about single bond.

In eclipsed conformation the C-H bond on one carbon is directly aligned with C-H bond on the adjacent carbon.

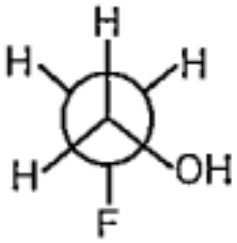
The angle that separates a bond on one atom from a bond on a adjacent atom is called a dihedral angle.

A staggered conformation with two larger groups 180° from each other is called anti. A stagged conformation with two larger group 60° from each other is called gauche.

Identify the most stable conformer of 2-fluoro ethanol among the following :

A. 

B.

C. 

D.

Answer:

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102. Conformations are different arrangements of atoms that are interconverted by rotation about single bond.

In eclipsed conformation the C-H bond on one carbon is directly aligned

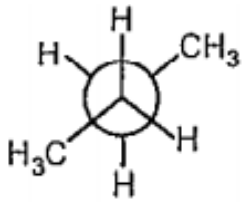
with C-H bond on the adjacent carbon.

The angle that separates a bond on one atom from a bond on a adjacent atom is called a dihedral angle.

A staggered conformation with two larger groups 180° from each other is called anti. A stagged conformation with two larger group 60° from each other is called gauche.

Which of the following is gauche conformer ?

A. 



B.

C. 

D. 

Answer:

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103. Which one has the highest reactivity towards nucleophilic addition :

$HCHO, CH_3CHO, CH_3COCH_3, CH_3COCl$

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104. Write the increasing order of reactivity towards the nucleophilic addition reactions :

$C_6H_5COC_6H_5, CH_3COC_6H_5, CH_3COCH_3, CH_3CHO$

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105. Arrange the following carbonyl compounds in decreasing order of reactivity towards nucleophilic addition :

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106. A solution prepared by mixing 10 mL of a 0.10 M solution of the R enantiomer and 30 mL of a 0.10 M solution of the S enantiomer was found to have an observed specific rotation of $+4.8^{\circ}$. What is the specific rotation of each of the enantiomers ?

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107. Which of the following compounds will exhibit geometrical isomerism?

A. 3-Phenyl-1-butene

B. 2-Phenyl-1-butene

C. 1,1-Diphenyl1-1propane

D. 1-Phenyl-2-butene

Answer: D

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108. In a mixture, two enantiomers are found to be present in $85\,\%$ and $15\,\%$ respectively. The enantiomeric excess (e,e) is

A. $85\,\%$

B. $15\,\%$

C. $70\,\%$

D. $60\,\%$

Answer: C

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109. Two possible stereo-structures of $CH_3CHOHCOOH$,which are optically active, are called.

A. Diastereomers

B. Atropisomers

C. Enantiomers

D. Mesomers

Answer: C

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110. A solution of (-) 1-chloro-1-phenylethane in toluene racemises slowly in the presence of a small amount of $SbCl_5$, due to the formation of

A. carbanion

B. carbene

C. carbocation

D. free radical

Answer: C

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111. Dissymmetric object is one which is

A. superimposable on its mirror image

B. non-superimposable on its mirror image

C. optically inactive

D. achiral

Answer: B

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112. The compound without a chiral carbon atom is

A. 

B. 

C. 

D. 

Answer: A

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113. In SN1 reaction, the racemization takes place. It is due to

A. Inversion of configuration

B. retention of configuration

C. conversion of configuration

D. BOTH (A) AND (B)

Answer: D

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114. Which of the following pairs of compounds are enantiomers ?

A. 

B. 

C. 

D. 

Answer: D

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115. How many compounds are possible on monochlorination of butane ?

A. 8

B. 2

C. 4

D. 6

Answer: C

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116. Which of the following is a chiral molecule ?

A. 

B. 

C. 

D. 

Answer: B

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117. Ibuprofen contains

A. Only S-enantiomer

B. Only R-enantiomer

C. Racemic mixture of both R and S enantiomer

D. Both R- and S-enantiomer are active pain killers

Answer: C

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118. The well known compounds, (+) -lactic acid and (-) -lactic acid, have the same molecular formula, $C_3H_6O_3$. The correct relationship between them is

A. constitutional isomerism

B. geometrical isomerism

C. identicalness

D. optical isomerism

Answer: D

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119. Under identical condition, the SN1 reaction will occur most efficiently with

A. tert-butyl chloride

B. 1-chlorobutane

C. 2-methyl-1-chloropropane

D. 2-chlorobutane

Answer: A

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120. Which of the following shows optical isomerism ?

