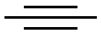
DPP No. # A1

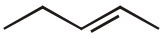
Total Marks: 60 **Max. Time: 33 min.**
Single choice Objective ('–1' negative marking) Q.1 to Q.12 **(3 marks, 2 min.) [36, 24]**
Numerical Value Questions ('0' negative marking) Q.13 to Q.15 **(3 marks, 3 min.) [09, 09]**

1. Which of the following is saturated hydrocarbon?

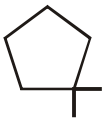
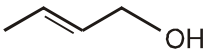
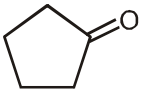
(A)  (B)  (C)  (D) 

2. Carbon has strong tendency to show catenation due to :
(A) Its tetravalency (B) small size
(C) Its high C–C bond energy (D) All of these

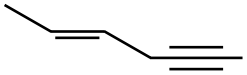
3. Which of the following is the empirical formula of C_6H_6?
(A) CH (B) C_2H_2 (C) C_6H_6 (D) none of these

4.  and  are :
(A) Identical (B) Homologous (C) Alkane (D) Saturated hydrocarbon

5. Which of the following is unsaturated hydrocarbon?

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

6. Which of the following is third member of C_nH_{2n-2} homologous series?
(A) C_2H_2 (B) C_3H_4 (C) C_4H_6 (D) C_4H_8

7. Which of the following is molecular formula of  ?
(A) C_7H_{14} (B) C_7H_{12} (C) C_7H_{10} (D) C_7H_8

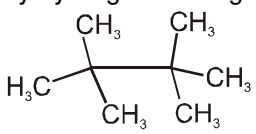
8. How many π and σ bond are present in $CH_2=CH–CH_2–C\equiv CH$
(1) 10 σ, 3 π (2) 8 σ, 3 π (3) 3 σ, 10 π (4) 12 σ, 3 π

9. How many σ and π-bonds are there in tetracynoethylene $(CN)_2C=C(CN)_2$ molecule.
(1) 9 σ, 9 π (2) 9 σ, 7 π (3) 5 σ, 9 π (4) 5 σ, 7 π

10. Which of the following alkanes contain primary, secondary, tertiary and quaternary carbon atoms together?
(1) $(CH_3)_3CH$ (2) $(C_2H_5)_3CH$ (3) $(CH_3)_3CCH_2CH(CH_3)_2$ (4) $(CH_3)_4C$

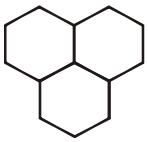
11. Ketene $CH_2=C=O$ has
(A) Only sp^2 carbon atom (B) Only sp carbon atom
(C) sp^2 and sp carbon atoms (D) sp^3, sp^2 and sp carbon atoms

12. Number of primary hydrogen is the given compound are



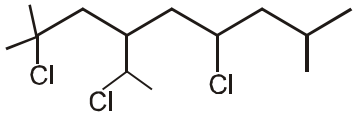
(A) 10 (B) 18 (C) 14 (D) 16

13. Total number of bonds in $HC\equiv C–C\equiv CH$?

14. 

How many hydrogen atoms are present in the given structure?

15. Number of secondary halogen in the given compound are

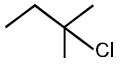
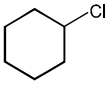
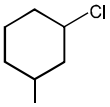
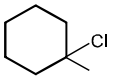


DPP No. # A2

Total Marks: 42 **Max. Time: 26 min.**

Multiple choice objective ('–1' negative marking) Q.1 to Q.7	**(4 marks, 2 min.)**	**[28, 14]**
Numerical Value Questions ('0' negative marking) Q.8 to Q.9	**(3 marks, 3 min.)**	**[06, 06]**
Match the Following (no negative marking) Q.10	**(8 marks, 6 min.)**	**[08, 06]**

1. Which of following is/are 3º chloride:

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

2. The alicyclic compound/s is / are :

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

3. The correct options for a homologous series

(A) All members have same general formula (B) All members have same chemical properties

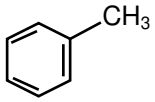
(C) All members have same physical properties (D) All members have same functional groups

4. What is correct about  and  ?

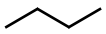
(A) both have same empirical formula (B) both have same general formula

(C) both have same molecular formula (D) both are homologous

5. How many of the following show general formula C_nH_{2n-6}?

(A) $H–C\equiv C–C\equiv C–CH_3$ (B) $CH_2=C=C=CH_2$ (C)  (D) $H–C\equiv C–H$

6. Which of the following is/are alicyclic hydrocarbon.

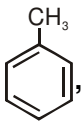
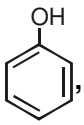
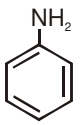
(A)  (B)  (C)  (D) 

7. Which molecules have sp^3 carbon atom :

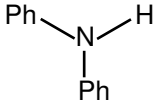
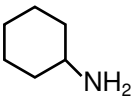
(A)  (B)  (C) $HC\equiv C–CH=CH_2$ (D) $H–C\equiv C–CH_3$

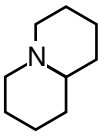
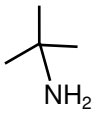
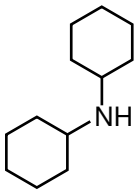
8. In the given compounds how many are unsaturated hydrocarbon?

 ,  ,  ,  ,  , 

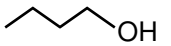
 ,  , 

9. How many amines are tertiary amines?

(1)  (2)  (3) $Ph–NH_2$ (4) Ph_3N (5) 

(6)  (7)  (8)  (9) 

10. **Match the following:**

	Column-I (Compounds)		Column-II (Class of compounds)
(A)		(p)	Saturated compound
(B)		(q)	Heterocyclic compound
(C)		(r)	Unsaturated compound
(D)		(s)	Hydrocarbon

DPP No. # A3

Total Marks: 42 **Max. Time : 31 min.**

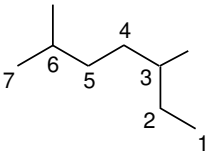
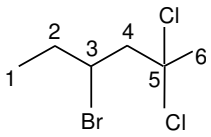
Single choice Objective ('–1' negative marking) Q.1 to Q.11 **(3 marks, 2 min.)** **[33, 22]**

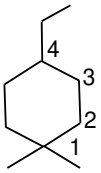
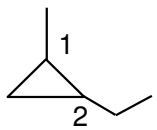
Numerical Value Questions ('0' negative marking) Q.12 to Q.14 **(3 marks, 3 min.)** **[09, 09]**

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

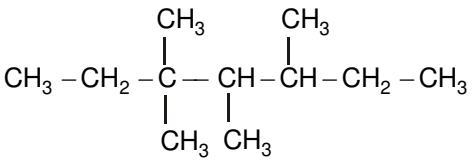
(A) $sp–sp^2$ (B) $sp–sp^3$ (C) $sp^2–sp^3$ (D) $sp^3–sp^3$

2. Which of the following has correct numbering :

(1)  (2) 

(3)  (4) 

