Additional Problems for Self Practice (APSP)

✍ **Marked questions are recommended for Revision.**

This Section is not meant for classroom discussion. It is being given to promote self-study and self-testing amongst the Resonance students.

PART - I : PRACTICE TEST-1 (IIT-JEE (MAIN Pattern))

Max. Marks: 100 **Max. Time : 1 Hour**

Important Instructions:

A. General :

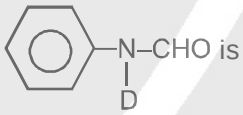
1. The test paper is of **1** hour duration.
2. The Test Paper consists of **25** questions and each questions carries **4** Marks. Test Paper consists of **Two** Sections.

B. Test Paper Format and its Marking Scheme:

1. Section-1 contains **20** multiple choice questions. Each question has four choices (1), (2), (3) and (4) out of which **ONE** is correct. For each question in Section-1, you will be awarded 4 marks if you give the corresponding to the correct answer and zero mark if no given answers. In all other cases, minus one **(–1)** mark will be awarded.
2. Section-2 contains **5** questions. The answer to each of the question is a **Numerical Value**. For each question in Section-2, you will be awarded 4 marks if you give the corresponding to the correct answer and zero mark if no given answers. No negative marks will be answered for incorrect answer in this section. In this section answer to each question is **NUMERICAL VALUE** with two digit integer and decimal upto two digit. If the numerical value has more than two decimal places **truncate/round-off** the value to **TWO** decimal placed.

SECTION-1

This section contains **20** multiple choice questions. Each questions has four choices (1), (2), (3) and (4) out of which Only **ONE** option is correct.

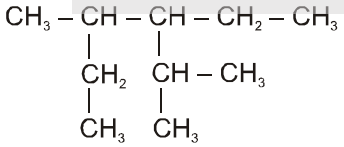
1. IUPAC name of  is

(1) N-Deutero-N-formylbenzenamine (2) N-Phenylamino-N-deuteromethanal
(3) N-Deutero-N-phenylmethanamide (4) N-Deuterobenzene carboxamide

2. In the organic compound $\overset{1}{C}H_2=\overset{2}{C}H-\overset{3}{C}H_2-\overset{4}{C}H_2-\overset{5}{C}\equiv\overset{6}{C}H$, the pair of hybridised orbitals involved in the formation of : $C_2–C_3$ bond is :

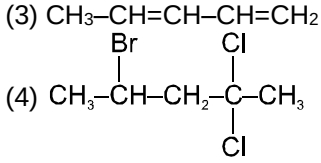
(1) $sp–sp^2$ (2) $sp–sp^3$ (3) $sp^2–sp^3$ (4) $sp^3–sp^3$

3. ✍ The correct IUPAC name of the following compound is

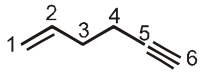


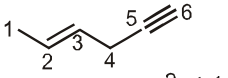
(1) 4-Ethyl-3,5-dimethylhexane (2) 2,4-Dimethyl-3-ethylhexane
(3) 3-Ethyl-2,4-dimethylhexane (4) 3-Isopropyl-4-methylhexane

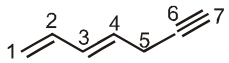
4. Which IUPAC name is incorrect among the following compounds ?

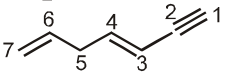
(1) $CH_3–CH=CH–CH_2–Cl$ 1-Chlorobut-2-ene
(2) $HC\equiv C–CH_2–CH_2–Br$ 1-Bromobut-3-yne
(3) $CH_3–CH=CH–CH=CH_2$ Penta-1,3-diene
(4)  4-Bromo-2,2-dichloropentane

5. Which of the following represent incorrect numbering.

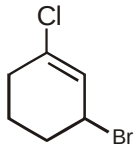
(1) 

(2) 

(3) 

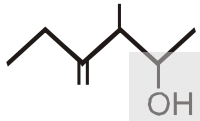
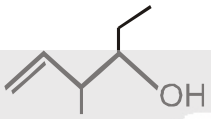
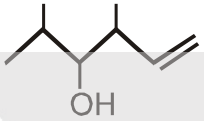
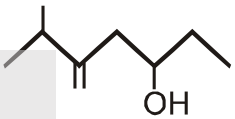
(4) 

6. The IUPAC name of the compound shown below is

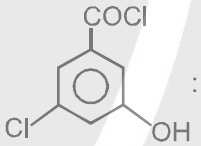


(1) 2-Bromo-6-chlorocyclohex-1-ene
(2) 6-Bromo-2-chlorocyclohexene
(3) 3-Bromo-1-chlorocyclohex-1-ene
(4) 1-Bromo-3-chlorocyclohexene

7. What is the structure of 4-Methylhex-5-en-3-ol.

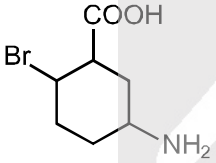
(1) 
(2) 
(3) 
(4) 

8. A compound having straight chain of five carbon atoms has one ketone group and two methyl groups on different-different carbon atoms. The IUPAC name of the compound is :
(1) 2,4-Dimethyl-3-oxopentane
(2) 2,4-Dimethylpentan-3-one
(3) 3,4-Dimethyl-2-oxopentane
(4) 3,3-Dimethylpentan-2-one

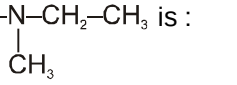
9. What is the IUPAC name of  :

(1) 5-Chloro-3-hydroxybenzenecarbonyl chloride.
(2) 3-Hydroxy-5-chlorobenzenecarbonyl chloride.
(3) 3-Chloro-5-hydroxybenzenecarbonyl chloride.
(4) 1-Chlorocarbonyl-3-chlorobenzen-1-ol

