Chapter 02

Isomerism

NEET-RANKER'S STUFF

Q.1 Which of the following is not a metamer of $C_5H_{12}O$:

(1) 2-methoxy butane

(2) 1-methoxy butane

(3) ethyl n-propyl ether

(4) n-pentyl alcohol

Q.2 Which of the following statements is/are correct?

(1) Metamerism belongs to the category of structural isomerism

(2) Tautomeric structures are the resonating structures of a molecule

(3) Keto form is always more stable than the enol form

(4) Geometrical isomerism is shown only by alkenes

Q.3 Geometrical isomerism results because the molecule:

(1) Rotates the plane of polarized light

(2) Has a plane of symmetry

(3) Has a centre of symmetry

(4) Has two dissimilar groups attached to both ends of double bond

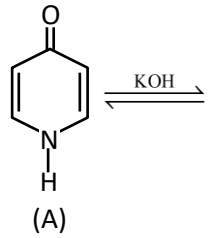
Q.4 Which of the following compounds exhibits stereoisomerism?

(1) 2-methylbutene-1

(2) 3-methylbutyne-1

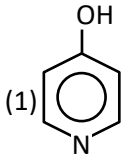
(3) 3-methybutanoic acid

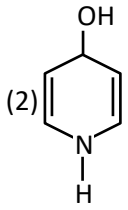
(4) 2-methylbutanoic acid

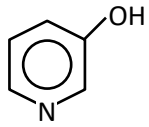
Q.5 

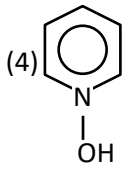
(B) Tautomer (B) is:

(A)

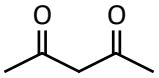
(1) 

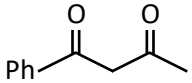
(2) 

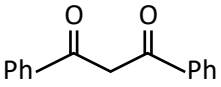
(3) 

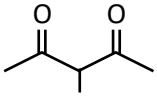
(4) 

Q.6 Which of the following compound has highest enol content?

(1) 

(2) 

(3) 

(4) 

Q.7 Keto and enol forms of a compound are related to each other as:

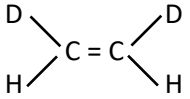
(1) Resonance structures

(2) Confornations

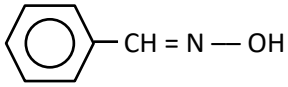
(3) Configurational isomers

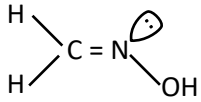
(4) Constitutional isomers

Q.8 In which of the following compound syn anticonfiguration will given?

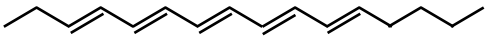
(1) 

(2) $H_2C = CHBr$

(3) 

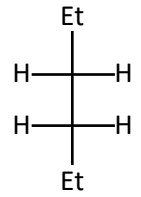
(4) 

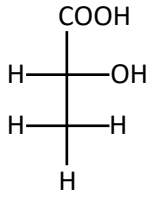
Q.9 Calculate the total no. of geometrical isomers?

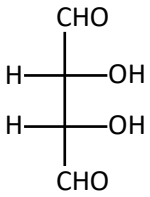


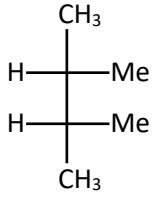
(1) 32 (2) 16 (3) 5 (4) 8

Q.10 Which of the following compound will be meso compound?

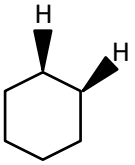
(1) 

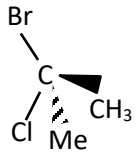
(2) 

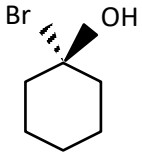
(3) 

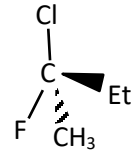
(4) 

Q.11 Which of the following will show optical isomerism?