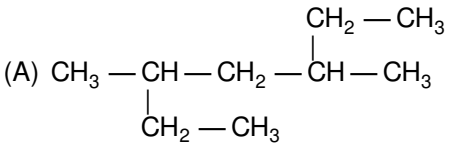
3. In following compound-

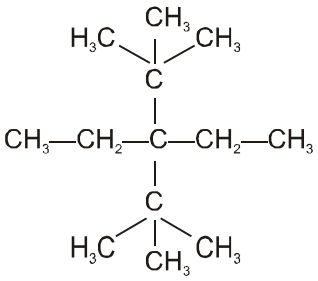


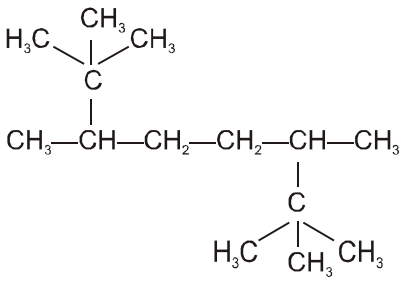
The correct lowest set of locants are :

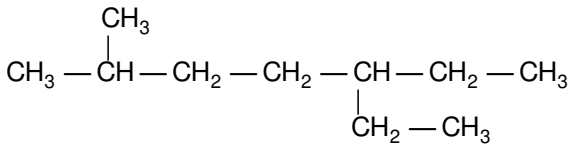
(A) 3,3,4,5 (B) 3,4,5,5 (C) 4,5,3,3 (D) 5,5,4,3

4. Which of the following has longest chain of carbon:

(A) 

(B) 

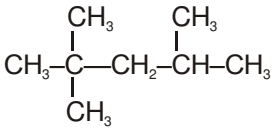
(C) 

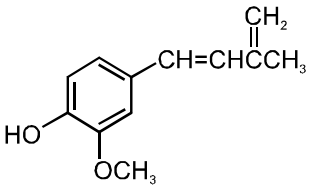
(D) 

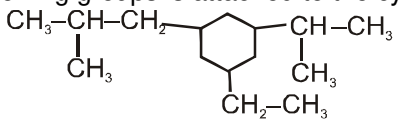
5. Which of the following is 3º chloride?
(A) $CH_3–CH_2–Cl$ (B) $(CH_3)_2CHCl$ (C) $(CH_3)_3CCl$ (D) $(CH_3)_3CCH_2Cl$

6. What is the correct IUPAC name of $(C_2H_5)_4C$ is:
(A) Tetraethyl methane (B) 3, 3-Diethyl pentane
(C) Triethylethane (D) Octane

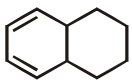
7. Which of the following are used as primary suffix:
(A) Bromo (B) Nitro (C) Methoxy (D) –ene

8. The name of  is :
(A) Isohexane (B) 2, 2, 4-Trimethylpentane
(C) Neoocatne (D) Isoheptane

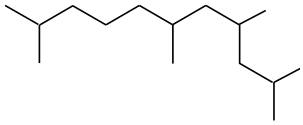
9. 
What is incorrect about the given structure?
(A) It has six D.U. (B) It has ten sp^2 hybrid C-atom
(C) It has ten sp^2–sp^2 C–C σ bond (D) All are incorrect.

10. Which of the following groups is attached to the cyclohexane ring in the following compound.

(A) Methyl (B) n-Propyl (C) Iso-propyl (D) Neo-pentyl

11. Which of the following alkyl group are possible from Iso-butane?
(A) Iso-Butyl & n-butyl (B) Sec. butyl & Ter. butyl
(C) n-butyl & Ter. butyl (D) Iso-butyl & Ter. butyl

12. Number of sp^2 – sp^2 C-C σ-bond in the given compound are :


13. How many carbon atoms are present in the principle chain of following compound?

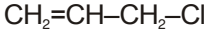


14. How many 1° hydrogens are present in Iso-octane?

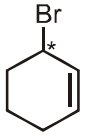
ChemINFO IUPAC NOMENCLATURE

Daily Self-Study Dosage for mastering Chemistry **Allylic / Vinylic / Benzylic**

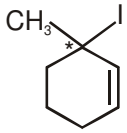
(i) Allylic Compounds: In these compounds monovalent functional group is linked to sp^3 – hybridised carbon atom which is next to carbon-carbon double bond, i.e. to an allylic carbon. These may be further classified as 1°, 2° or 3°.



1° Allylic chloride



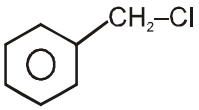
2°-Allylic bromide



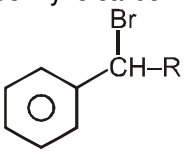
3°-Allylic iodide

Note : * represents allylic carbon.

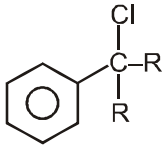
(ii) Benzylic Compounds: In these compounds, monovalent functional group is attached to a sp^3-hybridized carbon atom next to an aromatic ring i.e. to a benzylic carbon. These may be further classified as 1°, 2°, 3°.



1°-Benzylic chloride



2°-Benzylic bromide

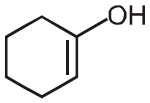


3°-Benzylic chloride

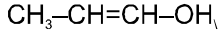
(iii) Vinylic Compounds: In these compounds, the monovalent functional group is attached to one of the carbon atoms of the carbon - carbon double bond.

$CH_2 = CH - Cl$
Vinylic chloride

Note : The compounds which have double bond and OH group on same carbon are unstable hence vinylic alcohol are unstable.



Vinylic alcohol
(generally unstable)



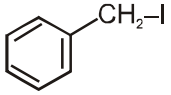
Vinylic alcohol
(generally unstable)

Memorize this theory as soon as you get the DPP. Revize it regularly and master this concept by practice.

(i). Which of the following compound is unstable
(A) $CH_3–CH=CH–Cl$ (B) $CH_2=CH–CH_2–OH$ (C) $CH_2=CH–CH_2–Cl$ (D) $CH_3–CH=CH–OH$

(ii). $CH_2=CH–Br$ is a/an
(A) Allylic bromide (B) Benzylic bromide (C) Vinylic bromide (D) All of these

(iii). Which of the following statement is / are correct for following compound



(A) It is an allylic iodide (B) It is a vinylic iodide
(C) It is 2° benzylic iodide (D) It is 1° benzylic iodide

ANSWER KEY

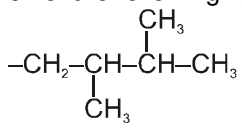
(i). (D) **(ii).** (C) **(iii).** (D)

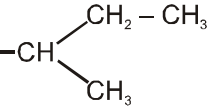
DPP No. # A4

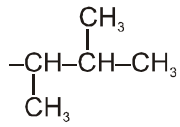
Total Marks : 43 **Max. Time: 25 min.**

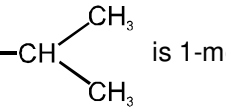
Multiple choice objective ('–1' negative marking) Q.1 to Q.8	**(4 marks, 2 min.)**	**[32, 16]**
Numerical Value Questions ('0' negative marking) Q.9	**(3 marks, 3 min.)**	**[03, 03]**
Match the Following (no negative marking) Q.10	**(8 marks, 6 min.)**	**[08, 06]**

1. Which of the following IUPAC names of alkyl radicals is/are correct:

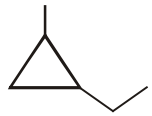
(A)  is 2, 3-dimethylbutyl

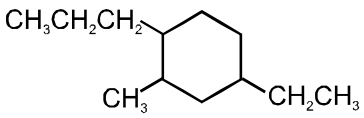
(B)  is 1-methylpropyl

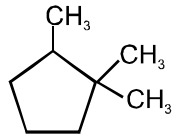
(C)  is 1, 2-dimethylpropyl

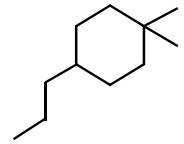
(D)  is 1-methylethyl

2. Which of the following IUPAC name is/are correct :

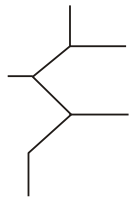
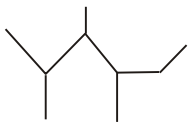
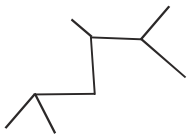
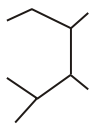
(A)  1- Ethyl-2-methylcyclopropane