10. The correct IUPAC name of compound is :

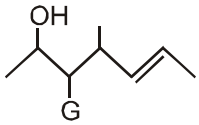


(1) 3-Amino-6-bromocyclohexane-1-carboxylic acid
(2) 2-Bromo-5-aminocyclohexane-1-carboxylic acid
(3) 5-Amino-2-bromocyclohexane-1-carboxylic acid
(4) 4-Bromo-5-carboxycyclohexanamine

11. The IUPAC name of  is :

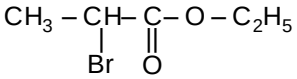
(1) N-Methyl-N-ethyl ethanamine
(2) Diethyl methanamine
(3) N-Ethyl-N-methyl ethanamine
(4) Methyl diethyl ethanamine

12. In the given formula G is an unknown group.



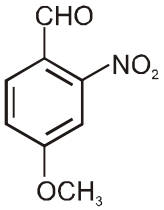
What will be the group G, which can change the word root (parent carbon chain length) of above structure?
(1) $-CH=CH_2$
(2) $-Cl$
(3) $-CH_2-CH_2-CH_3$
(4) $-COOH$

13. Correct IUPAC name of given ester is :



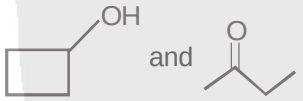
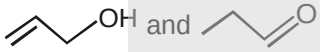
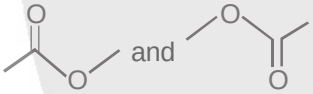
(1) Ethyl 2-bromopropanoate
(2) 2-Bromoethylpropanoate
(3) Ethyl 1-bromoethanoate
(4) 2-Bromo ethoxyethanecarboxylate

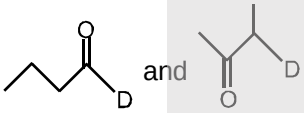
14. Relation between Ethyl benzenecarboxylate and phenyl propanoate is :
(1) Metamers
(2) Functional isomers
(3) Chain isomers
(4) Homologues

15. The correct IUPAC name of the compound  is :

(1) 4-Methoxy-2-nitrobenzaldehyde
(2) 4-Formyl-3-nitro anisole
(3) 4-Methoxy-6-nitrobenzaldehyde
(4) 2-Formyl-5-methoxy nitrobenzene

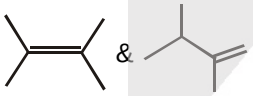
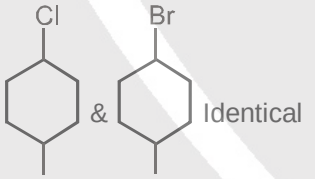
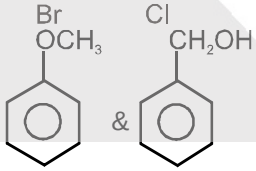
16. Which of the following pair of compounds is not functional isomers ?

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

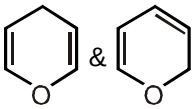
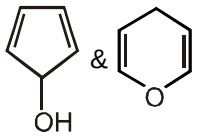
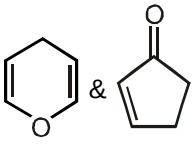
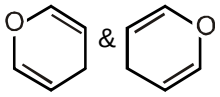
17.  are related as :

(1) Functional Isomers (2) Position Isomers (3) Chain Isomers (4) Metamers

18. Which of the following is correctly matched.

(1)  chain somer
(2)  Identical
(3)  Positional isomer
(4)  Metamer

19. Which of the following pairs of structures do not represent isomers ?

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

20. Hybridisation of carbon atoms present in the smallest ester are :
(1) All sp^3 (2) All sp^2 (3) sp^2 and sp^3 (4) sp^2 and sp

SECTION-2

This section contains **5** questions. Each question, when worked out will result in **Numerical Value**.

21. Total number of structural isomers possible from molecular formula C_8H_{18} that contain 7 carbons in the parent chain are :

22. Total number of position isomers of trimethyl cyclohexane are :

23. How many 1° amines are possible with molecular formula $C_4H_{11}N$ (only structural isomers)

24. The number of metamers of the compound with molecular formula $C_5H_{12}O$ is/are :

25. How many tertiary alcohols is/are possible with molecular formula $C_5H_{12}O$?

Practice Test-1 (IIT-JEE (Main Pattern))

OBJECTIVE RESPONSE SHEET (ORS)

Que.	1	2	3	4	5	6	7	8	9	10
Ans.										
Que.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ans.										
Que.	**21**	**22**	**23**	**24**	**25**					
Ans.										

PART - II : JEE (MAIN) / AIEEE OFFLINE PROBLEMS (PREVIOUS YEARS)

1. Which of the following compounds has wrong IUPAC name: **[AIEEE- 2002, 3/225]**

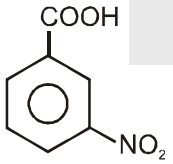
(1) $CH_3–CH_2–CH_2–COO–CH_2CH_3$ → Ethyl butanoate

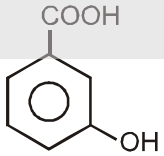
(2) $CH_3-\underset{\underset{CH_3}{|}}{CH}-CH_2-CHO$ → 3-Methylbutanal

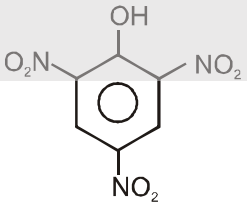
(3) $CH_3-\underset{\underset{OH}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CH_3$ → 2-Methyl-3-butanol

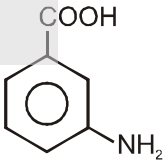
(4) $CH_3-\underset{\underset{CH_3}{|}}{CH}-\overset{\overset{O}{||}}{C}-CH_2-CH_3$ → 2-Methyl-3-pentanone

2. Pricric acid is : **[AIEEE- 2002, 3/225]**

(1) 

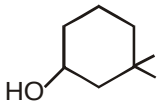
(2) 

(3) 

(4) 

3. The general formula $C_nH_{2n}O_2$ could be for open chain **[AIEEE- 2003, 3/225]**

(1) diketones (2) carboxylic acids (3) diols (4) dialdehydes.