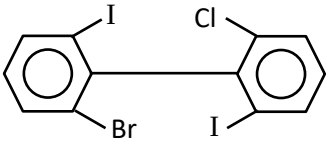
(1) 

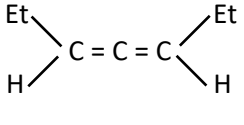
(2) 

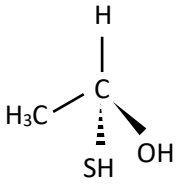
(3) 

(4) 

Q.12 Which of the following compound will be chiral molecule?

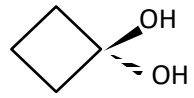
(1) 

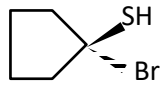
(2) 

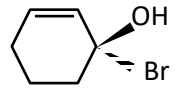
(3) 

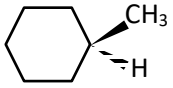
(4) All of these

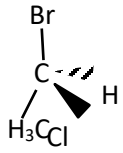
Q.13 Which of the following will be optically active?

(1) 

(2) 

(3) 

(4) 

Q.14 The configuration of the compound 

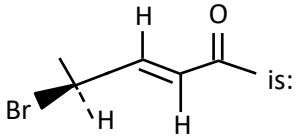
is:

(1) E (2) R (3) S (4) Z

Q.15 Total number of conformers of ethane is:

(1) 2 (2) 3 (3) 4 (4) Infinite

Q.16 The IUPAC name (including the stereohemical rotation for the chiral carbon) of



(1) (S) –2 –bromo – (Z) – hex – 3 – en – 4 one

(2) (R) –2 –bromo – (E) – hex – 3 – en – 4 one

(3) (R) –5 –bromo – (Z) – hex – 3 – en – 2 one

(4) (S) –5 –bromo – (E) – hex – 3 – en – 2 one

Q.17 Choose correct statement"

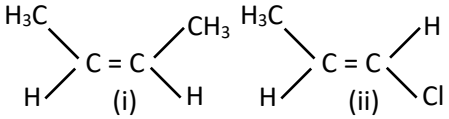
(1) All organic compound eith c = c show geometrical isomerism

(2) Presence of multiple band is only condition for unsaturation.

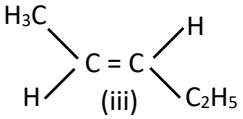
(3) Homologue should have different molecular mass and general formula.

(4) But-2-ene and -1- ene are position isomer

Q.18 Increasing order of dipole moment is:



(i) (ii)



(iii)

(1) ii > i (2) ii > iii > i

(3)i > ii > iii (4) iii > ii > i

Q.19 What is the relation between 3- ethylpentane and 3 - methylhexane

(1) Chain isomers

(2) Position isomers

(3) Functional isomers

(4) Metamers

Q.20 (i) $CH_3 - CH_2 - NH - CHO$; (ii) $CH_3 - \underset{\displaystyle NH_2}{\underset{|}{CH}} - CHO$

Which type of isomerism is observed between (i) and (ii)?

(1) Chain isomer

(2) Position isomers

(3) Functional isomers

(4) Metamers

Q.21 Meso – tartaric acid and d- tartaric acid are:

(1) Positional isomers

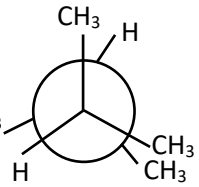
(2) Enantiomers

(3) Diastereomers

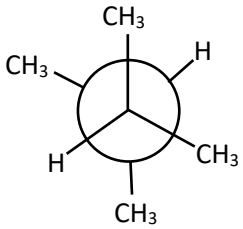
(4) Racemic mixture

Q.22 In which of the following has minimum torsional strain and minimum van der walls, strain?

