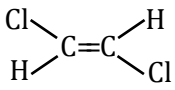
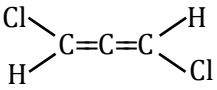
EXERCISE - O

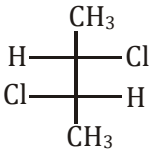
SINGLE CORRECT TYPE QUESTIONS

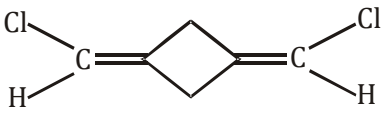
Symmetry element

1. Identify the compound having COS

(A) 

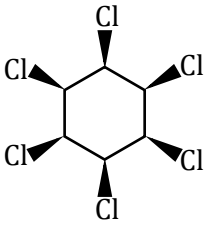
(B) 

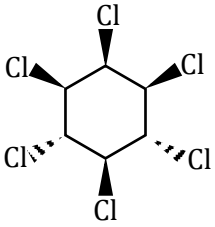
(C) 

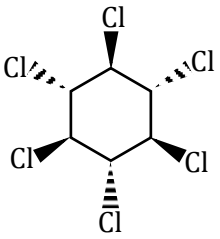
(D) 

COI086

2. Which of the following compound has plane of symmetry and center of symmetry ?

(A) 

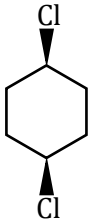
(B) 

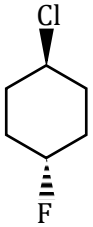
(C) 

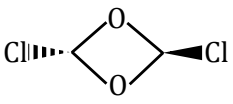
(D) All of these

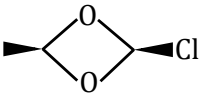
COI087

3. Compound having POS and COS both ?

(A) 

(B) 

(C) 

(D) 

COI089

4. Which of the following has C_2 & C_3 axis of symmetry ?

(A) NH_3 (B) CH_2Cl_2 (C) CH_3–Cl (D) BCl_3

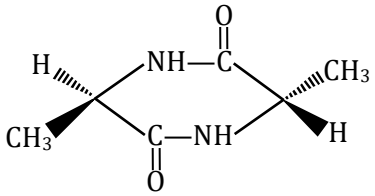
COI090

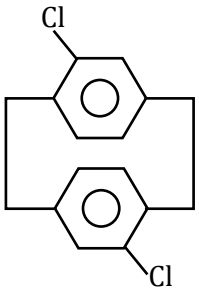
5. Number of POS present in benzene ?

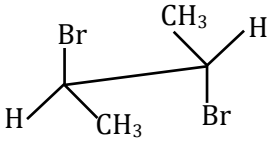
(A) 5 (B) 6 (C) 7 (D) 9

COI091

6. Which of the following compounds has centre of symmetry ?

(A) 

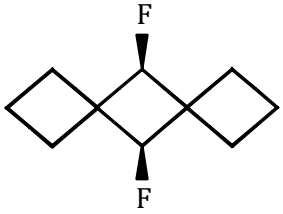
(B) 

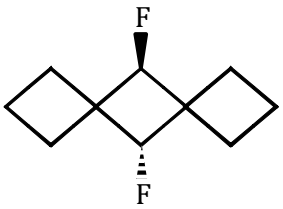
(C) 

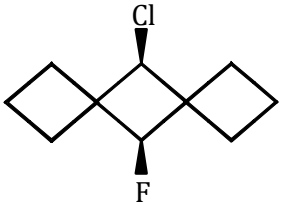
(D) All of these

COI092

7. Which of the following containing both POS & COS ?

(A) 

(B) 

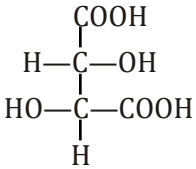
(C) 

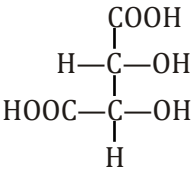
(D) None of these

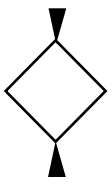
COI095

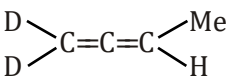
Optical Active compound and Chiral centre

8. Identify optically active compound among following :

(A) 

(B) 

(C) 

(D) 

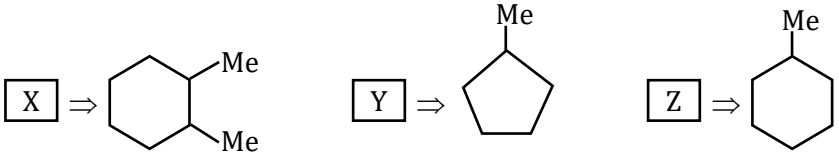
COI100

9. Which of the following compounds is not chiral ?

(A) $DCH_2CH_2CH_2Cl$ (B) CH_3CHDCH_2Cl (C) $CH_3CHClCH_2D$ (D) CH_3CH_2CHDCl

COI101

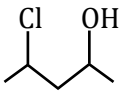
10. Number of chiral carbon atoms in the compound X, Y and Z respectively would be :

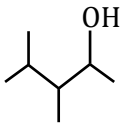


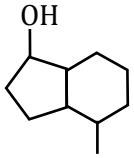
(A) 2, 1, 1 (B) 1, 1, 1 (C) 2, 0, 2 (D) 2, 0, 0

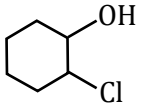
COI102

11. The compound which has maximum number of chiral centres is

(A) 

(B) 

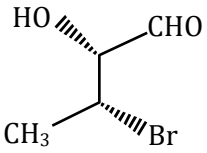
(C) 

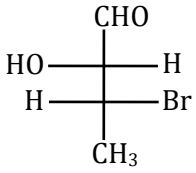
(D) 

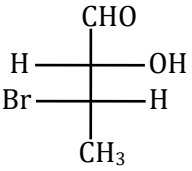
COI103

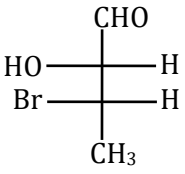
Projection Formula of Chiral compound

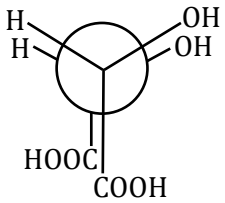
12. Write correct Fischer projection of given compound



(A) 

(B) 

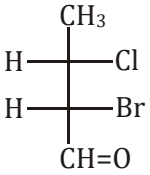
(C) 

(D) 

COI105

R/S Configuration

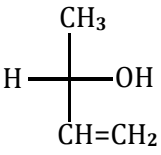
13. The correct nomenclature of following compound is :



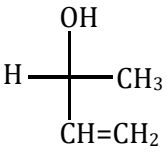
(A) 2R, 3R (B) 2S, 3R (C) 2R, 3S (D) 2S, 3S

COI106

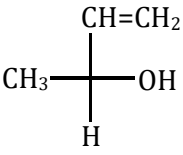
14. Which of the following combinations amongst the four Fischer projections represents the same absolute configurations ?