A. Butan-1-ol

B. Butan-2-ol

C. Butene

D. But-2-enol

Answer: B

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121. Among the following compounds the one that is most reactive towards eletrophilic nitration is

A. nitrobenzene

B. toluene

C. benzene

D. benzoic acid

Answer: C

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122. Which of the following acids does not exhibit optical isomerism ?

A. Maleic acid

B. α-amino acids

C. Lactic acid

D. Tartaric acid

Answer: A

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123. Consider the reaction,

$$RCHO + NH_2NH_2 \rightarrow RCH = N - NH_2$$

What type of reaction is it ?

A. Electrophilic addition elimination reaction

B. Free radical addition elimination reaction

C. Electrophilic substitution elimination reaction

D. Nucleophilic addition elimination reaction

Answer: D

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124. Which of the following does show SN2 reaction at highest rate ?

A. tertiary chloride

B. secondary chloride

C. primary chloride

D. methyl chloride

Answer: D

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125. In which of the following compounds, one of the structural isomers is also cabable of showing enantiomerism ?

A. C_3H_8

B. $C_3H_6Br_2$

C. C_5H_{12}

D. C_6H_{14}

Answer: B

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126. Geometrical isomerism is shown by

A. -C-C-

B. -C=C-

C. -C $\equiv$ C-

D. None of the

Answer: D

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127. The amino acid which is not optically active is

A. lactic acid

B. serine

C. alanine

D. glycine

Answer: D

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128. Which one of the following will show optical isomerism ?

A. 2-hydroxypropanoic acid

B. propanoic acid

C. 2-methylpropanoic acid

D. 2-chloro-2-methylpropanoic acid

Answer: B

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129. The ease of dehydrohalogenation of alkyl halide with alcoholic KOH is

A. $3^\circ < 2^\circ < 1^\circ$

B. $3^\circ > 2^\circ > 1^\circ$

C. $3^\circ < 2^\circ > 1^\circ$

D. $3^\circ > 2^\circ < 1^\circ$

Answer: B

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130. Consider thiol anion $\left(RS^{-}\right)$ and alkoxy anion $\left(RO^{-}\right)$. Which of the following statements is correct ?

A. RS^{-} is less basic and less nucleophilic than RO^{-}

B. RS^{-} is less basic but more nucleophilic than RO^{-}

C. RS^{-} is more basic and more nucleophilic than RO^{-}

D. RS^{-} is more basic and but less nucleophilic than RO^{-}

Answer: B

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131. The maximum number of possible optical isomers in 1-bromo-2-methyl cyclobutane is

A. 4

B. 2

C. 8

D. 16

Answer: A

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132. Which one of the following is the least energetic conformation of cyclohexane ?

A. Boat

B. Twisted boat

C. Chair

D. Half chair

Answer: D

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133. Which of the following compounds exhibit rotamers ?

A. 2-butene

B. Maleic acid

C. Butane

D. Fumeric acid

Answer: A

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134. 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. CH3

Answer: C

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135. 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

Answer: B

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136. Which one is a nucleophilic substitution reaction among the following ?

A. $CH_3CHO + HCN \rightarrow CH_3CH(OH)CN$

B. 

C. 

D. 

Answer: D

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137. Among the following, the optically active compound is

A. CH_3CH_2OH

B. $CH_3CH = CHCH_3$

C. $CH_3CH(OH)COOH$

D. $CH_3CH_2COCH_3$

Answer: C

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138. Which of the compounds when brominated turns to meso 2,3-dibromobutane ?

A. Cis -2-butene

B. Iso-butane

C. Butane

D. Trans-2-butene

Answer: D

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139. Of the following, the oxime of which shows geometrical isomerism, is

A. acetone

B. diethylketone

C. formaldehyde

D. benzaldehyde

Answer: D

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140. Which one of the following exhibits geometrical isomerism ?

A. 1,2-dibromopropene

B. 2, 3-dimethylbut-2-ene

C. 2,3-dibromobut-2-ene

D. 2-methylbut-2-ene

Answer:

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141. Which one of the following alkylbromides undergoes most rapid solvolysis in methanol solution to give corresponding methyl ether ?

A. 

B. 

C. 

D. 

Answer: A

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142. 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

Answer: B

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143. Amongst the given options, the compound(s) in which all the atoms are in one plane in all the possible conformations (if any), is (are)

A. 

B. 

C. $H_2C = C = O$

D. $H_2C = C = CH_2$

Answer: C

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

A. 1

B. 3

C. 5

D. 7

Answer: C

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