(B)  4-Ethyl-2-methyl-1-propylcyclohexane

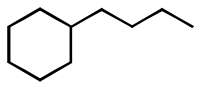
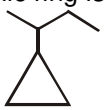
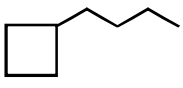
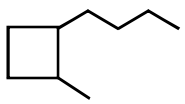
(C)  1,1,2-Trimethylcyclopentane

(D)  1,1-Dimethyl-4-propylcyclohexane

3. The correct structure of 2,3,4-Trimethylhexane is :

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

4. In which of the following cyclic ring is a parent chain:

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

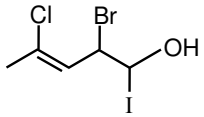
5. Which of the following is/are incorrect IUPAC name?

(A) 1,1,1-Dimethyl ethane (B) 2- Methyl-3-ethylpentane

(C) 3- Methyl-4-ethylhexane (D) 3- Ethyl-4-methylhexane

6. Which of the following is/are correct ?

(A) 1-buten-3-yne has 7 σ & 3π bonds

(B) Total number of substituent in  is 4.

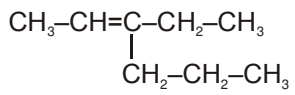
(C) $C_2(CN)_4$ has 9σ and 9π bonds.

(D) Cyclohexane has only one type of carbon atoms.

7. Which of the following is/are correct IUPAC Name ?

(A) $CH_3–C(CH_3)_2 – CH_2–CH=CH_2$ 4,4-Dimethylpent-1-ene

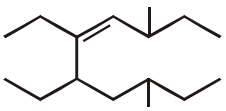
(B) $CH_3CH_2C(Br) = CH – Cl$ 2-Bromo-1-chlorobut-1-ene

(C)  3-Ethyl-2-hexene

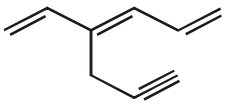
(D) $CH_2=CH—CH(C_2H_5)C(Br)=CH_2$ is 2-Bromo-3-ethylpenta-1,4-diene

8. Which of the following is/are correct IUPAC Name ?

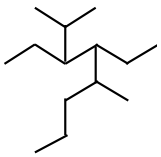
(A) $CH_3–CH(C_2H_5)–CH=CH–CH_3$ 4-Methylhex-2-ene

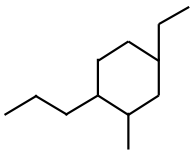
(B)  5,6-Diethyl-3,8-dimethyldec-4-ene

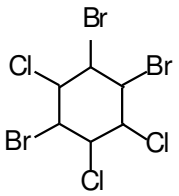
(C)  Diethenyl pentadiene

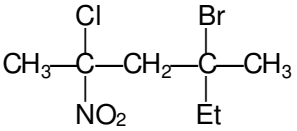
(D)  4-Ethenylhepta-1, 3-dien-6-yne

9. How many of following IUPAC names of given strutures are correct.

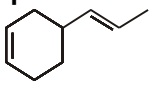
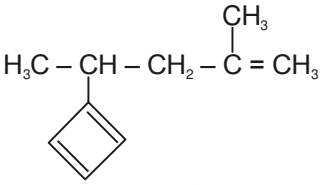
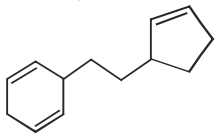
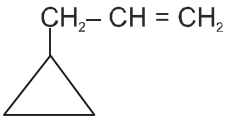
(1)  3,4-Diethyl-2,5-dimethyloctane

(2)  5-Ethyl-1-methyl-2-propylcyclohexane

(3)  1,2,4-Tribromo-3,5,6-trichlorocyclohexane

(4)  4-Bromo-2-chloro-4-methyl-2-nitrohexane

10. Match the following :

Column I Compound	**Column II Degree of unsaturation**
(A) 	(P) 2
(B) 	(Q) 5
(C) 	(R) 4
(D) 	(S) 3

ChemINFO IUPAC NOMENCLATURE

Daily Self-Study Dosage for mastering Chemistry **Dienes, or diolefins or alkadienes**

Dienes or Diolefins or Alkadienes

Compounds containing two double bonds are called as dienes or diolefins. Dienes may be of three types.

(i) **Cumulative diene :** When the two double bonds are present on the adjacent carbon atoms, the diene is called as cumulative diene. Such sytem is found in allenes.

$CH_2 = C = CH_2$ $CH_3–CH=C=CH–CH_3$

1, 2-Propadiene (Allene) 2,3-Pentadiene (Dimethylalleine)

(ii) **Conjugated diene :** when the two double bonds are separated by one single bonds, the diene is called as conjugated diene.

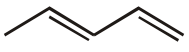
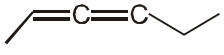
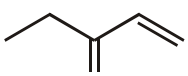
$CH_2 = CH– CH = CH_2$ (1,3-butadiene) $CH_2 = C(CH_3)– CH = CH_2$ (2-methyl-1,3-butadiene)

(iii) **Isolated diene :** When the two double bonds are separated by more than one single bond, the diene is called isolated diene.

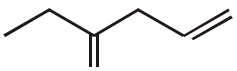
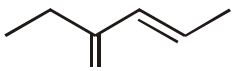
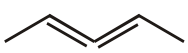
$CH_2=CH–CH_2–CH=CH_2$ (1,4-pentadiene) $CH_2=CH–CH_2–CH_2–CH=CH_2$ (1,5-Hexadiene)

Memorize this theory as soon as you get the DPP. Revize it regularly and master this concept by practice.

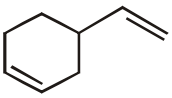
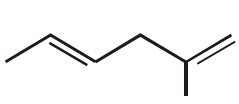
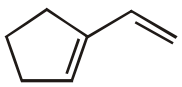
(i). Which of the following compound is cumulative diene.