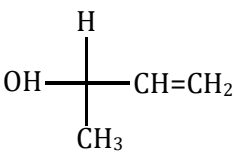
(I)



(II)



(III)

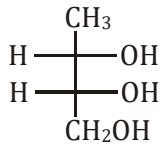


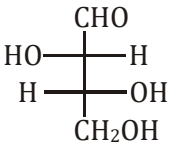
(IV)

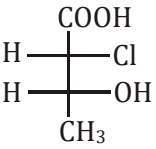
(A) (II) and (III) (B) (I) and (IV) (C) (II) and (IV) (D) (III) and (IV)

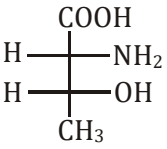
COI107

15. Which of the following is a 'threo' isomer :

(A) 

(B) 

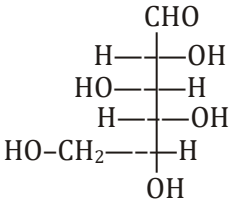
(C) 

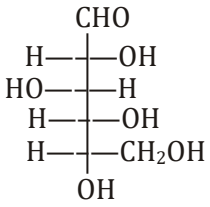
(D) 

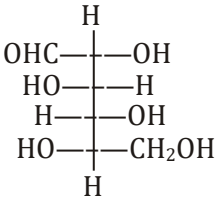
COI108

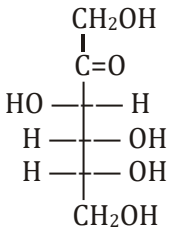
D/L system (Relative configuration

16. Which of the following is not D sugar :

(A) 

(B) 

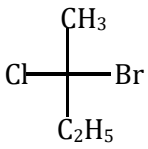
(C) 

(D) 

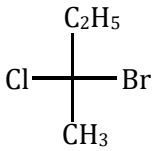
COI109

Enantiomers, Diastereomers, Racemic Mixture and Meso compound

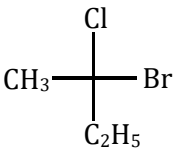
17. Consider the following structures (A), (B), (C) and (D) –



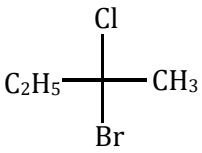
(A)



(B)



(C)



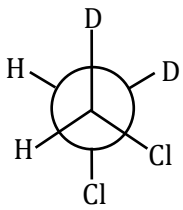
(D)

Which of the following statements is not correct

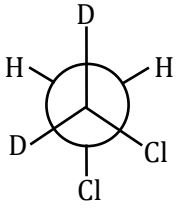
(A) B and C are identical
(B) A and B are enantiomers
(C) A and C are enantiomers
(D) B and D are enantiomers

COI110

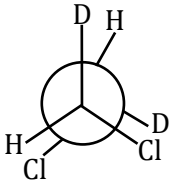
18. The identical compounds are



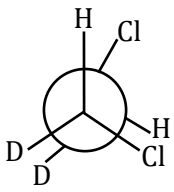
(I)



(II)



(III)



(IV)

(A) I, II
(B) II, III
(C) II, IV
(D) I, III

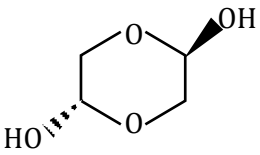
COI112

Optical Purity

19. What is optical purity of +9° and –1° form ?

(A) 40% (B) 80% (C) 10% (D) 60%

COI119

20. 

(A)

What is optical rotation of (A) ?

(A) +50° (B) –50° (C) 0° (D) 100°

COI120

21. Which of the following amine is optically active.

(A) CH_3NH_2 (B) $CH_3NHC_2H_5$

(C) $CH_3CH_2CH_2-N(CH_3)(C_2H_5)$ (D) Sec-Butylamine

COI121

Calculation of Numbers of Optical Isomers

22. A compound can be divided into two equal halves & contains even 'n' asymmetric carbon atoms. The number of stereo isomer is -

(A) 2^n (B) $2^{(n-1)}$ (C) $2^{\frac{n}{2}-1}$ (D) $2^{n-1} + 2^{\frac{n}{2}-1}$

COI122

23. The total number of optically active isomer for $CH_2OH(CHOH)_3CHO$ is -

(A) 2 (B) 4 (C) 8 (D) 12

COI125

MULTIPLE CORRECT TYPE QUESTIONS

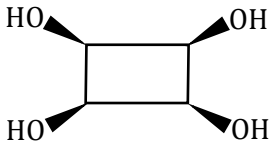
Symmetry element

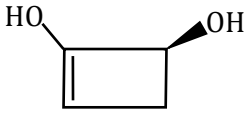
24. The number of molecule that posses C_2–axis of symmetry?

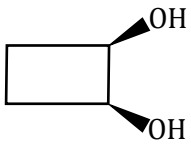
(A) BF_3 (B) Benzene (C) cis-2-butene (D) cyclopropane

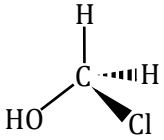
COI096

25. Which of the following compound have plane of symmetry?

(A) 

(B) 

(C) 

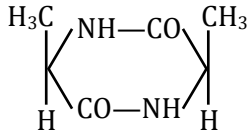
(D) 

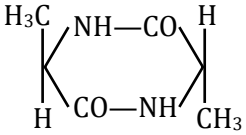
COI097

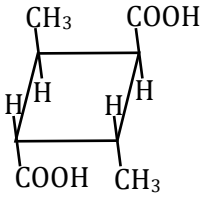
Resolution

26. Which of the following are not resolvable ?

(A) 2,3-Pentadiene

(B) 

(C) 

(D) 

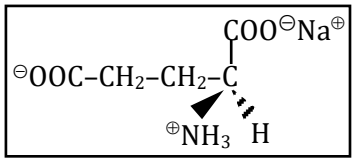
COI126

COMPREHENSION TYPE QUESTIONS

Optical activity

Paragraph for Question 27 to 29

S(+) Mono sodium Glutamate (MSG) is a flavour enhancer used in many foods. Fast foods often contain substantial amount of MSG and is widely used in Chinese food. If one mole of above MSG was placed in 845 ml solution and passed through 200 mm tube, the observed rotation was found to be + 9.6°.



27. Find out the specific rotation of (–) MSG :

(A) + 24° (B) +56.8º (C) –48° (D) None of these

COI083

28. Find out the approximate percentage composition of (–) MSG in a mixture containing (+) MSG and (–) MSG whose specific optical rotation is –20° :

(A) 83.3% (B) 16.7% (C) 91.6% (D) 74%

COI084

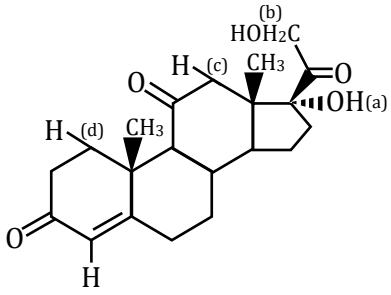
29. If 33.8 g of (+) MSG was put in 338 ml solution and was mixed with 16.9g of (–) MSG put in 169 ml solution and the final solution was passed through 400 mm tube. Find out observed rotation of the final solution :

(A) +1.6° (B) +4.8° (C) +3.2° (D) None of these

COI085

Enantiomers, Diastereomers, Racemic Mixture and Meso compound

Paragraph for Question No. 30 to 31



Cortisone

30. Total number of chiral centers in Cortisone :-

(A) 4 (B) 5 (C) 6 (D) 7

COI116

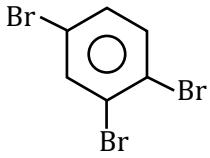
31. Total number of possible stereoisomers of the compound Cortisone will be :

(A) 32 (B) 64 (C) 66 (D) 128

COI117

EXERCISE - S

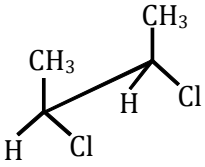
POS, COS

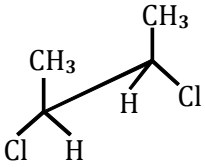
1. 

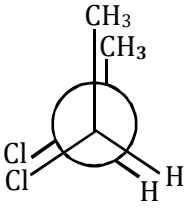
Number of plane of symmetry in above compound is :

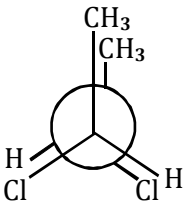
COI098

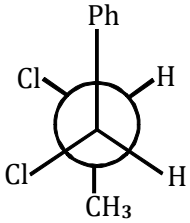
2. Identify the no of compounds containing POS.

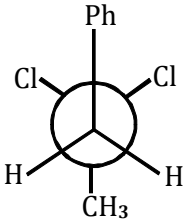
1. 

2. 

3. 

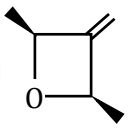
4. 

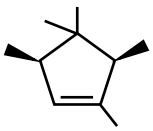
5. 

6. 

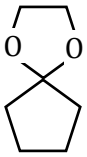
COI099

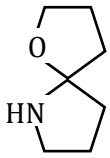
3. How many compounds are optically inactive ?