4. The IUPAC name of the compound  is **[AIEEE- 2004, 3/225]**

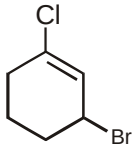
(1) 3, 3-dimethyl-1-hydroxycyclohexane (2) 1, 1-dimethyl-3-hydroxycyclohexane

(3) 3, 3-dimethyl-1-cyclohexanol (4) 1, 1-dimethyl-3-cyclohexanol

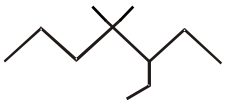
5. Which one of the following does not have sp^2 hybridized carbon? **[AIEEE- 2004, 3/225]**

(1) acetone (2) acetic acid (3) acetonitrile (4) acetamide

6. The IUPAC name of the compound shown below is **[AIEEE- 2006, 3/165]**



(1) 2-Bromo-6-chlorocyclohex-1-ene (2) 6-Bromo-2-chlorocyclohexene
(3) 3-Bromo-1-chlorocyclohex-1-ene (4) 1-Bromo-3-chlorocyclohexene

7. The IUPAC name of  is : **[AIEEE-2007, 3/120]**

(1) 5,5-Diethyl-4,4-dimethylpentane (2) 3-Ethyl-4,4-dimethylheptane
(3) 1,1-Diethyl-2,2-dimethylpentane (4) 4,4-Dimethyl-5, 5-diethylpentane

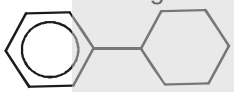
8. The correct decreasing order of priority for the functional groups of organic compounds in the IUPAC system of nomenclature is **[AIEEE-2008, 3/105]**
(1) $-SO_3H$, $-COOH$, $-CONH_2$, $-CHO$ (2) $-CHO$, $-COOH$, $-SO_3H$, $-CONH_2$
(3) $-CONH_2$, $-CHO$, $-SO_3H$, $-COOH$ (4) $-COOH$, $-SO_3H$, $-CONH_2$, $-CHO$

9. The IUPAC name of neopentane is : **[AIEEE-2009, 4/144]**
(1) 2, 2-dimethylpropane (2) 2-methylpropane
(3) 2, 2-dimethylbutane (4) 2-methylbutane

10. Aspirin is known as : **[AIEEE 2012, 4/120]**
(1) Acetyl salicylic acid (2) Phenyl salicylate (3) Acetyl salicylate (4) Methyl salicylic acid

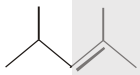
PART-III : NATIONAL STANDARD EXAMINATION IN CHEMISTRY (NSEC) STAGE-I

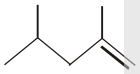
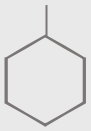
1. Which of the following is a correct name for the following compound ? **[NSEC-2000]**



(A) cyclohexylbenzene (B) biphenyl (C) hexylbenzene (D) phenylbenzene

2. Which is the constitutional isomer of the compound : **[NSEC-2000]**



(A)  (B)  (C)  (D) both (A) and (C)

3. A compound with no tertiary hydrogen is : **[NSEC-2001]**
(A) $(CH_3)_3CCH(CH_3)_2$ (B) $(CH_3)_3CCH_2CH_3$
(C) $(CH_3)_2CHCH_2CH_2CH_3$ (D) None of these

4. How many structural isomers can be obtained by the replacement of one hydrogen atom of propene with chlorine ? **[NSEC-2001]**
(A) 4 (B) 3 (C) 2 (D) 5

5. The shape of 2-butene is : **[NSEC-2001]**
(A) planar (B) tetrahedral (C) linear (D) pyramidal

6. The IUPAC name of $CH_2=CHCN$ is : **[NSEC-2001]**
(A) Cyanoethene (B) Vinyl cyanide. (C) Ethenenitrile (D) 2-Propenitrile

7. The number of isomers of C_6H_{14} is : **[NSEC-2001]**
(A) 6 (B) 5 (C) 4 (D) 7

8. The compound which represents an unsaturated hydrocarbon is : **[NSEC-2002]**
(A) $CH_3-C\equiv N$ (B) $CH_3-CH=CH_2$ (C) $CH_3-CH=O$ (D) all of these

9. The number of possible primary alcohols with the molecular formula $C_4H_{10}O$ is : **[NSEC-2002]**
(A) 1 (B) 2 (C) 3 (D) 4

10. The number of possible mononitro isomers on nitration of 2,3-dichloronaphthalene is **[NSEC-2003]**
(A) 3 (B) 6 (C) 4 (D) 5.

11. In the conversion, $CH_3CH_2C{\equiv}N \rightarrow CH_3CH_2{-}CH_2{-}NHCOCH_3$, the nitrogen atom changes its state of hybridisation from **[NSEC-2003]**
(A) sp^2 to sp^3 (B) sp to sp^3 (C) sp to sp^2 (D) sp^2 to sp.

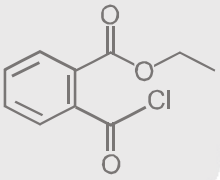
12. The IUPAC name of $HOCH_2CH=C(CH_3)_2$ **[NSEC-2003]**
(A) 2-Methyl-2-buten 4-ol (B) 3-Methyl-2-buten-1-ol
(C) 2-Methyl-2-butenol (D) 3-Methyl-2-butenol.

