



Wings

Organic Chemistry_Revision_Set I

DATE: 08-01-2022

TIME: 200mins

- 1** 0.7 gm of an organic compound gave $11.2 \text{ cm}^3 \text{ N}_2$ at NTP in Duma's method. Percentage of nitrogen in the organic compound is

Correct Options:

(B) 2

Solution:

moles = $11.2/22400$

mass = moles \times 28

- 2** Which reaction is termed as Darzen's Reaction -

(A) $\text{ROH} + \text{HCl}$ (B) $\text{ROH} + \text{PCl}_5$ (C) $\text{ROH} + \text{SOCl}_2$ (D) $\text{ROH} + \text{PCl}_3$

Correct Options:

(C) (C)

Solution:

- 3** An organic compound is fused with fusion mixture and extracted with HNO_3 . The extract give yellow precipitate with ammonium molybdate. It shows the presence of which element ?

Correct Options:

(A) P

Solution:

the answer is 1

- 4** Match the interhalogen compounds of column I with the geometry in column II and assign the CORRECT code.

Column I		Column II	
i. XX'	a. T-shape		
ii. XX'_3	b. Pentagonal bipyramidal		
iii. XX'_5	c. Linear		
iv. XX'_7	d. Square pyramidal		
	e. Tetrahedral		

Correct Options:

(A) i - c, ii - a, iii - d, iv - b

Solution:

i - c, ii - a, iii - d, iv - b

- 5 Vinyl halides are unreactive towards nucleophilic substitution because of the following except-
- (A) C - halogen bond is strong
 - (B) The halogen is bonded to sp^2 carbon
 - (C) A double bond character is developed in the carbon-halogen bond by resonance
 - (D) Halide ions are not good leaving groups

Correct Options:

(D) (D)

Solution:

- 6 Which of the following group 16 element is present in galena and zinc blende?

Correct Options:

(B) Sulphur

Solution:

Sulphur

- 7 Ethyl bromide can be converted into ethyl alcohol by -

- (A) Heating with an alcoholic solution of KOH
- (B) The action of moist silver oxide
- (C) Heating with dil. HCl and Zn
- (D) Refluxing with methanol

Correct Options:

(B) (B)

Solution:

- 8 Non combustible hydride is

Correct Options:

(A) NH_3

Solution:

conceptual

- 9 What is the geometry of molecule of bromine pentafluoride?

Correct Options:

(C) Square pyramidal

Solution:

Square pyramidal

10

Arrange the following in correct order of anionic polymerisation.

- I. $\text{CH}_2=\text{CH}-\text{CH}_3$
- II. $\text{CH}_2=\text{CH}-\text{Cl}$
- III. $\text{CH}_2=\text{CH}-\text{CH}_2\text{CH}_3$
- IV. $\text{CH}_2=\text{CH}-\text{CN}$

Correct Options:

(A) IV > II > I > III

Solution:

.....

11 Order of the above reaction is:

Correct Options:

(B) 2

Solution:

C

12

___ in glacial acetic acid called Wijs solution.

Correct Options:

(B) Iodine monochloride

Solution:

Iodine monochloride

13 0.759 g of a silver salt of a dibasic organic acid on ignition left 0.463 g metallic silver. The equivalent weight of acid is :

Correct Options:

(A) 70

Solution:

the answer is 1

14 The ether $\text{C}_6\text{H}_5\text{OCH}_2\text{C}_6\text{H}_5$ on heating with concentrated HI produces -

- (A) $\text{C}_6\text{H}_5\text{I}$ and $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$
- (B) $\text{C}_6\text{H}_5\text{I}$ and $\text{C}_6\text{H}_5\text{CH}_2\text{I}$
- (C) $\text{C}_6\text{H}_5\text{OH}$ and $\text{C}_6\text{H}_5\text{CH}_2\text{I}$
- (D) $\text{C}_6\text{H}_5\text{OH}$ and $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$

Correct Options:

(C) (C)

Solution:

15 19. Which is true statement?