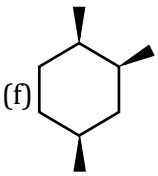
(a) 

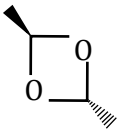
(b) 

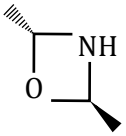
(c) 

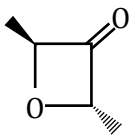
(d) 

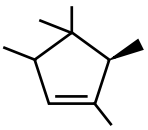
(e) 

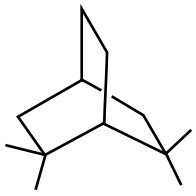
(f) 

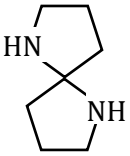
(g) 

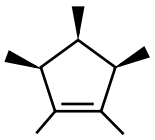
(h) 

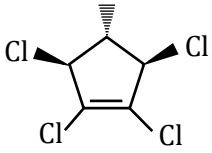
(i) 

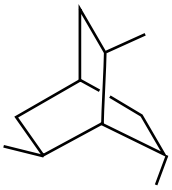
(j) 

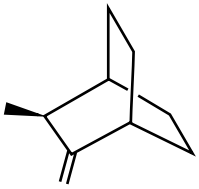
(k) 

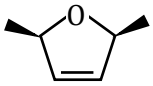
(l) 

(m) 

(n) 

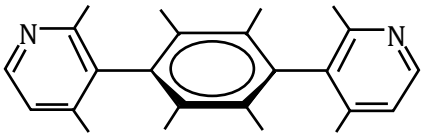
(o) 

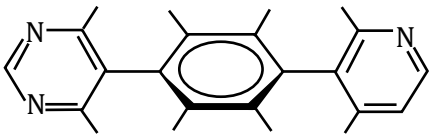
(p) 

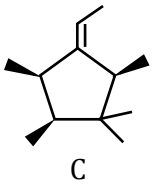
(q) 

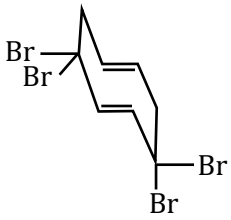
COI132

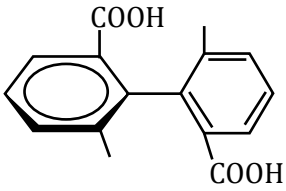
4. How many compounds are optical active ?

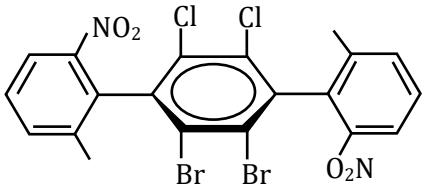
(a) 

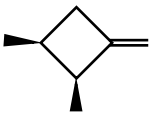
(b) 

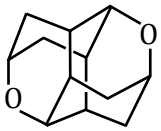
(c) 

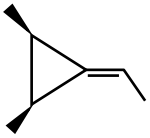
(d) 

(e) 

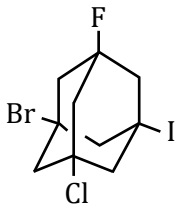
(f) 

(g) 

(h) 

(i) 

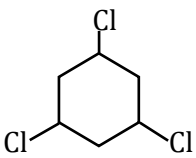
(j) 

(k) 

COI133

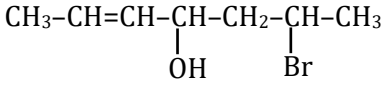
Total Isomer

5. Total number of stereoisomers formed by the given compound is :



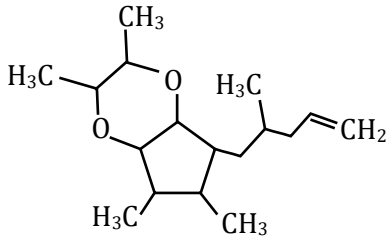
COI130

6. Calculate the total number of stereoisomers for the given compound :



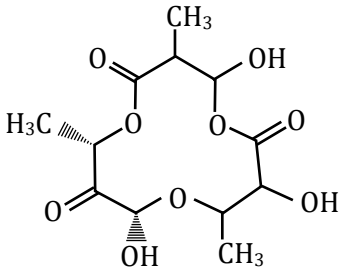
COI131

7. How many stereoisomers are possible for the following compound ?



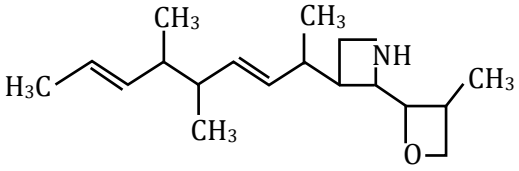
COI134

8. How many stereoisomers are possible for the following compound ?



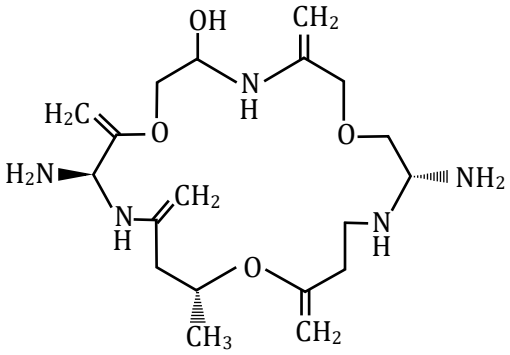
COI135

9. How many stereoisomers are possible for the following compound ?



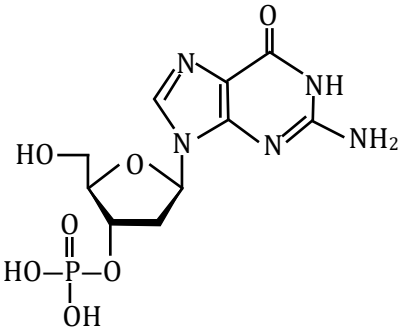
COI136

10. How many stereoisomers are possible for the following compound ?



COI137

11. How many stereoisomers are possible for the following compound ?



COI138

12. Total number of isomers for $C_4H_6Br_2$ containing cyclobutane ring are (including stereoisomer) ?

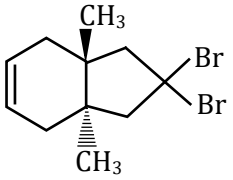
COI139

13. Find the total number of isomers of C_7H_{14} (only 5-membered ring).

COI140

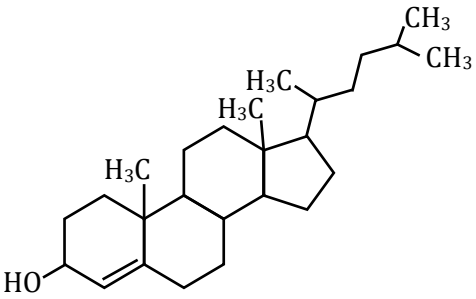
Chiral Centre

14. How many chiral centres are present in the following compound ?



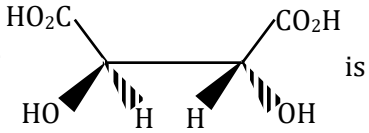
COI141

15. How many chiral centres are present in the following compound ?



COI142

EXERCISE - JEE (Main) PYQ

1. The absolute configuration of  is **[AIEEE 2008]**

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

COI039

2. The number of stereoisomers possible for a compound of the molecular formula $CH_3–CH=CH–(OH)–Me$ is :- **[AIEEE 2009]**

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

COI040

3. Out of the following, the alkene that exhibits optical isomerism is :- **[AIEEE 2010]**

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

COI041

4. How many chiral compounds are possible on monochlorination of 2–methyl butane ? **[AIEEE 2012]**

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

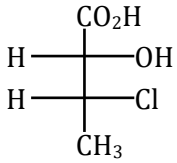
COI042

5. The optically inactive compound from the following is **[JEE (Main) 2015]**

(1) 2-chloropropanal (2) 2-chlorobutane
(3) 2-chloro-2-methylbutane (4) 2-chloropentane

COI043

6. The absolute configuration of : **[JEE (Main) 2016]**



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

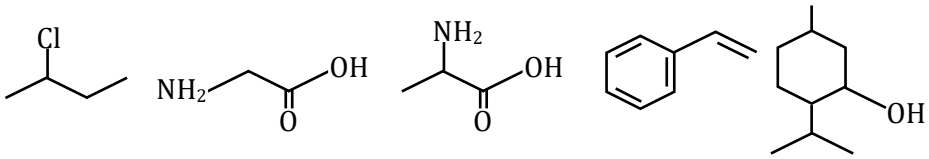
COI044

7. The number of stereoisomers possible for 1,2-dimethyl cyclopropane is : **[JEE (Main) 2021]**

(1) One (2) Four (3) Two (4) Three

COI045

8. Observe structures of the following compound **[JEE (Main) 2022]**



The total number of structures/compounds which possess asymmetric carbon atoms is _____.

