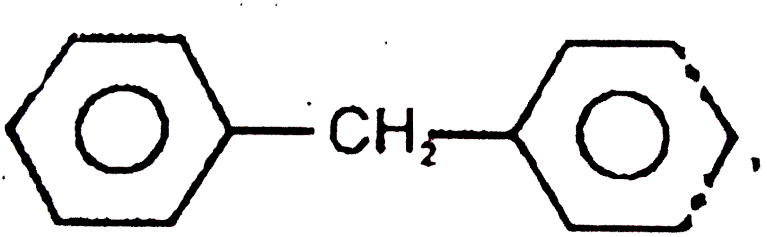
CHEMISTRY

PHYSICAL, INORGANIC, AND ORGANIC CHEMISTRY

BASIC CONCEPTS

Organic Chemistry Basic Concepts

1. The molecular formula of diphenyl methane,



is

$C_{13}H_{12}$.

How many structural isomers are possible when one of the hydrogen is replaced by chloride atom.

A. 4

B. 8

C. 7

D. 6

Answer: A

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2. Which of the following hydrocabon can give only acetone and CO_2on ozonolysis in presence of Zince ?

A. $CH_3 - CH = C = CH - CH_3$

B. $CH_3 - CH = CH - CH = C(CH_3)_2$

C. $(CH_3)_2C - C = CH_2$

D. $CH_3 - \underset{\underset{CH_3}{|}}{C} = C = \underset{\underset{CH_3}{|}}{C} - CH_3$

Answer: 4

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3. Which of the following IUPAC name is incorrect ?

A. $3 -$ Ethylpenta$- 1, 4 -$ diene

B. 20Ethylhex$- 1 - en - 4 -$ yne

C. $2-(2-$ Chloroethyl)pentanenitrile

D. $2,2-$ Dichlorohexan $-4-$ ol

Answer: 4

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4. The general molecular formula , which represents the homologous series of alkanol is

A. $C_nH_{2n}O_2$

B. $C_nH_{2n}O$

C. $C_nH_{2n+1}O$

D. $C_nH_{2n+2}O$

Answer: 4

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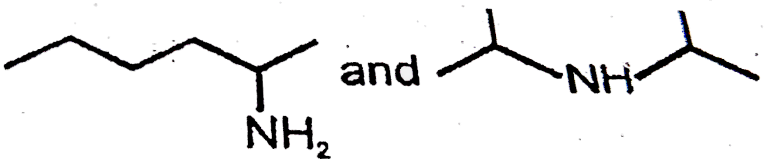
5. The given structures are :



A. Chain isomers

B. Postion isomers

C. Functional isomers

D. metamers

Answer: 3

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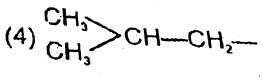
6. The structure of isobutyl group in an organic compound is

A. $CH_3 - \underset{|}{CH} - CH_2 - CH_3$

B. $CH_3 - CH_2 - CH_2 - CH_2 -$

C. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} -$

D. 

Answer: 4

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7. Which of the following compound is achiral (optically inactive)?

A. $1 -$ Bromo $- 2 -$ chlorocyclopropane

B. (Trans)$-2-$ Methyl hex$-3-$ ene

C. $2-$ Methyl butanal

D. $2,2,4-$ Trimethyl hexane

Answer: 2

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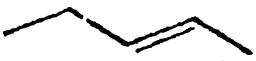
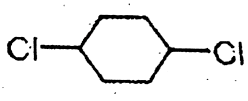
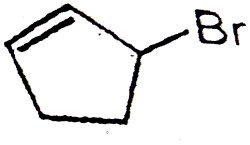
8. Which cannot show geometrical isomerism ?

A. 

B. 

C. 

D. $ClCH = N - CH_2 - CH_3$

Answer: 3

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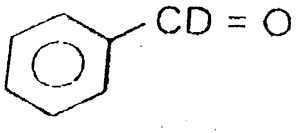
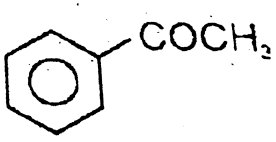
9. The following compounds can be distinguished by





A. Neutral $FeCl_3$

B. Ammonical $AgNO_3$

C. $2, 4 - DNP$

D. $NaHCO_3$ solution

Answer: 2

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10. Total acyclic optically active isomers of $C_3H_2D_2$ are :

A. 0

B. 1

C. 2

D. 4

Answer: 2

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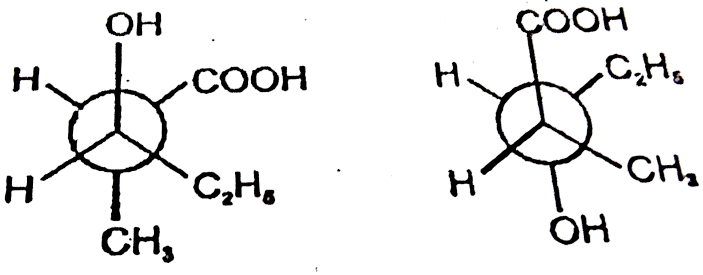
11. Identify the compound and find the relation between them .