(1)



(2)



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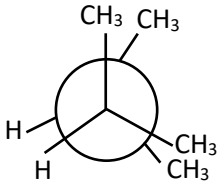

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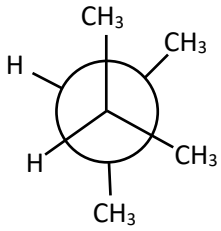


Q.23 The type of isomerism found in urea molecule is:

(1) Chain

(2) Position

(3) Tautomerism

(4) None of these

Q.24 $HO - CH_2 - CH_2 - F$

Which conformer of above compound is most stable across C– C?

(1) Anti staggered

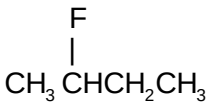
(2) Partially eclipsed

(3) Gauche

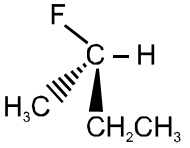
(4) Fully eclipsed

Q.25 The structure of (S)-2-fluorobutane is best represented by:

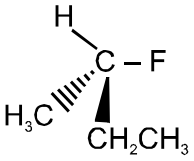
(1)



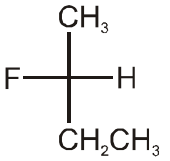
(2)



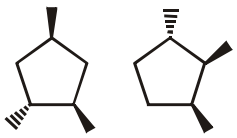
(3)



(4)



Q.26 The following pair of compounds is best described as:

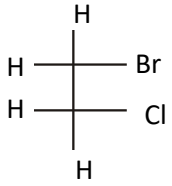
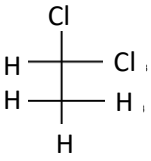
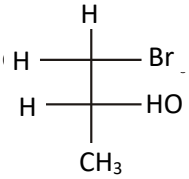
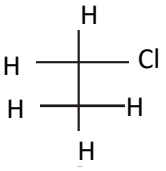


(1) Identical

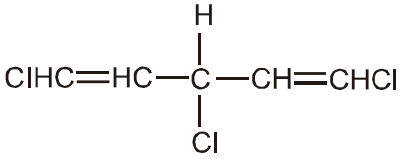
(2) Diastereomers

(3) Enantiomers
(4) Constitutional isomers

Q.27 Which of the following have a asymmetric carbon atom?

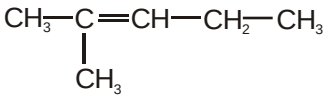
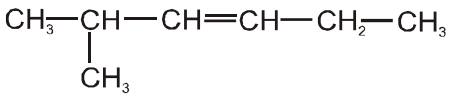
(1) 
(2) 
(3) 
(4) 

Q.28 How many different stereoisomers are possible for the following compound?

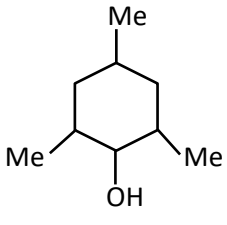


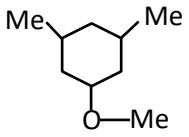
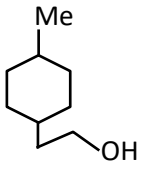
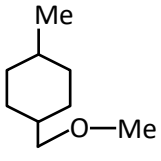
(1) 6 (2) 8 (3) 3 (4) 4

Q.29 Which of the following will not show geometrical isomerism?

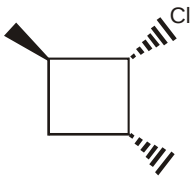
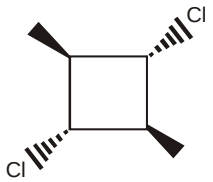
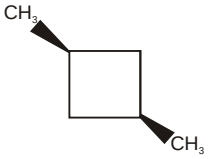
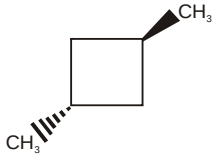
(1) 
(2) 
(3) $CH_3 - CH = CH - CH_3$
(4) $CH_3 - CH_2 - CH = CH - CH_2 - CH_3$

Q.30 Which of the following is not the correct relationship?