COI046

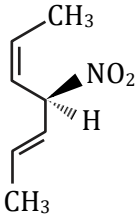
9. Total number of isomers (including stereoisomers) obtained on monochlorination of methylcyclohexane is _____. **[JEE (Main) 2022]**

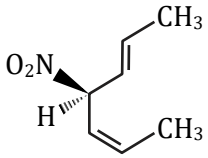
COI047

10. Optical activity of an enantiomeric mixture is +12.6° and the specific rotation of (+) isomer is +30°. The optical purity is___% **[JEE (Main) 2022]**

COI143

11. Given below are two statements.

Statement I : The compound  is optically active.

Statement II :  is mirror image of above compound A.

In the light of the above statement, choose the **most appropriate** answer from the options given below. **[JEE (Main) 2022]**

(1) Both Statement I and Statement II are correct

(2) Both Statement I and Statement II are incorrect.

(3) Statement I is correct but Statement II is incorrect.

(4) Statement I is incorrect but Statement II is correct.

COI144

12. Maximum number of isomeric monochloro derivatives which can be obtained from 2,2,5,5-tetramethylhexane by chlorination is _____. **[JEE (Main) 2023]**

COI048

13. The isomeric deuterated bromide with molecular formula C_4H_8DBr having two chiral carbon atoms is **[JEE (Main) 2023]**

(1) 2–Bromo–1–deuterobutane

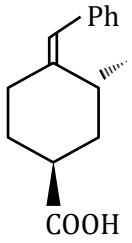
(2) 2–Bromo–2–deuterobutane

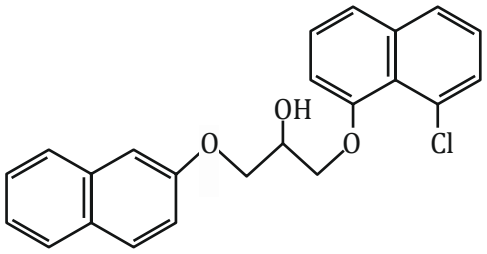
(3) 2–Bromo–3–deuterobutane

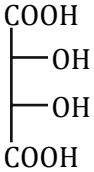
(4) 2–Bromo–1–deutero–2–methylpropane

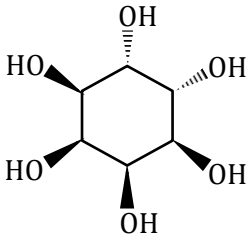
COI145

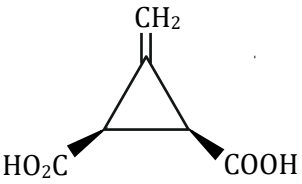
14. The total number of chiral compound/s from the following is _____. **[JEE (Main) 2023]**





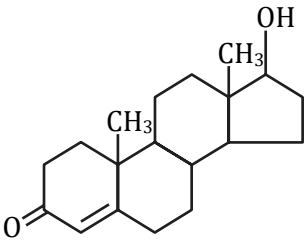






COI146

15. Testosterone, which is a steroidal hormone, has the following structure. **[JEE (Main) 2023]**



Testosterone

The total number of asymmetric carbon atom/s in testosterone is _____

COI147

EXERCISE - JEE (Advanced) PYQ

1. $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_3 \xrightarrow{Cl_2/h\nu} N(\text{no. of isomers}) \xrightarrow{\text{Fractional distillation}}$ (F), (N) and (F) are : **[IIT 2006]**

(A) 6, 4 (B) 4, 4 (C) 6, 6 (D) 3, 3

COI069

2. The number of stereoisomers obtained by bromination of trans–2–butene is : **[IIT 2007]**

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

COI070

3. Statement-I : Molecules that are not superimposable on their mirror images are chiral Because
Statement-II : All chiral molecules have chiral centres. **[IIT 2007]**

(A) Statement-1 is True, Statement-2 is True ; Statement-2 is a correct explanation for Statement-1

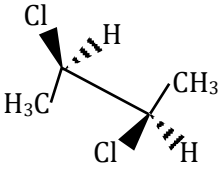
(B) Statement-1 is True, Statement-2 is True ; Statement-2 is NOT a correct explanation for Statement-1

(C) Statement-1 is True, Statement-2 is False.

(D) Statement-1 is False, Statement-2 is True.

COI071

4. The correct statement(s) about the compound given below is (are) :- **[IIT 2008]**



(A) The compound is optically active

(B) The compound possesses centre of symmetry

(C) The compound possesses plane of symmetry

(D) The compound possesses axis of symmetry

COI072

5. The correct statement(s) about the compound $H_3C(HO)HC-CH=CH-CH(OH)CH_3$(X) is are : **[IIT 2009]**

(A) The total number of stereoisomers possible for X is 6

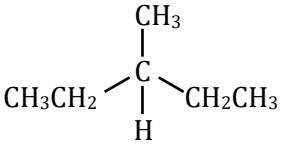
(B) The total number of diastereomers possible for X is 3

(C) If the stereochemistry about the double bond in X is trans, the number of enantiomers possible for X is 4

(D) If the stereochemistry about the double bond in X is cis, the number of enantiomers possible for X is 2

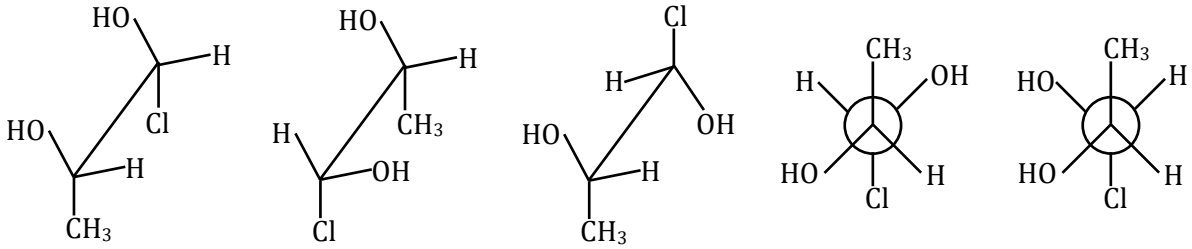
COI073

6. The maximum number of isomers (including stereoisomers) that are possible on mono-chlorination of the following compounds, is **[JEE (Advanced) 2011]**



COI074

7. Which of the given statement(s) about N,O,P and Q with respect to M is (are) correct ? **[IIT 2012]**

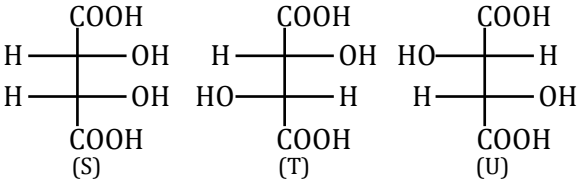


(M) (N) (O) (P) (Q)

(A) M and N are non-mirror image stereoisomers
(B) M and O are identical
(C) M and P are enantiomers
(D) M and Q are identical

COI075

8. P & Q are isomers of dicarboxylic acid $C_4H_4O_4$. Both decolorize Br_2/H_2O, on heating P forms the cyclic anhydride.
Upon treatment with dilute alkaline $KMnO_4$, P as well as Q could produce one or more than one from S, T and U.