13. The number of possible isomers for di-nitronaphthalene is **[NSEC-2004]**
(A) 12 (B) 10 (C) 8 (D) 14.

14. The compound 2-Chloro-3-methyl-1-butanol has the following formula **[NSEC-2006]**
(A) $CH_3CH(CH_3)CHClCH_2OH$ (B) $CH_3CHOHCH(CH_3)CH_2Cl$
(C) $CH_2ClC(CH_3)_2CH_2OH$ (D) $CH_3CHClCH(CH_3)CH_2OH$.

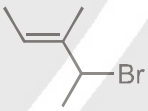
15. How many different alcohols (not including optical isomers) are possible with the molecular formula : $C_4H_{10}O$? **[NSEC-2006]**
(A) 3 (B) 4 (C) 5 (D) 6

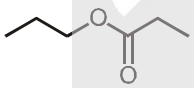
16. The C–C–H bond angle in ethylene is : **[NSEC-2007]**
(A) 180º (B) 109º28º (C) 120º (D) 90º

17. The IUPAC name of  is : **[NSEC-2007]**
(A) 2-Chlorocarbonylethyl benzoate (B) 2-Carboxyethylbenzoylchloride
(C) Ethyl-2-(chlorocarbonyl) benzoate (D) Ethyl-1-(chlorocarbonyl) benzoate

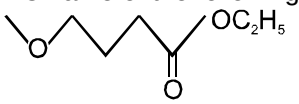
18. How many sigma bonds and pi bonds are present in $CH_2=C=CH_2$? **[NSEC-2007]**
(A) 6 sigma and 1pi (B) 8 sigma and 0 pi (C) 4 sigma and 4 pi (D) 6 sigma and 2 pi

19. The number of ether metamers represented by the molecular formula $C_4H_{10}O$ is : **[NSEC-2009]**
(A) 1 (B) 2 (C) 3 (D) 4

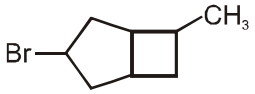
20. The IUPAC name of  is : **[NSEC-2009]**
(A) 2-Bromo-3-methylbut-3-ene (B) 4-Bromo-3-methylpent-2-ene
(C) 2-Bromo-3-methylpent-3-ene (D) 4-Bromo-2,3-dimethylbut-2-ene

21. The IUPAC name of the following compound is : **[NSEC-2010]**

(A) n-Propyl ethanoate (B) Ethyl propanoate
(C) Pentanoic anhydride (D) n-Propyl propanoate

22. The number of isomers of dibromobiphenyl (Biphenyl $C_6H_5{-}C_6H_5$) is **[NSEC-2011]**
(A) 8 (B) 10 (C) 12 (D) 14

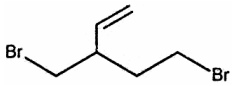
23. The IUPAC name of the following compound is : **[NSEC-2011]**

(A) 3-Methoxy ethylpropanoate (B) Ethyl 4-methoxybutanoate
(C) 1,4-Diethoxybutane (D) Ethoxy 3-methoxybutyrate

24. The correct IUPAC name of the following compound is : **[NSEC-2012]**



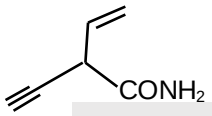
(A) 2-Bromo-5-methylbicyclo[5:4:0]heptanes (B) 3-Bromo-7-methylbicyclo[3.2.0]heptanes
(C) 3-Bromo-6-methylbicyclo[3.2.0]heptanes (D) 2-Methyl-6-bromobicyclo[2.3.0]heptane

25. The IUPAC name of the following compounds is **[NSEC-2014]**



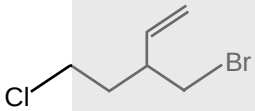
(A) 5-Bromo-3-(bromomethyl)pent-1-ene (B) 3-(1-Bromomethyl)-4-bromobut-1-ene
(C) 1,4-Dibromo-3-ethenylbutane (D) 1-Bromo-3-(bromomethyl) but-4-ene

26. The IUPAC name of the following compound is **[NSEC-2016]**



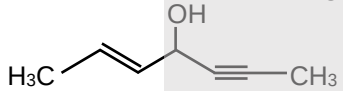
(A) 3-Aminocarbonylpent-1-en-4-yne (B) 2-Ethenylbut-3-yn-1-amide
(C) 2-Ethynylbut-3-en-1-amide (D) 3-Aminocarbonylpent-4-en-1-yne

27. The IUPAC name of the following compound is **[NSEC-2018]**



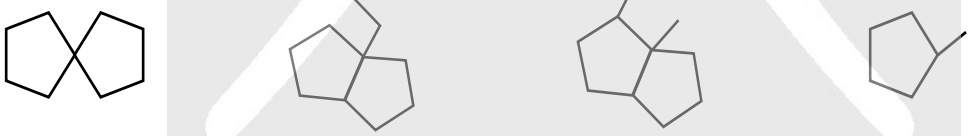
(A) 1-Bromo-4-chloro-3-ethenylbutane (B) 4-Bromo-1-chloro-3-ethenylbutane
(C) 3-(Bromomethyl)-5-chloropent-1-ene (D) 3-(Bromomethyl)-1-chloropent-4-ene

28. IUPAC name of the following molecule is **[NSEC-2019]**



(A) 4-hydroxyhept-2-en-5-yne (B) hept-2-en-5-yn-4-ol
(C) hept-5-en-2-yn-4-ol (D) 4-hydroxyhept-5-en-2-yne

29. All four types of carbon (1°, 2°, 3° and 4°) are present in **[NSEC-2019]**



I II III IV

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

PART - IV : PRACTICE TEST-2 (IIT-JEE (ADVANCED Pattern))

Max. Time : 1 Hr. **Max. Marks : 69**

Important Instructions

A. General :

1. The test is of 1 hour duration.
2. The Test Booklet consists of 23 questions. The maximum marks are 69.

B. Question Paper Format

3. Each part consists of five sections.
4. Section-1 contains 8 multiple choice questions. Each question has four choices (A), (B), (C) and (D) out of which ONE is correct.
5. Section-2 contains 6 multiple choice questions. Each question has four choices (A), (B), (C) and (D) out of which ONE OR MORE THAN ONE are correct.
6. Section-3 contains 6 questions. The answer to each of the questions is a numerical value, ranging from 0 to 9 (both inclusive).