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

(ii). Which of the following compound have conjugated diene

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

(iii). Which of the following compound does not have isolated diene

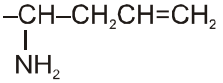
(A)  (B)  (C)  (D) 

ANSWER KEY

(i). (C) **(ii).** (B) **(iii).** (C)

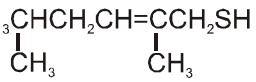
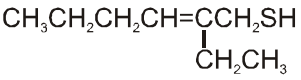
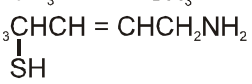
DPP No. # A5

Total Marks: 45 **Max. Time: 33 min.**
Single choice Objective ('–1' negative marking) Q.1 to Q.12 **(3 marks, 2 min.)** **[36, 24]**
Numerical Value Questions ('0' negative marking) Q.13 to Q.15 **(3 marks, 3 min.)** **[09, 09]**

1. The IUPAC name of  is :

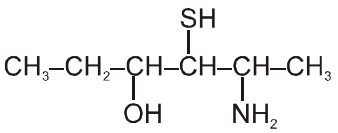
(A) Pent-4-en-2-amine
(B) 1-Methylbut-3-en-1- amine
(C) Pent-1-en-4-amine
(D) 4-Methylbut-1-en-4-amine

2. The compound 2-Ethylhex-2-ene-1-thiol has the structure :

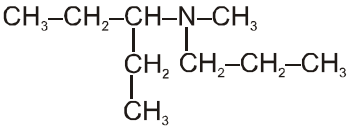
(A) $C_2H_5CH = CHCH_2CH_2SH$
(B) 
(C) 
(D) 

3. The correct IUPAC name for the compound $(CH_3)_3 CSO_3H$ is :

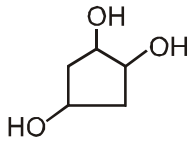
(A) Trimethylmethane-1-sulphonic acid
(B) 1,1-Dimethylethane-1-sulphonic acid
(C) Butanesulphonic acid
(D) 2-Methylpropane-2-sulphonic acid

4. IUPAC name of  is :

(A) 4-Hydroxy-3-mercaptohexan-2-amine
(B) 5-Amino-4-mercaptohexan-3-ol
(C) 3-Mercapto-2-aminohexan-4-ol
(D) 2-Amino-4-hydroxyhexane-3-thiol

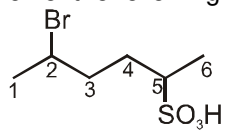
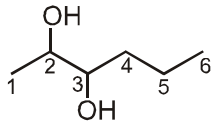
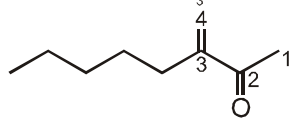
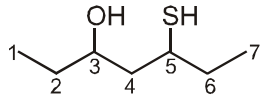
5. The correct IUPAC name of the the compound  is :

(A) 1-Ethyl-N-methyl-N-propylpropan-1-amine
(B) 3-[N-Methyl-N-propylamino]pentane
(C) N-Methyl-N-propylhexan-3-amine
(D) N-Methyl-N-propylpentan-3-amine

6. IUPAC name of  is :

(A) 1,2,4-Trihydroxycyclopentane
(B) Cyclopentane-1,3,4-triol
(C) Cyclopentane-1,2,4-triol
(D) 1,3,4-Trihydroxycyclopentane

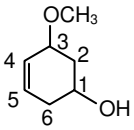
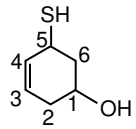
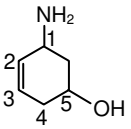
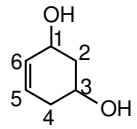
7. Which of the following has incorrect IUPAC numbering.

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

8. Which is not secondary alcohol

(A) Isopropanol
(B) Secondary butanol
(C) 3-methylpentane-2-ol
(D) Pentan-1-ol

9. Which of the following has correct numbering.

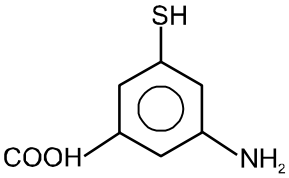
(A) 
(B) 
(C) 
(D) 

10. The IUPAC name of the compound $CH_3CONHBr$ is :

(A) 1-Bromoacetamide (B) N-Bromoethanamide

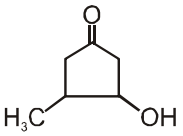
(C) Ethanoyl bromide (D) None of these

11. What is the IUPAC name of :



(A) 3-mercapto-5-amino benzene carboxylic acid (B) 3-amino-5-mercapto benzene carboxylic acid.

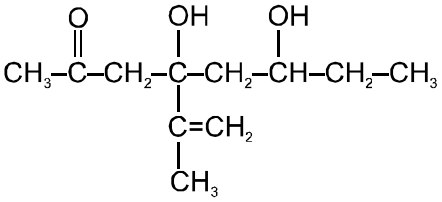
(C) 5-amino-3-mercapto benzene carboxylic acid (D) 5-mercapto-3-amino benzene carboxylic acid.

12. The correct IUPAC name for the compound  is :

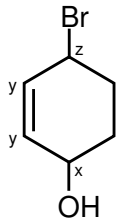
(1) 4-Hydroxy-3-methylcyclopentan-1-one (2) 3-Hydroxy-4-methylcyclopentan-1- one

(3) 5-Methyl -3-oxocyclopentan-1-ol (4) 2-Methyl -4-oxocyclopentan-1-ol

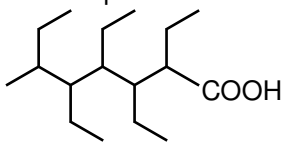
13. How many carbon atoms are present in parent chain (main chain) of the following compound ?



14. In the given compound IUPAC numbering of –Br is :



15. In the given compound how many carbon atoms present in the parent chain.



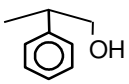
ChemINFO IUPAC NOMENCLATURE

Daily Self-Study Dosage for mastering Chemistry **IUPAC Nomenclature of Aromatic compound in which Benzene is side chain.**

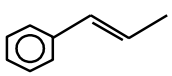
If benzene is used as side chain then **phenyl** is used as prefix. There are following rule in which benzene is used as side chain.

Rule -1 : If main chain have any functional group or unsaturation (double or triple bond) then benzene is used as side chain irrespective of number of carbon in main chain .

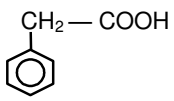
i.e,.



2 – Phenyl propanol – 1

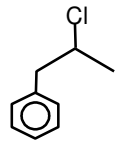


1 – Phenyl prop–1-ene

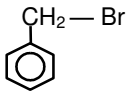


Phenyl ethanoic acid

Rule – 2 : If main chain have substitute like halogen , nitro , etc. then benzene is used as side chain.
i.e,

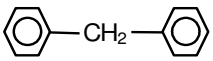


2-chloro-1-phenylpropane

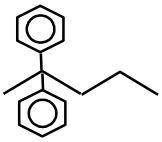


Bromophenylmethane

Rule – 3 : If more than one benzene ring attached to same carbon atom then it is consider as side chain.
i.e.,



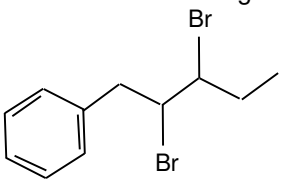
Diphenyl methane



2 , 2-Diphenylpentane

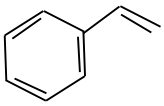
Memorize this theory as soon as you get the DPP. Revize it regularly and master this concept by practice.