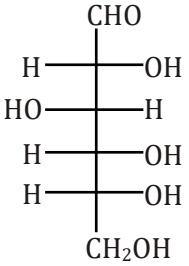


(S) (T) (U)

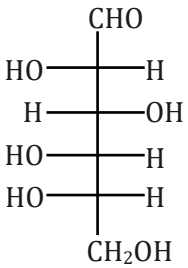
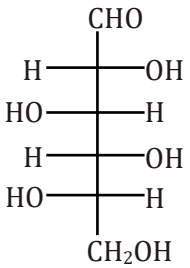
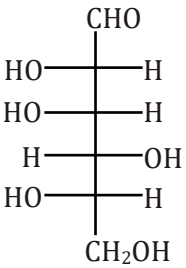
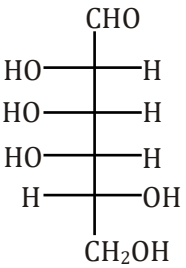
Compounds formed from P and Q are respectively. **[JEE (Advanced) 2013]**
(A) Optically active S and optically active pair (T, U)
(B) Optically inactive S and optically inactive pair (T, U)
(C) Optically active pair (T, U) and optically active S
(D) Optically inactive pair (T, U) and optically inactive S

COI076

9. The structure of D-(+)-glucose is **[JEE (Advanced) 2015]**

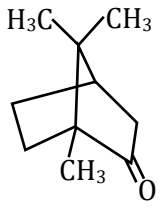


The structure of L(–)-glucose is

(A) 
(B) 
(C) 
(D) 

COI077

10. The total number of stereoisomers that can exist for M is : **[JEE (Advanced) 2015]**

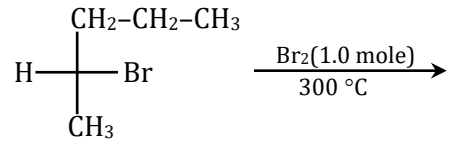


(M)

COI078

11. In the following monobromination reaction, the number of possible chiral products is :

[JEE (Advanced) 2016]

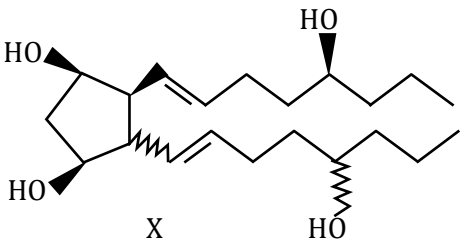


(1.0 mole)
(enantiomerically)

COI079

12. For the given compound X, the total number of optically active stereoisomers is____.

[JEE (Advanced) 2018]



This type of bond indicates that the configuration at the Specific carbon and the geometry of the double bond is fixed.

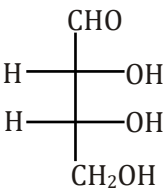
This type of bond indicates that the configuration at the Specific carbon and the geometry of the double bond is not fixed

COI080

13. Total number of isomers, considering both structural and stereoisomers, of cyclic ethers with the molecular formula C_4H_8O is_ **[JEE (Advanced) 2019]**

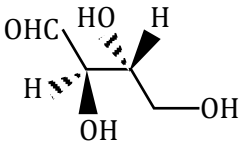
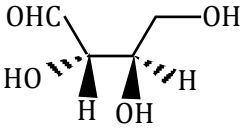
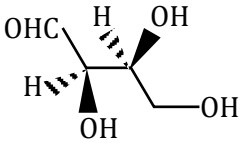
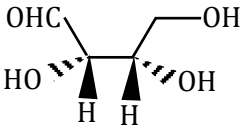
COI081

14. The Fischer projection of D-erythrose is shown below. **[JEE (Advanced) 2020]**



D–Erythrose

D-Erythrose and its isomers are listed as **P**, **Q**, **R**, and **S** in **Column-I**. Choose the correct relationship of **P**, **Q**, **R**, and **S** with D-erythrose from **Column II**.

	Column–I	Column–II
(P)		1. Diastereomer 2. Identical 3. Enantiomer
(Q)		
(R)		
(S)		

(A) P → 2, Q → 3, R → 2, S → 2
(B) P → 3, Q → 1, R → 1, S → 2
(C) P → 2, Q → 1, R → 1, S → 3
(D) P → 2, Q → 3, R → 3, S → 1

COI082

JEE (Main) Practice Paper

This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

SECTION–A

- This section contains **TWENTY** questions.
- Each question has **FOUR** options (1), (2), (3) and (4). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :

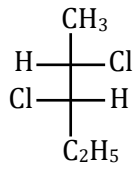
Full Marks : +4, if only the bubble corresponding to the correct option is darkened.
Zero Marks : 0, if none of the bubbles is darkened.
Negative Marks : –1 in all other cases

1. Minimum molecular weight of a hydrocarbon containing minimum number of C-atom to show optical isomerism :

(1) 100 (2) 80 (3) 68 (4) 70

COI001

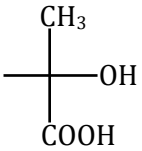
2. The absolute configuration of the following compound is :–

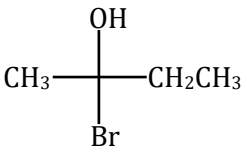


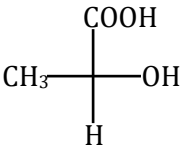
(1) 2S, 3R (2) 2S, 3S (3) 2R, 3S (4) 2R, 3R

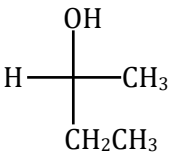
COI002

3. Which of the following structures has the R–configuration at the chiral centre ?

(1) 

(2) 

(3) 

(4) 

COI003

4. A molecule is said to be chiral, only if

(1) it is superimposable on its mirror image

(2) it is non-superimposable on its mirror image

(3) it possesses stereogenic centres

(4) it can have different configurations

COI004

5. Which of the following compounds contains a pseudo-asymmetric carbon atom

(1) $CH_3-\underset{\underset{Br}{|}}{CH}-\underset{\underset{Br}{|}}{CH}-\underset{\underset{Br}{|}}{CH_2}$

(2) $CH_3-\underset{\underset{Br}{|}}{CH}-\underset{\underset{OH}{|}}{CH}-\underset{\underset{Br}{|}}{CH}-CH_3$

(3) $CH_3-\underset{\underset{OH}{|}}{CH}-\underset{\underset{Br}{|}}{CH}-\underset{\underset{Br}{|}}{CH}-CH_3$

(4) $CH_3-\underset{\underset{Br}{|}}{CH}-\underset{\underset{OH}{|}}{CH}-\underset{\underset{Cl}{|}}{CH}-CH_3$

COI005

6. Consider the following structures (1), (2), (3) and (4) -

(1) $\begin{matrix} & CH_3 & \\ Cl & | & Br \\ & C_2H_5 & \end{matrix}$

(2) $\begin{matrix} & C_2H_5 & \\ Cl & | & Br \\ & CH_3 & \end{matrix}$

(3) $\begin{matrix} & Cl & \\ CH_3 & | & Br \\ & C_2H_5 & \end{matrix}$

(4) $\begin{matrix} & Cl & \\ C_2H_5 & | & CH_3 \\ & Br & \end{matrix}$

Which of the following statements is not correct

(1) (2) and (3) are identical

(2) (1) and (2) are enantiomers

(3) (1) and (3) are enantiomers

(4) (2) and (4) are enantiomers

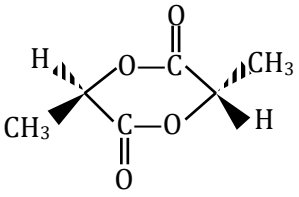
COI006

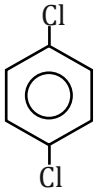
7. How many meso isomers are possible for 2, 3, 4–pentanetriol -

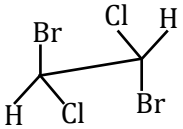
(1) 1 (2) 2 (3) 3 (4) none of these

COI007

8. Which of the following compounds has centre of symmetry ?

(1) 

(2) 

(3) 

(4) All of these

COI008

9. Which of following compounds will rotate the plane polarized light at room temperature?

(1) CH_4

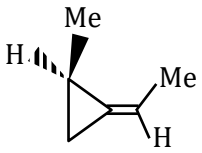
(2) $CH_3-\underset{\underset{Cl}{|}}{CH}-CH_2-CH_3$

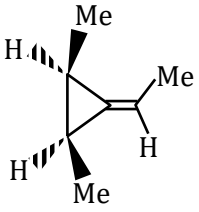
(3) C_2H_6

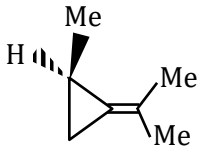
(4) n–Propane

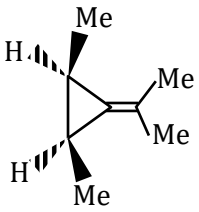
COI009

10. Find the sum of all the chiral carbons that are present in below compounds :

i. 

ii. 

iii. 

iv. 