A. Conformational isomers or identical

B. Configurational diastereomer

C. Configurational enantiomers

D. Constitutional isomers

Answer: 2

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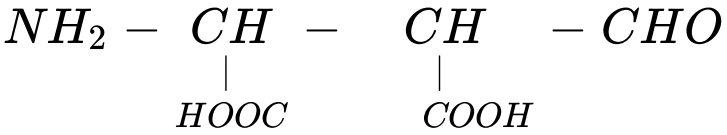
12. Correct IUPAC name of the compound is



A. $2-$ Formyl $-3-$ aminobutane dioic acid

B. $2-$ Amino $-3-$ formylbutane dioic acid

C. $3-$ Amino $-2,3-$ dicarboxypropanal

D. None of the above

Answer: 2

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13. How many structural isomers containing a benzene ring are possible for C_8H_{10} :

A. 2

B. 3

C. 4

D. 5

Answer: 3

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14. Which of the following statement is incorrect ?

A. A meso compound has chiral centres but does not exhibit optical activity.

B. If a molecule is dissymmetric, it rotate the plane of plane polarized light.

C. A meso compound is optically inactive because the rotation caused by any molecule is cancelled by an equal and opposite rotation caused by another

molecule that is the mirror image of the first.

D. The twc diastereomers have same structure formula but different physical and chemical properties

Answer: 3

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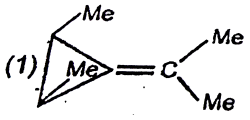
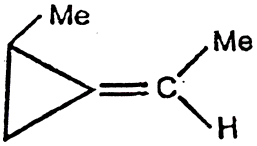
15. Which of the following species can not exhibit geometrical isomerism ?

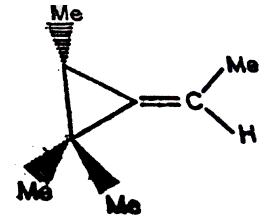
A.



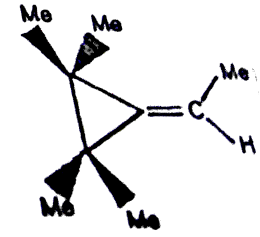
B.



C.



D.



Answer: 4

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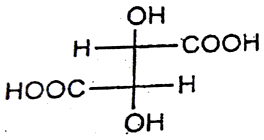
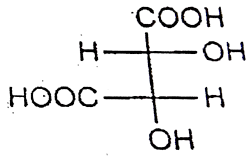
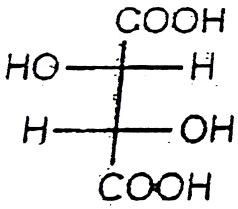
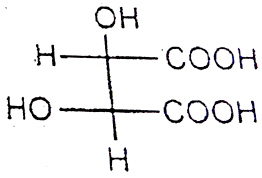
16. The stereochemical formula of diastereomer $'Y'$ of optically active compound $'X'$ is,

(If $X = 2,3-$ Dihydroxybutanedioic acid.).

A. 

B. 

C. 

D. 

Answer: 2

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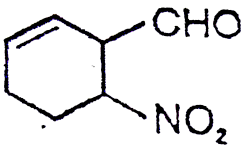
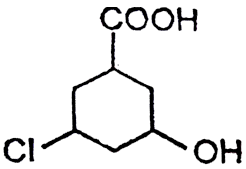
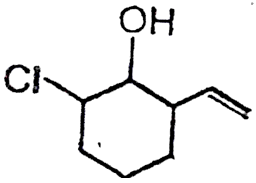
17. Which is correctly matched with IUPAC Name ?

A. 

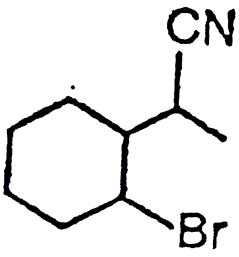
$2-$ Nitrocyclohex$-5-$ ene$-1-$ carbaldehyde

B. 

$5-$ Chloro$-3-$ hydroxycyclohexane$-1-$ carboxylic acid

C. 

$2-$ Ethenyl$-6-$ chlorocyclohexanol

D. 

$2-(2-$ bromocyclohexyl)propanenitrile

Answer: 4

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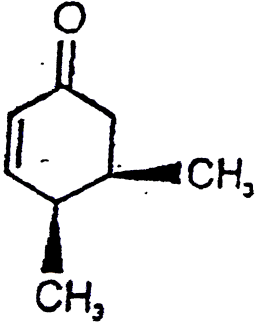
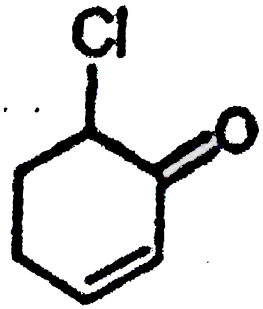
18. Which compound racemises (looses optical activity) due to tautomerisation ?