7. Section-4 contains 1 paragraphs each describing theory, experiment and data etc. 2 questions relate to paragraph. Each question pertaining to a particular passage should have only one correct answer among the four given choices (A), (B), (C) and (D).
8. Section-5 contains 1 multiple choice questions. Question has two lists (list-1 : P, Q, R and S; List-2 : 1, 2, 3 and 4). The options for the correct match are provided as (A), (B), (C) and (D) out of which ONLY ONE is correct.

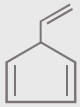
C. Marking Scheme :

9. For each question in Section 1, 4 and 5 you will be awarded 3 marks if you darken the bubble corresponding to the correct answer and zero mark if no bubble is darkened. In all other cases, minus one (–1) mark will be awarded.
10. For each question in Section 2, you will be awarded 3 marks. If you darken all the bubble(s) corresponding to the correct answer(s) and zero mark. If no bubbles are darkened. No negative marks will be answered for incorrect answer in this section.
11. For each question in Section 3, you will be awarded 3 marks if you darken only the bubble corresponding to the correct answer and zero mark if no bubble is darkened. No negative marks will be awarded for incorrect answer in this section.

SECTION-1 : (Only One option correct Type)

This section contains 8 multiple choice questions. Each questions has four choices (A), (B), (C) and (D) out of which Only ONE option is correct.

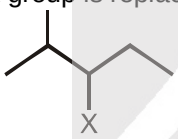
1. How many position isomers are possible for chlorophenol ?
(A) 2 (B) 3 (C) 4 (D) 5

2. IUPAC name of  is :
(A) 5-ethenylcyclopenta-1,3-diene (B) 3-ethenylcyclopenta-1,4-diene
(C) 1-ethenylcyclopenta-2,4-diene (D) 2-ethenylcyclopenta-1,3-diene

3. How many carboxylic acid structure isomers are possible with $C_5H_{10}O_2$?
(A) 3 (B) 4 (C) 5 (D) 8

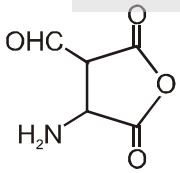
4. Which of the following is correct IUPAC name
(A) 2-Bromo cyclohex-5-ene carbaldehyde (B) Ethyl-2-vinyl pentanoate
(C) 5-Bromo-3-chlorohept-3-ene (D) 2-Ethenylhexa-1,5-diene

5. When X group is replaced by –C≡N, then the IUPAC name of the compound is :

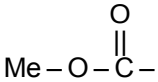


(A) 2-Methylpentane-3-nitrile (B) 3-Cyano-2-methylpentane
(C) 2-Ethyl-3-methylbutanenitrile (D) 2-Methylpentane-3-carbonitrile

6. Correct IUPAC name of following compound is



(A) 2-Amino-3-formyl butane-1,4-dioic anhydride (B) 3-Amino-2-formyl butane-1,4-dioic anhydride
(C) 3-Amino-2-oxobutane-1,4-dioic anhydride (D) 2-Formyl-3-amino butane-1,4-dioic anhydride

7.  and Et–O–CH=O are :
(A) Functional isomers (B) Metamers
(C) Positional isomers (D) Chain isomers

8. How many structurally isomeric carbonyl compounds are possible with molecular formula $C_5H_{10}O$.
(A) 5 (B) 6 (C) 7 (D) 8

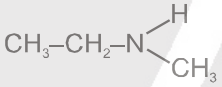
Section-2 : (One or More than one options correct Type)

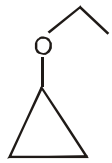
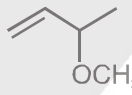
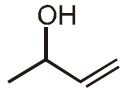
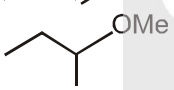
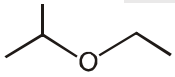
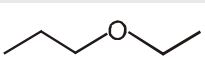
This section contains 6 multiple choice questions. Each questions has four choices (A), (B), (C) and (D) out of which ONE or MORE THAN ONE are correct.

9. Which of the following statements are incorrect for aniline.
(A) Compound is heterocyclic hydrocarbon.
(B) Number of σ bonds are 8.
(C) Degree of unsaturation of the compound is 3
(D) It contains functional group amine

10. Select correct IUPAC name.
(A) Methane-1,1,1,1-tetracarboxylic acid
(B) 5-Carbonyl-heptane-1,7-dioic acid
(C) 2-Chloro ethanoyl chloride
(D) 1-Bromo-3-fluoro-4-methyl cyclohexane

11. Which of the following IUPAC name(s) is/are incorrect :
(A) 4-Chloro-3-methyl cyclopentanol
(B) 1-Amino-3-bromohexan-1-one
(C) 4-chloro-3-methylcyclohexane carboxylic acid
(D) 3-Bromo-1-methylhexan-1-ol

12. Which of the following represent correct pair of homologous ?
(A)  &
(B) Me–OH & $MeCH_2CH_2OH$
(C) 
(D) $CH_3–CH_2–NH_2$ & 

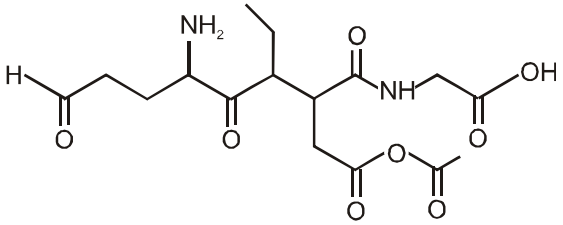
13. Which of the following is/are correct statement(s) :
(A)  &  are functional isomers of each other
(B)  &  are position isomers of each other
(C)  &  are chain isomers of each other
(D)  &  are metamers of each other.