(1) 5 (2) 6 (3) 7 (4) 8

COI010

11. The total number of isomers including stereoisomers of 1,3-dimethyl cyclohexane is :

(1) 2, cis and trans both optically inactive

(2) 3, one cis and two optically active transforms

(3) 3, one trans and two optically active cis forms

(4) 4, two cis (optically active) and two trans optically active)

COI011

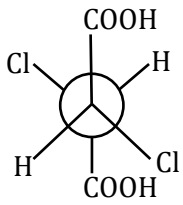
12. Which of the following compounds exhibits stereoisomerism–

(1) 2–Methylbut-1-ene (2) But–1–yne

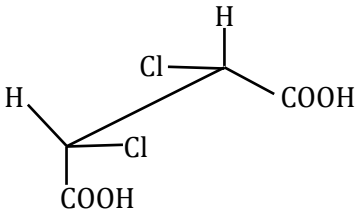
(3) 3–Methylbutanoic acid (4) 2–Methylbutanoic acid

COI012

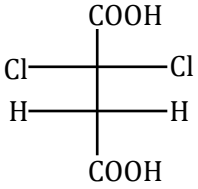
13. For the given configuration :



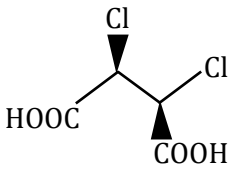
(I)



(II)



(III)



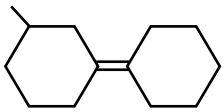
(IV)

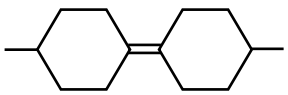
Which of the compound/configuration are optically active :

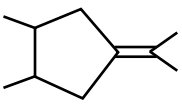
(1) I (2) II (3) III (4) IV

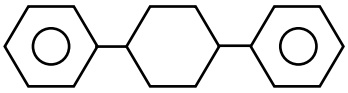
COI013

14. Compounds which can show both optical as well as geometrical isomerism :

(1) 

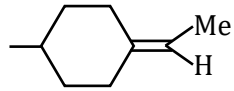
(2) 

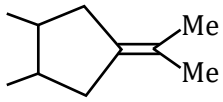
(3) 

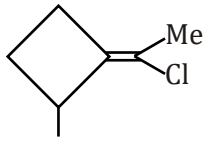
(4) 

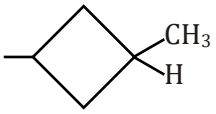
COI014

15. Which of the following will not show optical isomerism :

(1) 

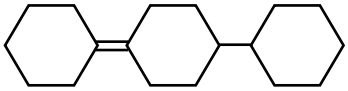
(2) 

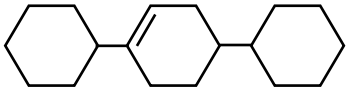
(3) 

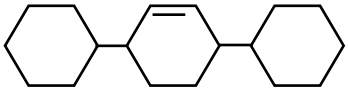
(4) 

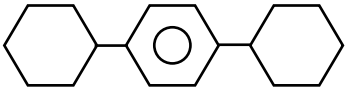
COI015

16. Optical & geometrical isomerism both can be shown by :-

(1) 

(2) 

(3) 

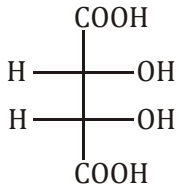
(4) 

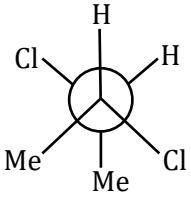
COI016

17. Which of the following will not show optical isomerism :

(1) Cl–CH=C=C=CH–Cl

(2) Cl–CH=C=C=C=CH–Cl

(3) 

(4) 

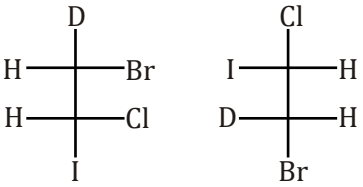
COI017

18. Meso-tartaric acid and d-tartaric acid are :-

(1) Positional isomers
(2) Enantiomers
(3) Diastereomers
(4) Racemic mixture

COI018

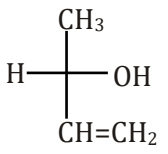
19. The two compounds given below are :



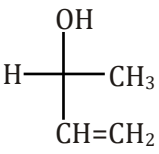
(1) Enantiomers (2) Diastereomers (3) Optically inactive (4) Identical

COI019

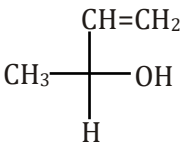
20. Which of the following combinations amongst the four Fischer projections represents the same absolute configurations ?



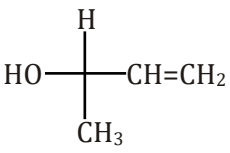
(I)



(II)



(III)



(IV)

(1) (II) and (III) (2) (I) and (IV) (3) (II) and (IV) (4) (III) and (IV)

COI020

SECTION-B

- This section will have **TEN questions**. Candidate can choose to attempt any 5 questions out of these 10 questions. In case if candidate attempts more than 5 questions, first 5 attempted questions will be considered for marking.
- The answer to each question is a **NUMERICAL VALUE.**
- For each question, enter the correct numerical value (Answer should be rounded off to the nearest integer).
- Answer to each question will be evaluated according to the following marking scheme:

  Full Marks : +4, if only correct answer is given.

  Zero Marks : 0, if no answer is given.

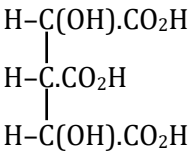
  Negative Marks :-1 for incorrect answer

---

1. Number of possible stereoisomers of glucose are -

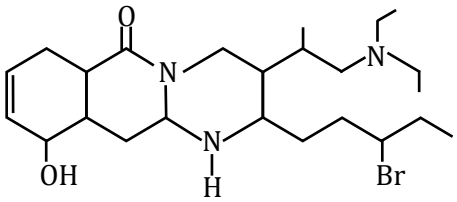
COI021

2. How many stereoisomers can exist for the following acid.



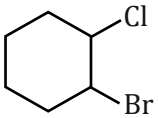
COI022

3. Find total number of chiral centre in the given compound



COI023

4. Total number of enantiomeric pair of compound

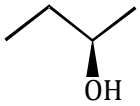


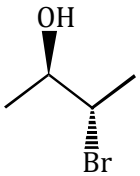
COI024

5. Find out the total number of cyclic isomers of C_6H_{12} which are optically active ?

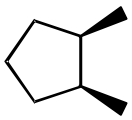
COI025

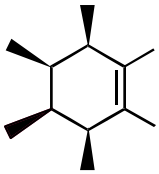
6. How many of the given compounds are chiral:

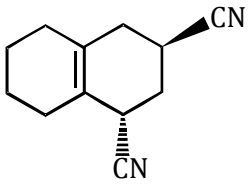
(I) 

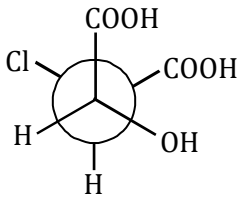
(II) 