A. 

B. 

C. $CH_3 - \overset{\overset{H}{|}}{\underset{\underset{Br}{|}}{C}} - CH_2 - \overset{\overset{O}{||}}{C} - CH_3$

D. $CH_3 - \overset{\overset{O}{||}}{C} - CH_2 - \overset{\overset{O}{||}}{C} - CH_3$

Answer: 2

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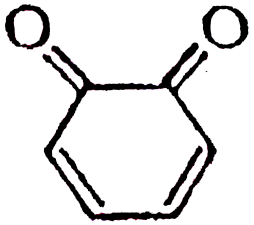
19. In which compund $D-$ exchange is possible in presence of OD^- / D_2O ?

A. $CH_3 - \overset{\overset{O}{||}}{C} - Ph$

B. $CH_2 = CH - \overset{\overset{O}{||}}{C} - Ph$

C. 

D. $CH_3 - \underset{\underset{C_2H_5}{|}}{\overset{\overset{Cl}{|}}{C}} - CH = CH - CHO$

Answer: 1

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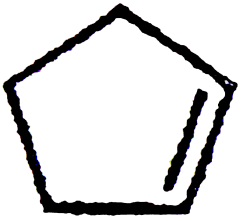
20. Compound

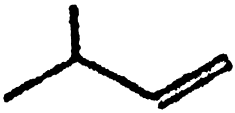
$$C_5H_{10}(A) \xrightarrow[(2)\,Me_2S/H_2O]{(1)\,O_3} B + C$$

Compound B and C both gives iodoform test and B also give silver mirror with ammonical silver nitrate. The structure of compound A is :

A. 

B. 

C. 

D. 

Answer: 3

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21. Correct name for the following compound is :

$$Cl - CH_2 - \overset{O}{\overset{||}{C}} - O - \overset{O}{\overset{||}{C}} - CH_2 - Cl$$

A. Bis (Chloroacetic anhydride)

B. Bis(Chloroethanoic anhydride)

C. Chloroethanoic anhydride

D. $1-$ Chloroethanoyloxy$-2-$ chloroethenone

Answer: 3

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22. Which is the suitable reagent for the following conversion.

Acetone $\xrightarrow{Re-\text{agent}}$ Acetic acid

A. $NaHCO_3$

B. Tollen's reagent

C. NaOI followed by H^+

D. NaOH

Answer: 3

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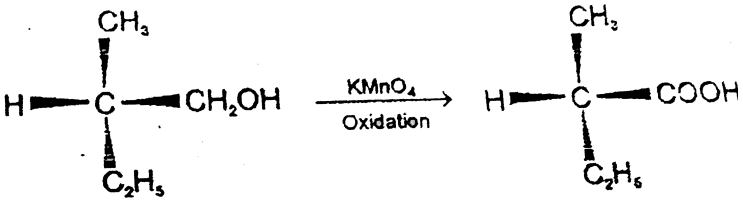
23. Which statement is correct for the given reaction :



A. The reactant and the products in the above reaction have (S) configuration.

B. In this reaction no bond to the chiral centre is broken so there is retention of

configuration in the product.

C. Reactant and product both can be distinguished by $NaHCO_3$ or Lucas reagent

D. All are correct.

Answer: D

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24. A research scholar get a mixture of three product during an experiment with ammonia. In product I only one H of ammonia is replaced by ethyl group and in II two H atoms of ammonia are replaced by ethyl groups and in III all the H- atoms are replaced by ethyl groups. Which test he should use to distinguish or separate the products :

A. Carbyl amine test

B. Iodoform test

C. Fehling solution test

D. Hinsberg test

Answer: 4

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25. When a nitrogen containing organic compound is strongly heated with conc. H_2SO_4 , the product is $-$

A. HNO_3

B. $(NH_4)_2SO_4$

C. NH_3

D. N_2 gas

Answer: 2

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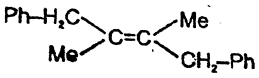
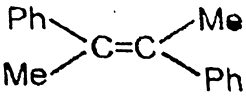
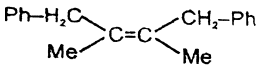
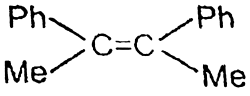
26. The lower boiling isomer of the W is

$$W \xrightarrow[ZnH_2O]{O_3} \text{Acetophenone}$$

A. 

B. 

C. 

D. 

Answer: 2

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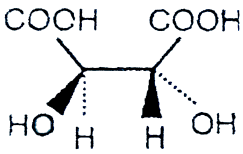
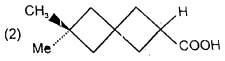
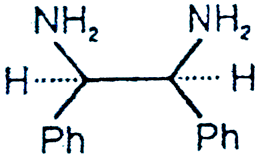
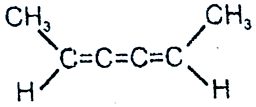
27. Which of the following compound has non superimposable mirror image –

A. 

B. 

C. 

D. 

Answer: 1

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