14. Which of the following is/are correct statement(s) :
(A) The number of structural isomers for molecular formula C_3H_8 are 2
(B) The number of structural isomers for molecular formula C_5H_{12} are 3
(C) The number of structural isomers for molecular formula C_6H_{14} are 5
(D) The number of benzene ring containing structural isomers for molecular formula C_6H_4BrCl are 4

Section-3 : (Numerical Value Questions)

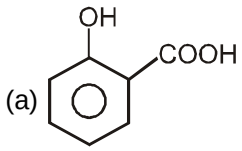
This section contains 6 questions. Each question, when worked out will result in numerical value from 0 to 9 (both inclusive).

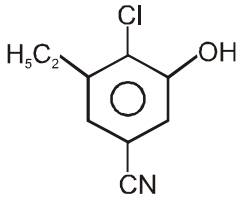
15. Number of functional groups present in the following compound is :

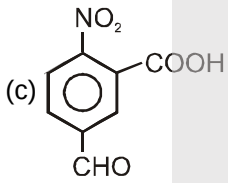


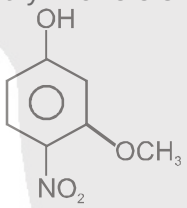
16. How many total stable acyclic structure isomers are possible with molecular formula C_4H_8O ?

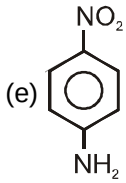
17. The no. of compound with correct IUPAC name is/are :

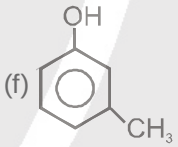
(a) 
2-Carboxyphenol

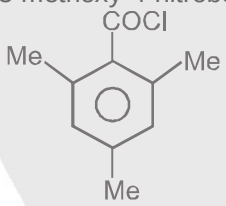
(b) 
3-Ethyl-4-chloro-5-hydroxybenzenecarbonitrile

(c) 
3-Formyl-5-nitrobenzenecarboxylic acid

(d) 
1-Hydroxy-3-methoxy-4-nitrobenzene

(e) 
4-Amino-1-nitrobenzene

(f) 
3-Methylphenol

(g) 
2,4,6-Trimethylbenzenecarbonlychloride

18. How many alkynes isomers are formed with molecular formula C_4H_6 ?

19. The number of structure isomeric compound(s) possible with molecular formula C_8H_{18} containing 5 carbon atoms in main chain having only methyl group(s) as side chain is:

20. The number of possible alkynes (strucutral only) having molecular formula $C_3FClBrI$ is :

SECTION-4 : Comprehension Type (Only One options correct)

This section contains 1 paragraphs, each describing theory, experiments, data etc. 2 questions relate to the paragraph. Each question has only one correct answer among the four given options (A), (B), (C) and (D).

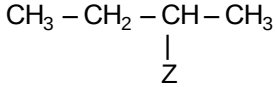
Paragraph for Questions 21 to 22

Compounds having same molecular formula but different connectivity of atoms or groups are called structure isomers. Structrue isomers are further classify according to their dissimilarities.

21. Which is not the isomer of butanoic acid?

(A) 3-Hydroxybutanal (B) Ethyl ethanoate
(C) 2-Methylpropanoic acid (D) Butane-2,3-diol

22. In the following skelton Z can be, if the molecular formula is $C_5H_{10}O_2$:

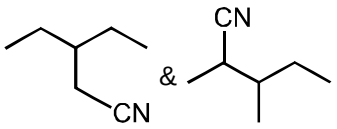
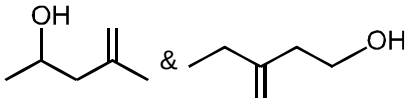
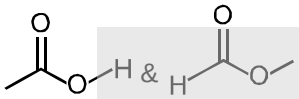


(i) A carboxylic acid group (ii) An ester group
(iii) Hydroxyaldehyde group (iv) Diol
(A) i & ii (B) iii & iv (C) i & iv (D) ii & iii

SECTION-5 : Matching List Type (Only One options correct)

This section contains 1 questions, each having two matching lists. Choices for the correct combination of elements from List-I and List-II are given as options (A), (B), (C) and (D) out of which one is correct.

23. Match the following :

	List-I		**List-II**
(P)	Ph–CH_2–O–CH=O & Ph–O–CH_2–CH=O	(1)	Chain isomers
(Q)		(2)	Position isomers
(R)		(3)	Functional isomers
(S)		(4)	Metamers

Code :

	P	Q	R	S		P	Q	R	S
(A)	3	1	2	4	(B)	4	1	2	3
(C)	4	2	2	3	(D)	3	1	1	3

Practice Test-2 ((IIT-JEE (ADVANCED Pattern))

OBJECTIVE RESPONSE SHEET (ORS)

Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.										
Que.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ans.										
Que.	**21**	**22**	**23**							
Ans.										