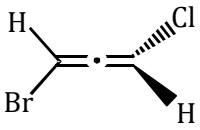
(III) 

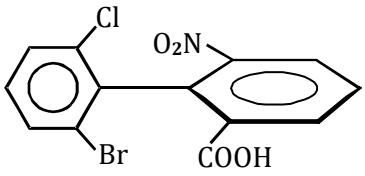
(IV) 

(V) 

(IV) 

(VII) 

(VIII) 

(IX) 

COI026

7. How many cyclopentane structures (including stereo) are possible for C_7H_{14}.

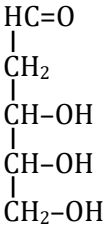
COI027

8. A mixture having 47% d–tartaric acid & 53% ℓ-tartaric acid

What is the optical purity of the mixture w.r.t. ℓ-isomer :

COI028

9. For the given aldopentose how many stereoisomers are possible.



COI029

10. Number of pair of enantiomers possible for 1-bromo- 2-chlorocyclohexane if X.
Number of pair of enantiomers possible for 1-chloro- 2-fluorocyclobutane if Y.
Then find out the value of X + Y :

COI030

JEE (Advanced) Practice Paper

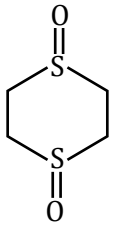
This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

SECTION–I

- This section contains **TWELVE** questions.
- Each question has FOUR options (A), (B), (C) and (D). ONLY ONE of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories:

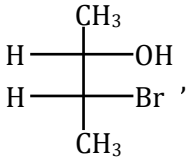
Full Marks : +3, if only the bubble corresponding to the correct option is darkened.
Zero Marks : 0, if none of the bubbles is darkened.
Negative Marks : –1, in all other cases

1. The correct statement for the given compound is



(A) It can show geometrical isomerism (B) It can show optical isomerism
(C) It contains chiral centre (D) None of these

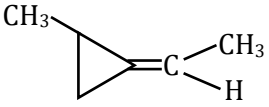
COI049

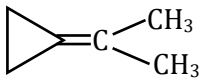
2. In the structure  , the configurations at the chiral centres are-

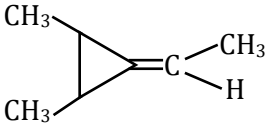
(A) 2R, 3R (B) 2S, 3R (C) 2R, 3S (D) 2S, 3S

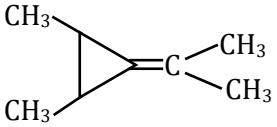
COI050

3. Which of the following will not show optical isomerism as well as geometrical isomerism :

(A) 

(B) 

(C) 

(D) 

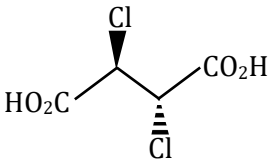
COI051

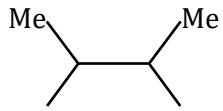
4. The number of optically active compounds in the isomers of C_4H_9Br is :

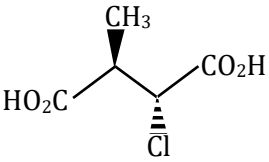
(A) 1 (B) 2 (C) 3 (D) 4

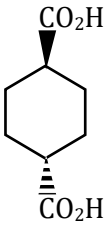
COI052

5. Identify meso compound.

(A) 

(B) 

(C) 

(D) 

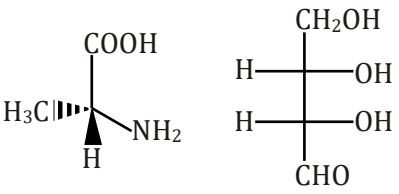
COI053

6. When an optically active compound is placed in a 10 dm tube is present 20 gm in a 200 ml solution rotates the PPL by 30°. Calculate the angle of rotation & specific angle of rotation if above solution is diluted to 1 Litre.

(A) 16° & 36° (B) 6° & 30° (C) 3° & 30° (D) 6° & 36°

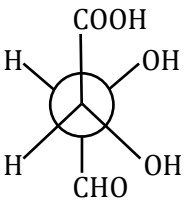
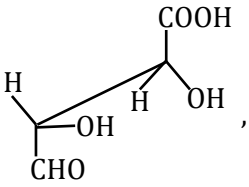
COI054

7. Configuration of I & II respectively will be :



(A) D, D (B) L, D (C) D, L (D) L, L

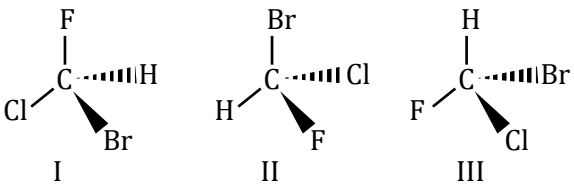
COI055

8.   , compound related as :

(A) Enantiomers (B) Conformation (C) Identicle (D) Diastereomers

COI056

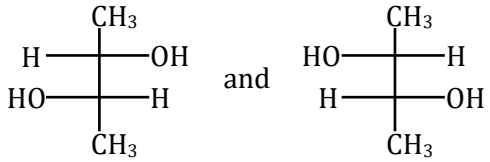
9. Which of the following have same configuration

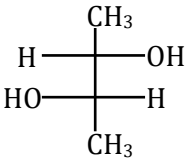
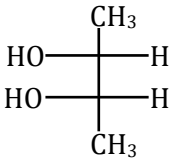


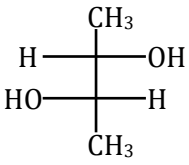
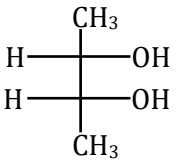
(A) I & II (B) II & III (C) I & III (D) All of these

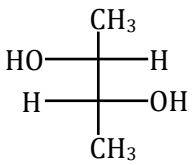
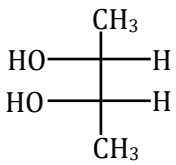
COI057

10. Which of the following pairs of compounds are enantiomers :

(A)  and

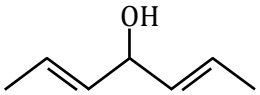
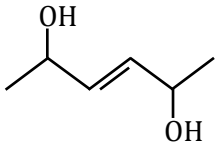
(B)  and 

(C)  and 

(D)  and 

COI058

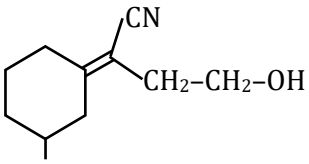
11. Total number of stereoisomer of following compounds are respectively :-

(A) 4, 6 (B) 8, 6 (C) 6, 6 (D) 8, 8

COI059

12. False statement about the following compound is



(A) It is having two chiral centre (B) Its configuration at double bond is E

(C) It shows optical isomerism (D) It shows geometrical isomerism

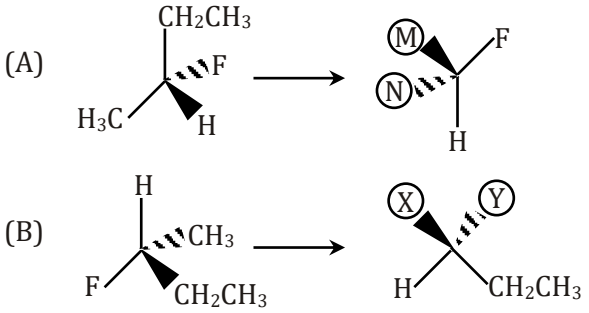
COI060

SECTION–II

- This section contains **FOUR** questions.
- Each question has **FOUR** options for correct answer(s). **ONE OR MORE THAN ONE** of these four option(s) is (are) correct option(s).
- For each question, choose the correct option(s) to answer the question.
- Answer to each question will be evaluated according to the following marking scheme:

Full Marks	: +4, if only (all) the correct option(s) is (are) chosen.
Partial Marks	: +3, if all the four options are correct but ONLY three options are chosen.
Partial Marks	: +2, if three or more options are correct but ONLY two options are chosen, both of which are correct options.
Partial Marks	: +1, if two or more options are correct but ONLY one option is chosen and it is a correct option.
Zero Marks	: 0, if none of the options is chosen (i.e. the question is unanswered).
Negative Marks	: –2, in all other cases.