(i). Correct IUPAC name of the following compound is



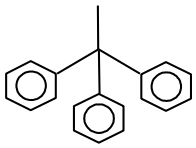
(A) 2,3-Dibromo-1-phenyl pentane
(B) 3,4-Dibromo-5-phenyl pentane
(C) 2,3-Dibromophenyl benzene
(D) 3,4-Dibromophenyl benzene

(ii). Correct IUPAC name of the following compound is



(A) Ethenyl benzene (B) Ethylbenzene (C) Phenylethene (D) Ethene benzene

(iii). Correct IUPAC name of the following compound is :



(A) Ethyl tribenzene
(B) 1, 1, 1-Triphenyl ethane
(C) 1-Ethyl-1,1-diphenyl benzene
(D) None of these

ANSWER KEY

(i) (A) **(ii)** (C) **(iii)** (B)

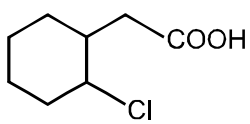
DPP No. # A6

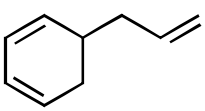
Total Marks : 42 **Max. Time: 26 min.**

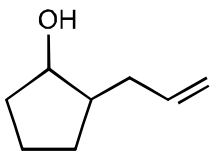
Multiple choice objective ('–1' negative marking) Q.1 to Q.7	**(4 marks, 2 min.)**	**[28, 14]**
Numerical Value Questions ('0' negative marking) Q.8 to Q.9	**(3 marks, 3 min.)**	**[06, 06]**
Match the Following (no negative marking) Q.10	**(8 marks, 6 min.)**	**[08, 06]**

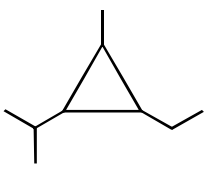
1. Which of the following is/are incorrect IUPAC name
(1) 2-Bromo cyclohex-5-ene carbaldehyde
(2) Ethyl-2-vinyl pentanoate
(3) 5-Bromo-3-chlorohept-3-ene
(4) 2-Ethenylhexa-1,5-diene

2. In which of the following cyclic ring is parent chain ?

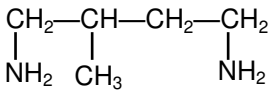
(A) 

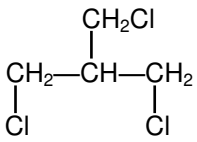
(B) 

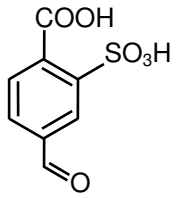
(C) 

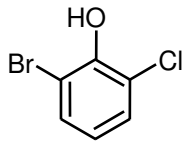
(D) 

3. Which of the following IUPAC names are correct :

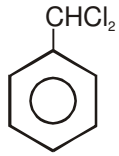
(A)  3-(Aminomethyl)butanamine

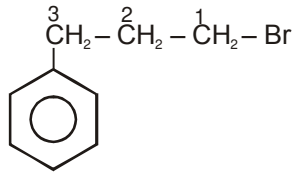
(B)  1,3-Dichloro-2(chloromethyl)propane

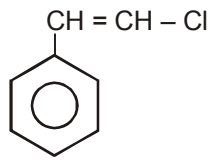
(C)  4-formyl-2-sulphobenzoic acid

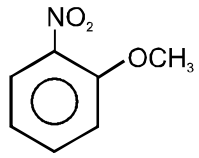
(D)  2-bromo-6-chlorophenol

4. Which of the following has correct IUPAC name ?

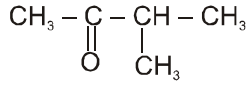
(A)  Dicholoro phenylmethane (Benzal chloride)

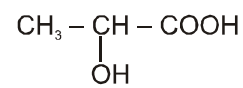
(B)  1-Bromo-3-phenylpropane

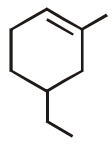
(C)  1-chloro-2-phenyl ethene

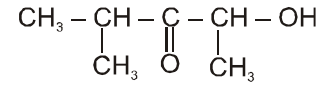
(D)  1-methoxy-2-nitrobenzene

5. Which of the following is/ are incorrect IUPAC name :

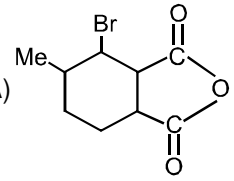
(A)  2-Methylbutan -3-one

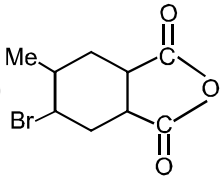
(B)  2-Hydroxypropanoic acid

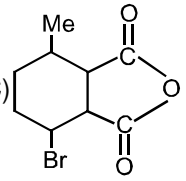
(C)  5-Ethyl-1-methylcyclohex-1-ene

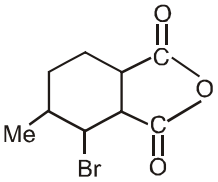
(D)  4-Methyl-3-oxopentan-2-ol

6. Correct structure of 3-Bromo-4-methylcyclohexane-1, 2-dicarboxylic anhydride

(A) 

(B) 

(C) 

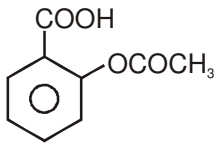
(D) 

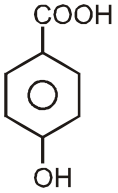
7. Which of the following is/are incorrect IUPAC name?

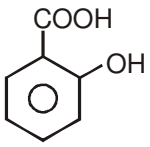
(A) 3-Methylenebutanamide (B) Ethenylcyclohexane

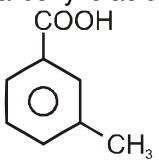
(C) 1,2,5-tribromo-3,4,6-trichlorocyclohexane (D) Tricyclopropyl methane

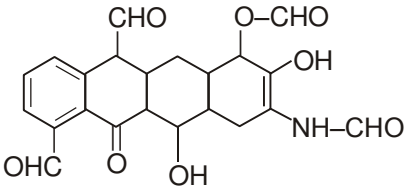
8. In how many of the following compound secondary suffix name is used as carboxylic acid ?

(A) CH_3–COOH (B) 

(C) 

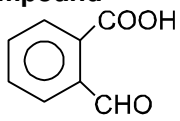
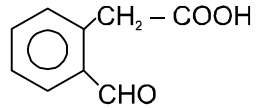
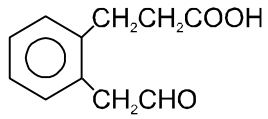
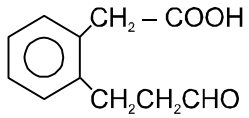
(D) 

(E) 

9. 

How many aldehyde (–CHO) groups present in the given compound?

10. Match the following compound with their IUPAC name:

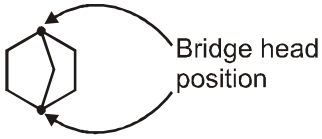
Column-I **Compound**	**Column-II** **IUPAC Name**
(P) 	(W) 3-[2-(2-Oxoethyl)phenyl]propanoic acid
(Q) 	(X) 2-[2-(3-Oxopropyl)phenyl]ethanoic acid
(R) 	(Y) 2-(2-Formylphenyl)ethanoic acid
(S) 	(Z) 2-Formylbenzenecarboxylic acid

ChemINFO IUPAC NOMENCLATURE

Daily Self-Study Dosage for mastering Chemistry **IUPAC Name of Bicyclo Bridgehead Compounds**

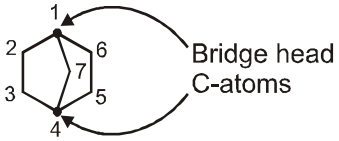
Bicyclo Compounds

Compounds with two fused cycloalkane rings are called bicyclo compounds. The carbon atoms common to both rings are called bridge head atoms. A bond or chain of carbon atoms connecting the bridge heads is called a bridge.

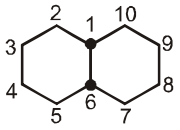


A bicyclic compound is named by attaching the prefix bicyclo to the name of hydrocarbon corresponding to the total number of carbon atoms in two rings.

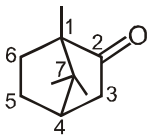
Numbering starts from bridge head to larger ring and then back to smaller ring.
The bracketed number show the number of carbon atoms (except bridge head position carbon atoms) in each bridge and they cited in **decreasing order.**
Ex.