APSP Answers

PART - I

1.	(3)	**2.**	(3)	**3.**	(3)	**4.**	(2)	**5.**	(2)
6.	(3)	**7.**	(2)	**8.**	(2)	**9.**	(3)	**10.**	(3)
11.	(3)	**12.**	(4)	**13.**	(1)	**14.**	(1)	**15.**	(1)
16.	(4)	**17.**	(1)	**18.**	(2)	**19.**	(4)	**20.**	(3)
21.	3	**22.**	6	**23.**	4	**24.**	6	**25.**	1

PART – II

1.	(3)	**2.**	(3)	**3.**	(2)	**4.**	(3)	**5.**	(3)
6.	(3)	**7.**	(2)	**8.**	(4)	**9.**	(1)	**10.**	(1)

PART - III

1.	(A)	**2.**	(D)	**3.**	(B)	**4.**	(B)	**5.**	(A)
6.	(D)	**7.**	(B)	**8.**	(B)	**9.**	(B)	**10.**	(A)
11.	(C)	**12.**	(B)	**13.**	(B)	**14.**	(A)	**15.**	(B)
16.	(C)	**17.**	(C)	**18.**	(D)	**19.**	(C)	**20.**	(B)
21.	(D)	**22.**	(C)	**23.**	(B)	**24.**	(C)	**25.**	(A)
26.	(C)	**27.**	(C)	**28.**	(B)	**29.**	(D)		

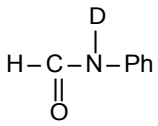
PART - IV

1.	(B)	**2.**	(A)	**3.**	(B)	**4.**	(C)	**5.**	(C)
6.	(A)	**7.**	(B)	**8.**	(C)	**9.**	(ABC)	**10.**	(AC)
11.	(ABD)	**12.**	(BC)	**13.**	(ABD)	**14.**	(BC)	**15.**	6
16.	11	**17.**	2	**18.**	2	**19.**	4	**20.**	4
21.	(D)	**22.**	(A)	**23.**	(D)				

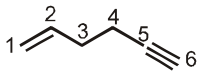
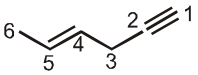
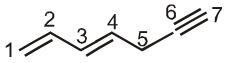
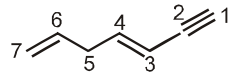
APSP Solutions

PART - I

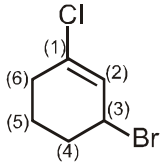
1.



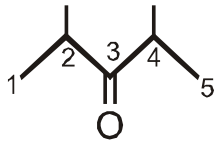
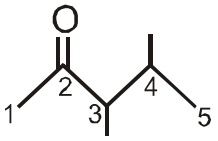
N-Deutero-N-phenylmethanamide.

5. (1)  (2)  (3)  (4) 

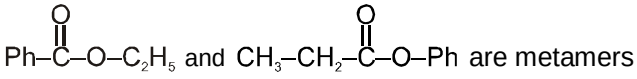
6.

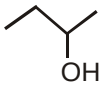
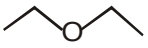


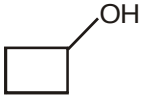
3-Bromo-1-chlorocyclohex-1-ene

8.  OR 

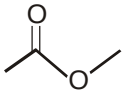
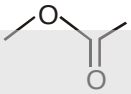
2,4-Dimethylpentan-3-one 3,4-Dimethylpentan-2-one

14.  are metamers

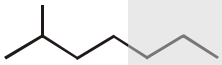
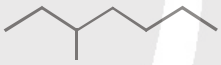
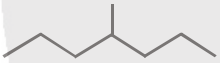
16. (1)  and  are functional isomer.

(2)  and  are functional isomers.

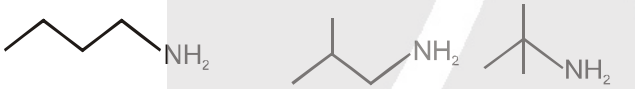
(3)  and  are functional isomers.

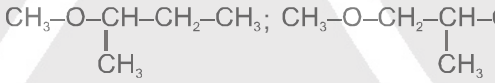
(4)  and  are identical.

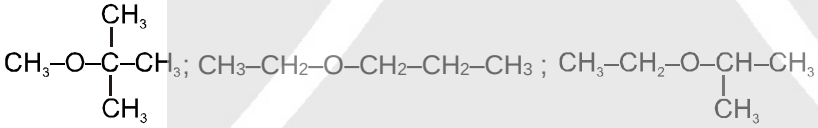
19. In (4), both are identical.

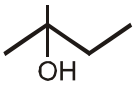
21. (1)  (2)  (3) 

22. 

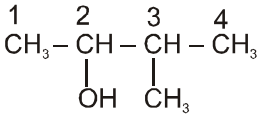
23. 

24. $CH_3–O–CH_2–CH_2–CH_2–CH_3$; 

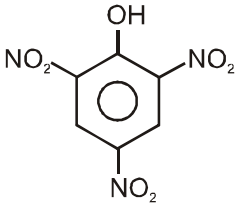


25.  (Only one tertiary alcohol with $C_5H_{12}O$)

PART - II

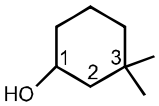
1.  3-Methyl-2-butanol

2. Pricric acid is 2,4,6-trinitro phenol



strongly acidic

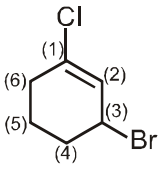
3. Diketones : $C_nH_{2n-2}O_2$, Carboxylic acid : $C_nH_{2n}O_2$, Diols : $C_nH_{2n+2}O_2$, Dialdehydes : $C_nH_{2n-2}O_2$

4. 