13. Re-orient the molecule at the left to match the partially drawn perspective at the right. Find the two missing substituents at their correct positions.



(A) M=CH_3CH_2–
N=CH_3–

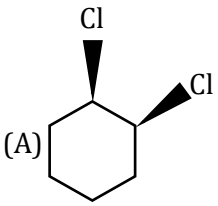
(B) X=CH_3–
Y=F–

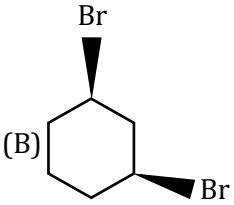
(C) M=CH_3–
N=CH_3CH_2–

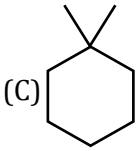
(D) X=F–
Y=CH_3–

COI061

14. Which of the following compounds has one of the stereoisomer as a meso compound?



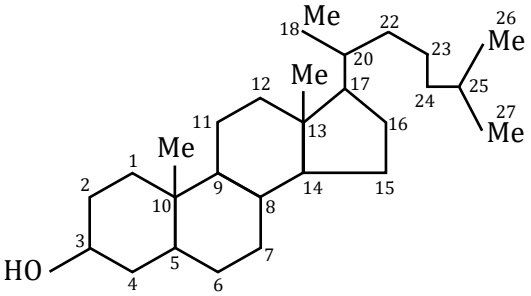




(D) 2, 3–Dimethyl butane

COI062

15. Structure of naturally occurring steroid cholesterol is given :



Which of the following statements is/are correct ?

(A) There are nine chiral centres in the cholesterol.

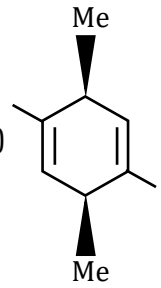
(B) It is a pentacyclic compound.

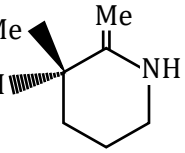
(C) There are two 4° C atoms in the compound.

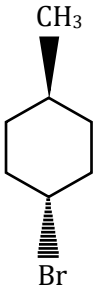
(D) There are seven 3° C atoms in the compound.

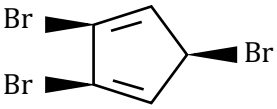
COI063

16. Which of the following compounds is chiral ?

(A) 

(B) 

(C) 

(D) 

COI064

SECTION–III

- This section contains **TWO** questions.
- Each question has matching lists. The codes for the lists have choices (A), (B), (C) and (D) out of which ONLY ONE is correct
- For each question, marks will be awarded in one of the following categories :

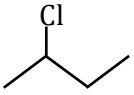
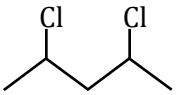
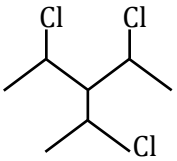
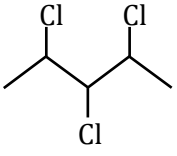
Full Marks : +3, if only the bubble corresponding to the correct option is darkened.

Zero Marks : 0, if none of the bubbles is darkened.

Negative Marks : –1, in all other cases.

---

17. Match the columns

Column–I (Compounds)		Column–II (Total number of stereoisomers)	
(1)		(P)	8
(2)		(Q)	4
(3)		(R)	3
(4)		(S)	2

(A) 1→ S, 2 → R, 3 → Q, 4 → Q

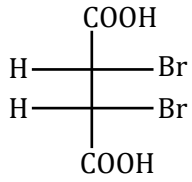
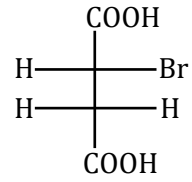
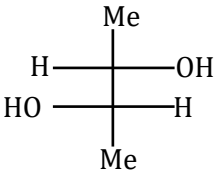
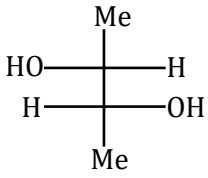
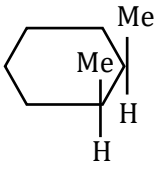
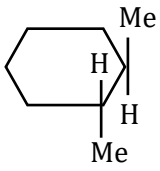
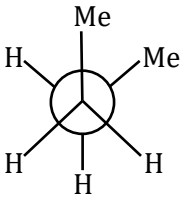
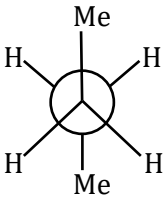
(B) 1→ Q, 2 → R, 3 → P, 4 → S

(C) 1→ R, 2 → S, 3 → Q, 4 → P

(D) 1→ P, 2 → Q, 3 → R, 4 → S

COI065

18. Match the columns

Column-I (Compounds)			Column-II (Characteristics)	
(a)		and 	(p)	Diastereomers
(b)		and 	(q)	Conformation
(c)		and 	(r)	Position isomers
(d)		and 	(s)	Enantiomers

(A) a → p, b → r, c → q, d → p
(B) a → s, b → r, c → p, d → q
(C) a → p, b → q, c → r, d → s
(D) a → p, b → s, c → p, d → q

COI066

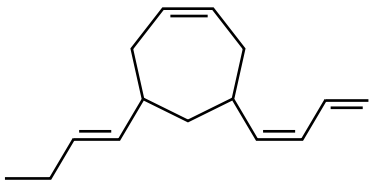
SECTION–IV

- This section contains **TWO** questions.
- The answer to each question is a **NUMERICAL VALUE.**
- For each question, enter the correct numerical value (in decimal notation, truncated/rounded-off to the second decimal place; e.g. 6.25, 7.00, –0.33, –.30, 30.27, –127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct).
- Answer to each question will be evaluated according to the following marking scheme:
  Full Marks : +3, If ONLY the correct numerical value is entered as answer.
  Zero Marks : 0, In all other cases.

19. Calculate the number of chiral center in the molecule Ethyl 2,2-dibromo-4-ethyl-6-methoxy cyclohexane carboxylate.

COI067

20. Calculate the total number of stereoisomers possible for

(i) 

COI068

ANSWER KEY

EXERCISE - O

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	A	C	C	D	C	D	B	D	A	D
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	C	A	C	C	B	B	D	D	B	C
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	D	D	C	ABCD	ACD	CD	D	C	C	C
Que.	31									
Ans.	B									

EXERCISE - S

1.	1	**2.**	3	**3.**	7	**4.**	8	**5.**	2
6.	8	**7.**	8	**8.**	64	**9.**	1024	**10.**	32
11.	8	**12.**	6	**13.**	8	**14.**	2	**15.**	8

EXERCISE - JEE (Main) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	1	4	4	3	3	4	3	12	42
Que.	11	12	13	14	15					
Ans.	3	3	3	2	6					

EXERCISE - JEE (Advanced) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	A	A	C	AD	AD	8	ABC	B	A	2
Que.	11	12	13	14						
Ans.	5	7	10	C						

JEE (Main) Practice Paper

Section-A	Q.	1	2	3	4	5	6	7	8	9	10
	A.	3	2	4	2	2	4	2	4	2	2
	Q.	11	12	13	14	15	16	17	18	19	20
	A.	1	4	2	3	4	3	1	3	1	3
Section-B	Q.	1	2	3	4	5	6	7	8	9	10
	A.	16	4	9	2	8	6	8	6	4	4

JEE (Advanced) Practice Paper

Section-I	**Q.**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	A.	A	B	B	B	A	B	C	A	A	A
	Q.	**11**	**12**								
	A.	A	A								
Section-II	**Q.**	**13**	**14**	**15**	**16**						
	A.	AB	AB	ACD	AB						
Section-III	**Q.**	**17**	**18**								
	A.	A	D								
Section-IV	**Q.**	**19**	**20**								
	A.	3	16								