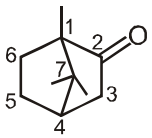
Bicyclo[2.2.1]heptane



Bicyclo[4.4.0]decane



1,7,7-Trimethylbicyclo[2.2.1]heptan-2-one



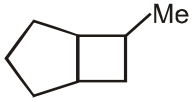
1,7,7-Trimethylbicyclo[2.2.1]heptan-2-one

Memorize this theory as soon as you get the DPP. Revize it regularly and master this concept by practice.

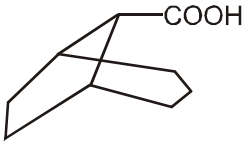
(i). The IUPAC name of the compound  is

(A) Bicyclo [2.1.0] pentane
(B) 1,2-cyclopropylcyclobutane
(C) Bicyclo [0.1.2] pentane
(D) 1-Methylenecyclobutane

(ii). The systematic naming of the following cycloalkane is



(A) 6-Methylbicyclo [3.2.0] heptane
(B) 7-Methylbicyclo [3.2.0] heptane
(C) 2-Methylbicyclo [3.2.0] heptane
(D) 3-Methylbicyclo [3.2.0] heptane

(iii). IUPAC name of 

is

(A) Bicyclo [3.2.1] octan-2-oic acid
(B) Bicyclo [3.2.1] octan-1-carboxylic acid
(C) Bicyclo [3.2.1] octan-8-carboxylic acid
(D) None of these

ANSWER KEY

(i) (A) **(ii)** (A) **(iii)** (C)

DPP No. # A7

Total Marks: 45 **Max. Time: 33 min.**
Single choice Objective ('–1' negative marking) Q.1 to Q.12 **(3 marks, 2 min.)** **[36, 24]**
Numerical Value Questions ('0' negative marking) Q.13 to Q.15 **(3 marks, 3 min.)** **[09, 09]**

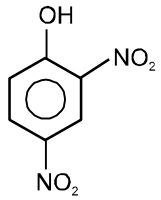
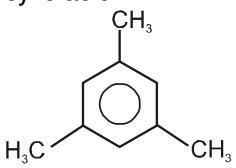
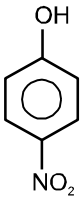
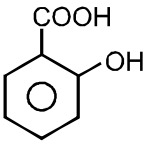
1. The structures $(CH_3)_2CHCH_2Br$ and $CH_3(CH_2)_3Br$ shows :
(A) position isomers
(B) chain isomerism
(C) functional isomerism
(D) None of these

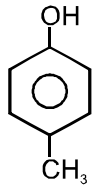
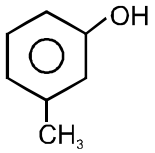
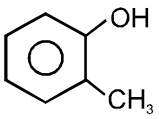
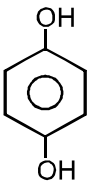
2. n-Propyl alcohol and isopropyl alcohol are examples of :
(A) Position isomers (B) Chain isomerism (C) Tautomerism (D) Geometrical isomerism

3. The compound which is not isomeric with diethyl ether is :
(A) n-Propylmethyl ether
(B) Butan-1-ol
(C) 2-Methylpropan-2-ol
(D) Butanone

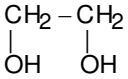
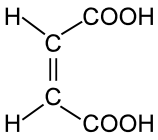
4. The compound $C_4H_{10}O$ can show
(A) Metamerism (B) Functional isomerism (C) Positional isomerism (D) All types

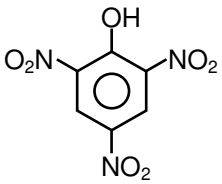
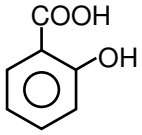
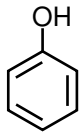
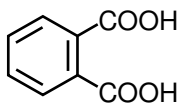
5. What is the common name of Ethanoic acid ?
(A) Formic acid (B) Acetic acid (C) Acetaldehyde (D) Propionic acid

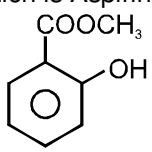
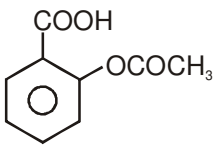
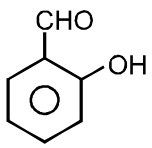
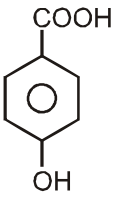
6. Which of the following is salicylic acid?
(A) 
(B) 
(C) 
(D) 

7. Which of the following is not cresol.
(A) 
(B) 
(C) 
(D) 

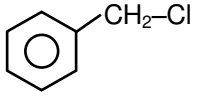
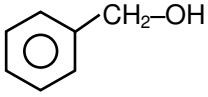
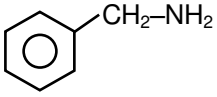
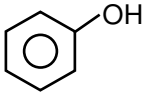
8. What is the common name of Ethyl ethanoate?
(A) Methyl formate (B) Acetaldehyde (C) Ethyl formate (D) Ethyl acetate

9. Which of the following is incorrectly matched?
(A)  Glycol
(B)  Oxalic acid
(C)  Fumaric acid
(D) $HOOC–CH_2–CH_2–COOH$ Succinic acid

10. Select the incorrect name of the following compound.
(A)  Picric acid
(B)  Salicyclic acid
(C)  Phenol
(D)  Isophthalic acid

11. Which is Aspirin?
(A) 
(B) 
(C) 
(D) 

12. Which of the following is not benzyl derivative :

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

13. What is the possible number of isomers of the aromatic compounds of molecular formula C_7H_7Cl.

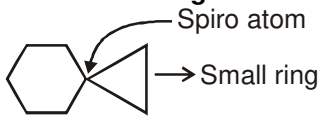
14. Number of structurally isomeric carbonyl compounds possible with molecular formula $C_5H_{10}O$ .....:

15. How many dichlorodiphenyl with molecular formula $C_{12}H_8Cl_2$ of each benzene ring containing only one (–Cl) group are possible :

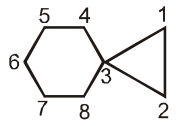
ChemINFO IUPAC NOMENCLATURE

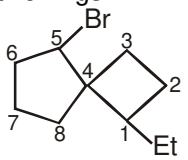
Daily Self-Study Dosage for mastering Chemistry **IUPAC Name of Spiro Compounds**

Spiro are polycyclics that share only one carbon atom. In substituted spiro, the **numbering is started next to the spiro atom in lower membered ring.**

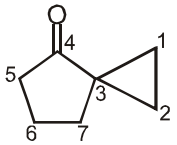


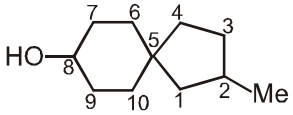
The prefix spiro is followed by brackets containing the number of carbon atoms in **ascending order**, in each ring attached to common carbon atom and ending with the name of hydrocarbon corresponding to the total number of carbon atoms in two rings.


Spiro[2.5]octane



5-Bromo-1-ethylspiro[3.4]octane

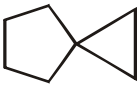
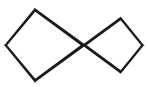

Spiro[2.4]heptan-4-one



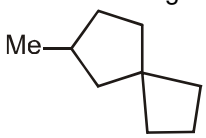
2-Methylspiro[4.5]decan-8-ol

Memorize this theory as soon as you get the DPP. Revize it regularly and master this concept by practice.