3.3 dimethy1-1-cyclohexanol

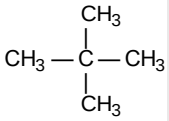
5. $\overset{sp^3}{CH_3}-\overset{sp^2}{CO}-CH_3$; $\overset{sp^3}{CH_3}-\overset{sp^2}{COOH}$; $\overset{sp^3}{CH_3}-\overset{sp}{C}\equiv N$; $\overset{sp^3}{CH_3}-\overset{sp^2}{CONH_2}$

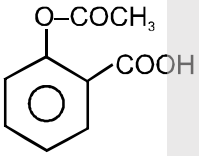
Acetone ; Acetic Acid ; Acetonitrile ; Acetamide

6. 

3- Bromo-1-chlorocyclohex-1-ene

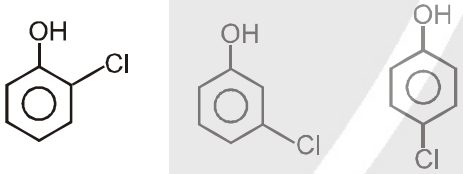
7. $^7CH_3-{}^6CH_2-{}^5CH_2-{}^4\underset{\displaystyle CH_3\ \ CH_2-CH_3}{\overset{\displaystyle CH_3}{\overset{|}{C}}}-{}^3C-{}^2CH_2-{}^1CH_3$ (3-Ethyl-4,4-dimethylheptane)

9. 
2, 2-dimethylpropane

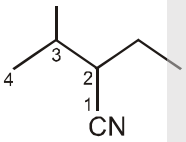
10. 

Aspirin (Acetyl salicylic acid)

PART – IV

1. 

Total = 3

5. 

8. (1) $CH_3–CH_2–CH_2–CH_2–CHO$

(2) $CH_3–CH_2–\underset{\displaystyle CH_3}{\overset{|}{C}}H–CHO$

(3) $CH_3–\underset{\displaystyle CH_3}{\overset{|}{C}}H–CH_2–CHO$

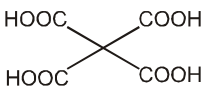
(4) $CH_3–\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{C}}}–CHO$

(5) $CH_3–\underset{\displaystyle O}{\overset{\displaystyle ||}{C}}–CH_2–CH_2–CH_3$

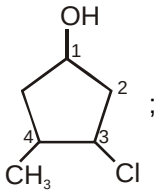
(6) $CH_3–\underset{\displaystyle O}{\overset{\displaystyle ||}{C}}–\underset{\displaystyle CH_3}{\overset{|}{C}}H–CH_3$

(7) $CH_3–CH_2–\underset{\displaystyle O}{\overset{\displaystyle ||}{C}}–CH_2–CH_3$

9. The number of σ bonds are 14 and DU = 4.

10. A is : 

; C is : $Cl–CH_2-\underset{\displaystyle O}{\overset{\displaystyle ||}{C}}-Cl$

11. A is :  ;

(B) should have amide as the functional group.

(D) has incorrect main chain.

12. A, D have different functional groups. So, cannot be homologous.

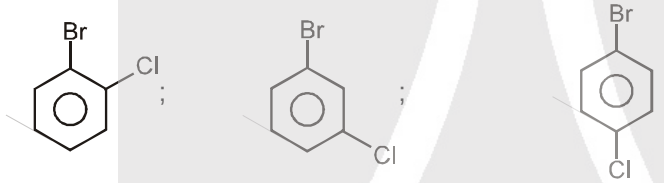
13. (C) These are metamers.

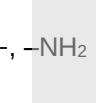
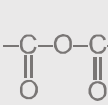
14. (A) $CH_3–CH_2–CH_3$

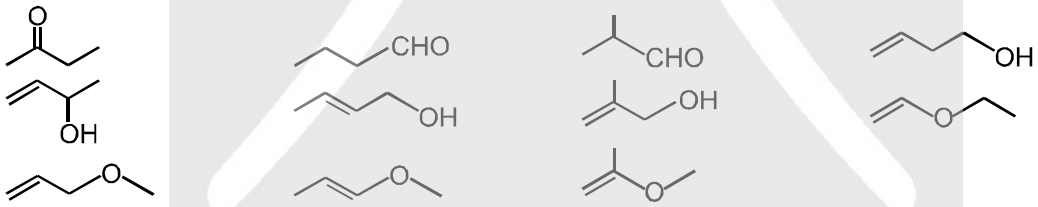
(B) $CH_3–CH_2–CH_2–CH_2–CH_3$; $CH_3–CH(CH_3)–CH_2–CH_3$; $CH_3–C(CH_3)_2–CH_3$

(C) $CH_3–CH_2–CH_2–CH_2–CH_2–CH_3$; $CH_3–CH(CH_3)–CH_2–CH_2–CH_3$;

$CH_3–CH_2–CH(CH_3)–CH_2–CH_3$; $CH_3–C(CH_3)_2–CH_2–CH_3$; $CH_3–CH(CH_3)–CH(CH_3)–CH_3$

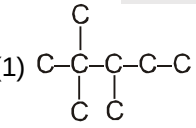
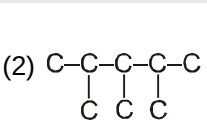
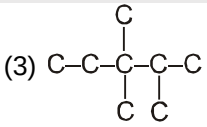
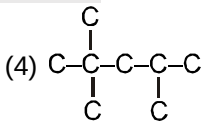
(D) 

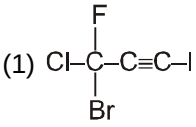
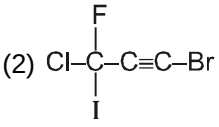
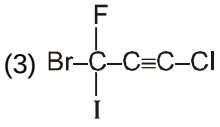
15. –CHO,  ,  , –COOH ,  functional groups are present.

16. 

17. f and g are correct.

19. DU = 0

∴ (1)  (2)  (3)  (4) 

20. (1)  (2)  (3)  (4)