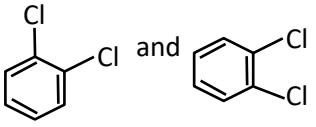
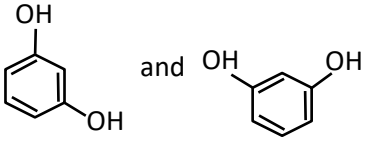
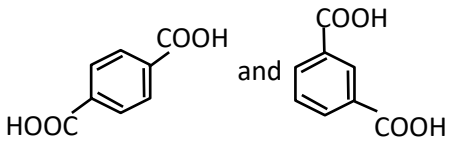
(1) 

(2) 
(3) 
(4) 

Q.31 In which of the following compound, posses plane of symmetry as well as centre of symmetry?

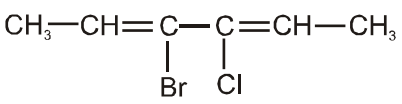
(1) 
(2) 
(3) 
(4) 

Q.32 Examine the relation between the following pairs of compounds:

(i) 
(ii) 
(iii) 

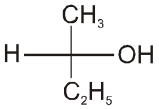
(1) All (i), (ii)and (iii) are identical
(2) All (i), (ii)and (iii) are isomers
(3) (i), (ii) are identical (iii) is isomers

(4) (i) is identical and (ii), (iii) are isomers

Q.33 

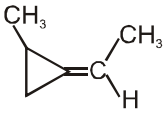
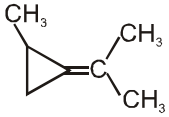
How many geometrical isomers are possible for this compound?

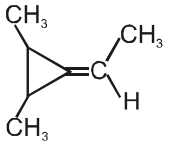
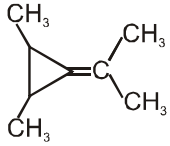
(1) 2 (2) 3 (3) 4 (4) 6

Q.34 Which of the following operations on the Fischer formula  does not change its absolute configuration?

(1) Exchanging groups across the horizontal bond
(2) Exchanging groups across the vertical bond
(3) Exchanging groups across the horizontal bond and also across the vertical bond
(4) Exchanging a vertical and horizontal group

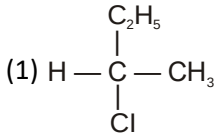
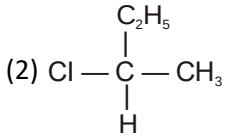
Q.35 Which of the following will show optical isomerism as well as geometrical isomerism.

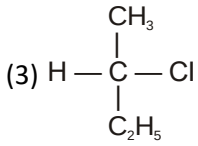
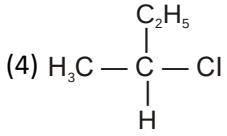
(A)  (B) 

(C)  (D) 

(1) A and D (2) A and C
(3) B and D (4) A, C and D

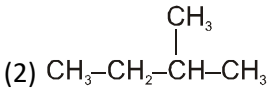
Q.36 $CH_3 - CHCl - CH_2 - CH_3$ has a chiral centre which one of the following represents its R configuration:

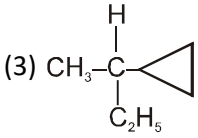
(1)  (2) 

(3)  (4) 

Q.37 Amongst the following compounds, the optically active alkane having lowest molecular mass is

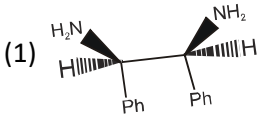
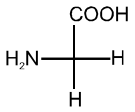
(1) $CH_3–CH_2–CH_2–CH_3$

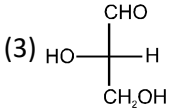
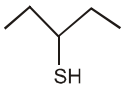
(2) 

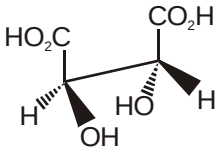
(3) 

(4) $CH_3–CH_2–C\equiv CH$

Q.38 Which of the following molecules is expected to rotate the plane of polarized light?