(i). The structure of spiro [3.3] heptane is :

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

(ii). The systematic naming of the following compounds is :



(A) 2-Methylspiro[3.4]octane (B) 3-Methylspiro[3.4]octane
(C) 6-Methylspiro[3.4]octane (D) 7-Methylspiro[3.4]octane

(iii). The correct IUPAC name for the compound

(A) Spiro[3.5]non-1-ene (B) Spiro[3.5]non-5-ene
(C) Spiro[5.3]dec-5-ene (D) Spiro[3.5]non-2-ene

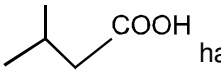
ANSWER KEY

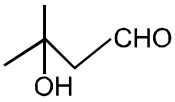
(i) (D) **(ii)** (C) **(iii)** (B)

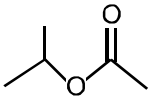
DPP No. # A8

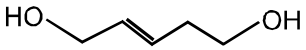
Total Marks : 42 **Max. Time: 26 min.**

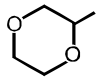
Multiple choice objective ('–1' negative marking) Q.1 to Q.7	**(4 marks, 2 min.)**	**[28, 14]**
Numerical Value Questions ('0' negative marking) Q.8 to Q.9	**(3 marks, 3 min.)**	**[06, 06]**
Match the Following (no negative marking) Q.10	**(8 marks, 6 min.)**	**[08, 06]**

1.  have functional isomer relation with

(A) 

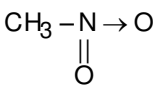
(B) 

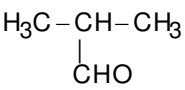
(C) 

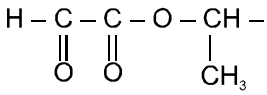
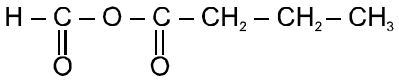
(D) 

2. Which is the correct relationship mentioned in bracket :

(A) $CH_3–CN$ and CH_3NC (Functional isomers)

(B) $CH_3–O–N=O$ and  (Functional isomers)

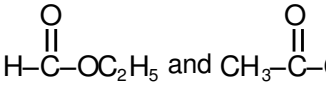
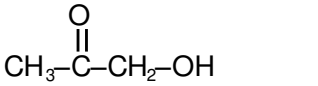
(C) $CH_3–CH_2–CH_2–CHO$ and  (Chain isomer)

(D)  and  (Functional isomers)

3. Which of the following alkene can give 3-methylpentane on hydrogenation.

(A) 3-methylpent-1-ene (B) 3-methylpent-2-ene

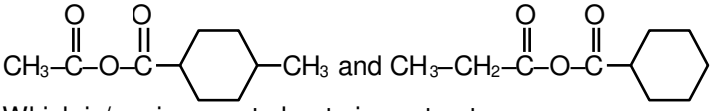
(C) 2-methylpent-1-ene (D) 2-ethylbut-1-ene

4.  and 

Which is/are true about above two structure –

(A) Degree of unsaturation is (1) (B) Both are functional isomers

(C) Both are metamers (D) Both have same molecular formula

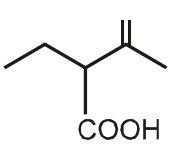
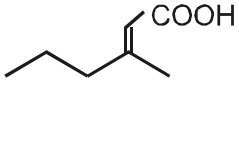
5.  and

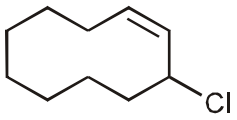
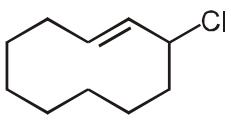
Which is/are incorrect about given structure

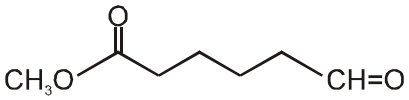
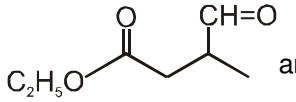
(A) Both are functional isomers (B) The degree of unsaturation is 2

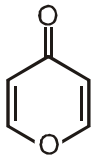
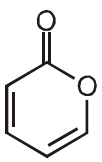
(C) Both have same molecular formula (D) Both are metamers to each other

6. Which of the following relation is correct :

(A)  and  are chain iosmers

(B)  and  are positional isomers

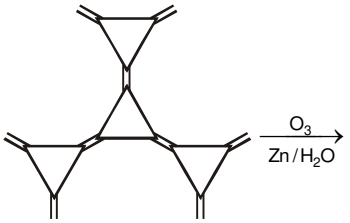
(C)  and  are metamers

(D)  and  are functional group isomers

7. Which statement(s) is/are correct.
(A) Degree of unsaturation tells about H-defficiency from any molecule in the form of multiple bond or ring.
(B) Hydrogenation tells about carbon skeleton.
(C) Monohalogenation tells about type of chemically different hydrogen.
(D) Ozonolysis tells about position of double or trible bond in molecule.

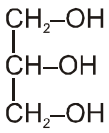
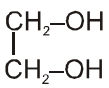
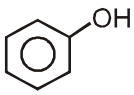
8. How many monochloro structural isomers will produce when 3-Methylpentane, reacts with chlorine in presence of sunlight?

9. Number of different products in the given ozonolysis reaction will be :



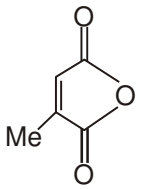
Products

10. **Match the Column**

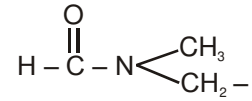
Comun–I (Compounds)		**Column–II (Common Names)**	
(A)		(p)	Carbinol
(B)		(q)	Gycerol
(C)		(r)	Ethylene glycol
(D)	$CH_3 - OH$	(s)	Phenol

DPP No. # A9

Total Marks: 60 **Max. Time: 33 min.**
Single choice Objective ('–1' negative marking) Q.1 to Q.12 **(3 marks, 2 min.) [36, 24]**
Numerical Value Questions ('0' negative marking) Q.13 to Q.15 **(3 marks, 3 min.) [09, 09]**

1. Correct IUPAC name of the compound  is :

(A)2-Methylbutenedioic anhydride (B) 3-Methylbutenedioic anhydride
(C) 2-Methyl-1,4-diketobutene epoxy (D) 2-Methylcyclopentanoxy-1,4-dione

2. The IUPAC name of the compound  is L:

(A) N-Ethyl-N-methylmethanamide (B) N-Methyl-N-ethylmethanamide
(C) N-Ethyl- N-methylformamide (D) N-Ethylmethylmethanamide

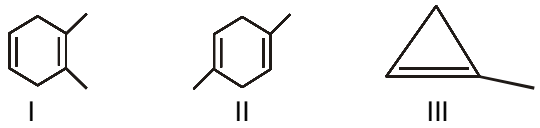
3. Which of the following amino acids contains sulfur atom
(A) Serine (B) Cystein (C) Alanine (D) Proline

4. Which of the following contains two-COOH group
(A) Aspartic acid (B) Tyrosine (C) Histidine (D) Glycine

5. Which of the following give positive test with neutral $FeCl_3$

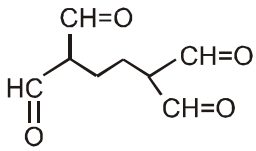
(A) Leucine (B) Tyrosine (C) Asparagine (D) Serine

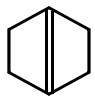
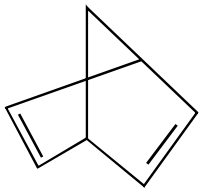
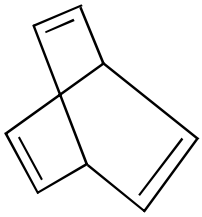
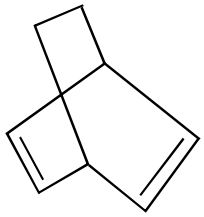
6. Which of the following will give same product on ozonolysis.

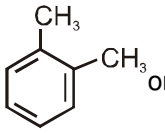


I II III

(A) I & II only (B) II & III only (C) I and III only (D) All

7.  can be obtained by ozonolysis of -

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

8.  on reductive ozonolysis [$O_3/Zn/H_2O/\Delta$] gives:

(A) $(CHO)_2 + CH_3–\underset{\underset{O}{\|}}{C}–\underset{\underset{O}{\|}}{C}–CH_3$

(B) $(CHO)_2 + CH_3–\underset{\underset{O}{\|}}{C}–\underset{\underset{O}{\|}}{C}–CH_3 + CH_3–\underset{\underset{O}{\|}}{C}–\underset{\underset{O}{\|}}{C}–H$

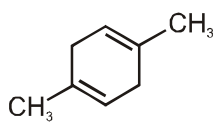
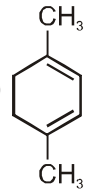
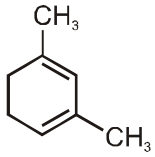
(C) $CH_3–\underset{\underset{O}{\|}}{C}–\underset{\underset{O}{\|}}{C}–H + CH_3–\underset{\underset{O}{\|}}{C}–\underset{\underset{O}{\|}}{C}–CH_3$

(D) Benzene is stable hence cannot be ozonolysed

9. $X \xrightarrow[\Delta]{H_2/Ni} C_8H_{16} \xrightarrow{Cl_2/h\nu}$ 3 monochloro structural product.

$\xrightarrow[Zn]{O_3/H_2O} CH_3–CH(CHO)_2$

Structure of X will be :

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

10. Molecular formula C_3H_9N represents :

(A) Only primary amine

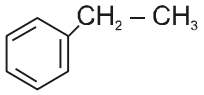
(B) Only secondary amine

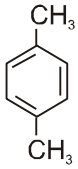
(C) Three primary amine, two secondary amine and one tertiary amine

(D) Two primary amine, one secondary amine and one tertiary amine

11. How many ketones with molecular formula $C_5H_{10}O$ is possible (structural isomers only).

(A) 2 (B) 3 (C) 4 (D) 6

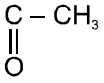
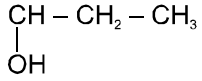
12.  $\xrightarrow{Cl_2/h\nu}$ 'm' monochloro products

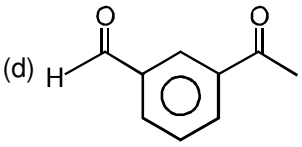
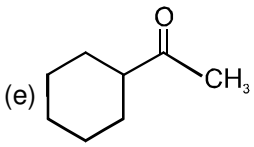
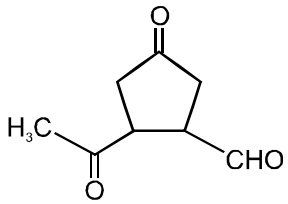
 $\xrightarrow{Cl_2/h\nu}$ 'n' dichloro products

The value of m and n are respectively :

(A) 2 and 1 (B) 2 & 2 (C) 1 & 2 (D) 1 & 1

13. How many compounds will give positive iodoform test but negative Tollen's test ?

(a) CH_3CHO (b)  (c) 

(d)  (e)  (f) 

14. Consider all possible isomeric amines of molecular weight = 73. How many of them give isocyanide with $CHCl_3$ and KOH

15. In how many of the following compound. –OH group directly attached on the benzene ring ?

(1) Glycol (2) Glycerol (3) o-cresol (4) p-cresol

(5) Phenol (6) aniline (7) anisol (8) resorcinol

(9) catechol (10) Hydroquinone

DPP No. # A10

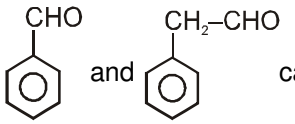
Total Marks : 44 **Max. Time : 24 min.**

Multiple choice objective ('–1' negative marking) Q.1 to Q.9 **(4 marks, 2 min.)** **[36, 18]**

Match the Following (no negative marking) Q.10 **(8 marks, 6 min.)** **[08, 06]**

1. Which of the following will decolourise highly diluted $KMnO_4$ solution ?

(A) C_3H_8 (B) CH_4 (C) C_2H_2 (D) C_2H_4

2.  cannot be distinguished by :

(A) Iodoform test (B) Tollen's test

(C) Fehling solution test (D) 2,4-DNP test

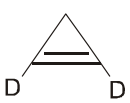
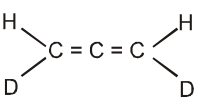
3. The test that can be used to distinguish between 1-propanol and 2-propanol :

(A) Lucas test (B) Iodoform test (C) Victor mayer test (D) Carbyl amine test

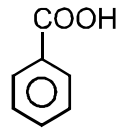
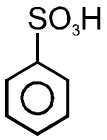
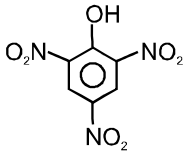
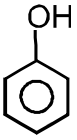
4. Test to differentiate between (CH_3OH) and (Ph-OH) is/are :

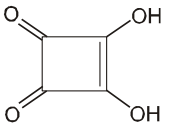
(A) Victor mayer test (B) Neutral $FeCl_3$ (C) Br_2/H_2O (D) Na metal

5. What is/are the structure of a compound ($C_3H_2D_2$) which decolourise bromine water.

(A)  (B)  (C) $CHD_2 - C \equiv CH$ (D) 

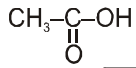
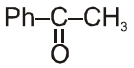
6. Which of the following compound will give positive test with $NaHCO_3$?

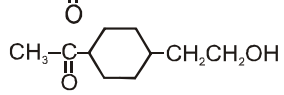
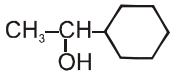
(A)  (B)  (C)  (D) 

7. Which of the following test will be given by  (squaric acid)

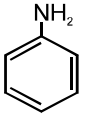
(A) Br_2 water test (B) 2, 4-DNP test (C) Neutral $FeCl_3$ (D) Tollen's test

8. Which of the following will give positive iodoform test.

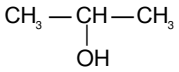
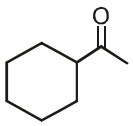
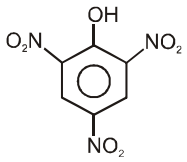
(A)  (B) 

(C)  (D) 

9. Compound giving offensive smell on heating with chloroform and alkali.

(A) $CH_3–NH_2$ (B)  (C) $CH_3–NO_2$ (D) $Ph–CH_2–NH_2$

10. Match the given compounds in Column-I with their appropriate descriptions given in Column-II.

	Column-I		**Column-II**
(A)		(p)	It evolve CO_2 gas with $NaHCO_3$
(B)		(q)	It gives iodoform test
(C)		(r)	It gives Lucas reagent test .
(D)	Reductive ozonolysis products of Benzene	(s)	It gives Tollen`s test
		(t)	It gives 2,4 DNP test