(1)  (2) 

(3)  (4) 

Q.39 The absolute configuration of  is

(1) R, R (2) R, S (3) S, R (4) S, S

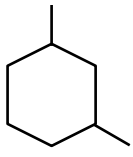
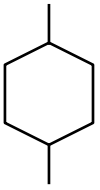
Q.40 Out of the following, the alkene that exhibits optical isomerism is

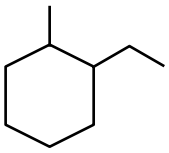
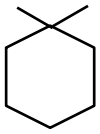
(1) 3-methyl-2pentene
(2) 4-methyl-1-pentene
(3) 3-methyl-1-pentene
(4) 2-methyl-2-pentene

Q.41 Which of the following compound will exhibit geometrical isomerism?

(1) 1-Phenyl-2-butene
(2) 3-Phenyl-1-butene
(3) 2-Phenyl-1-butene
(4) 1,1-Diphenyl-1-propane

Q.42 Which of the following compound has one of the stereoisomers as a meso compound?

(1)  (2) 

(3)  (4) 

Directions: These questions consist of two statements each, printed as Assertion and Reason. While answering these Questions you are required to choose any one of the following four response.

(A) If both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.

(B) If both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.

(C) If Assertion is True but the Reason is False.

(D) If both Assertion & Reason are false.

Q.43 **Assertion:** Trihydroxyglutaric acid ($HO_2C–CHOH–CHOH–CHOH–CO_2H$) exists in four stereoisomeric forms; two of which are optically active while the other two are meso-forms.

Reason: They contains same functional group.

(1) A (2) B (3) C (4) D

Q.44 **Assertion:** Alkynes show geometrical isomerism.

Reason: Geometrical isomerism arises due to the free rotation of a single bond.

(1) A (2) B (3) C (4) D

Q.45 **Assertion:** Propadiene is optically inactive.

Reason: Propadiene has a plane of symmetry.

(1) A (2) B (3) C (4) D

Q.46 **Assertion:** $C_2H_5O_2N$ shows functional isomerism as well as tautomerism.

Reason: Nitroethane shows tautomerism due to presence of α-hydrogens and functional isomerism with ethyl nitrite.

(1) A (2) B (3) C (4) D

Q.47 **Assertion:** Enol form of cyclohexane –1,3,5 trione is more stable than its keto form.

Reason: Enol form is aromatic.

(1) A (2) B (3) C (4) D

Q.48 **Assertion:** But-2-ene exists in two isomeric forms but but-1-ene not.

Reason: But-2-ene and But-1-ene are position isomers.

(1) A (2) B (3) C (4) D

Q.49 **Assertion:** Diastereomers have different physical properties.

Reason: They are non-superimposable mirror images.

(1) A (2) B (3) C (4) D

Q.50 **Assertion:** The lactic acid shows the geometrical isomerism.

Reason: Lactic acid has carbon-carbon double bond.

(1) A (2) B (3) C (4) D

Q.51 **Assertion:** Pent-1-ene and 2-methyl but -1-ene are position isomers.

Reason: Position isomers have the same molecular formula but differ in the position of functional group.

(1) A (2) B (3) C (4) D

Q.52 **Assertion:** Both cis-1,3-dimethyl cyclobutane and trans-1,3-dimethyl cyclobutane are optically inactive.

Reason: Cis-1,3-Dimethyl cyclobutane has the plane of symmetry, whereas trans form has the centre of symmetry.

(1) A (2) B (3)C (4) D

ANSWER KEY

NEET- RANKER'S STUFF

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	1	4	4	1	3	4	3	1	3	4	4	3	2	4
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	4	4	1	1	3	3	2	3	3	3	4	3	3	1	3
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	4	3	3	3	1	2	3	3	1	3	1	1	1	4	1
Que.	46	47	48	49	50	51	52								
Ans.	1	1	2	3	4	4	1								