Correct Options:

(D) All are true.

Solution:

the answer is 4

16 In steam distillation of Aniline, the pressure of aniline in vapour is:

Correct Options:

(B) Less than atmospheric pressure.

Solution:

the answer is 2

17 Which of the following hydride is least acidic?

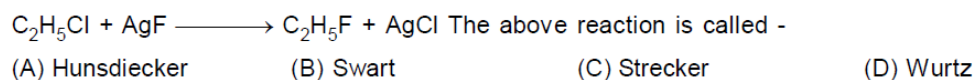
Correct Options:

(A) HF

Solution:

HF

18



Correct Options:

(B) (B)

Solution:

19 Which of the following constitutes a set of amphoteric species?

Correct Options:

(A) $H_2O, H_2PO_3^{\ominus}, HPO_4^{2-}$

Solution:

the answer is 1

20 . Statement-1 : Beilstein test can be used to detect fluorine in the organic compound. Statement-2 : CuF is not volatile and hence does not impart any colour to the flame.

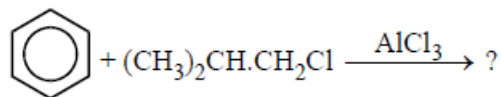
Correct Options:

(D) Statement-1 is false, statement-2 is true

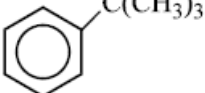
Solution:

the answer is 4

21 Which of the following is the major organic product for the following reaction?



Correct Options:

(B) 

Solution:

conceptual

- 22 In homologous series :
- (A) Molecular formula is same (B) Structural formula is same
(C) Physical properties are same (D) General formula is same

Correct Options:

(D) (D)

Solution:

- 23 The ortho to para ratio of the product formed by nitration of toluene was found to be 1.5. The o to p-ratio of the product formed by nitration of tert-butylbenzene should be

Correct Options:

(C) < 1.5

Solution:

conceptual

- 24 **STATEMENT - 1**
Pyrrole, is aromatic and undergoes electrophilic aromatic substitution extremely readily and predominant by at position adjacent to nitrogen.
STATEMENT - 2
Nitrogen in the ring bearing a lone pair in conjugation with π -electrons brings aromaticity to the pyrrole.

Correct Options:

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

Solution:

CONCEPTUAL

- 25 **Directions:** In this section, you have six short passages. After each passage, you will find some questions based on the passage. First, read a passage and answer the questions based on it. You are required to select your answers based on the contents of the passage and opinion of the author only.

Vacationing on a motorcycle, you see things in a way that is completely different from any other. In a car you are always in a compartment, and because you are used to it you do not realize that through that car window everything you see is just more TV. You are a passive observer and it is all moving by you boringly in a frame. On a motorcycle, however, the frame is gone. You are completely in contact with it all. You are in the scene, not just watching it anymore, and the sense of presence is overwhelming.

The writer likes travelling on the motorcycle. What is the most likely reason for this?

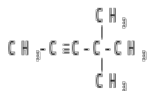
Correct Options:

(D)
Travelling by motorcycle, the writer feels that he is part of the scenery

Solution:

Travelling by motorcycle, the writer feels that he is part of the scenery

- 26 The IUPAC name of given compound is :-

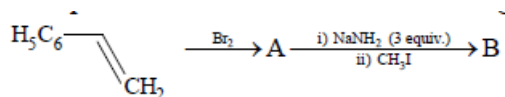


Correct Options:

(C) 4,4-Dimethyl-2-pentyne

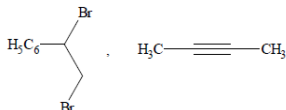
Solution:

27 The products A and B in the following reaction sequence are:



Correct Options:

(A)



Solution:

conceptual

28 Which is correct stability order -

Correct Options:



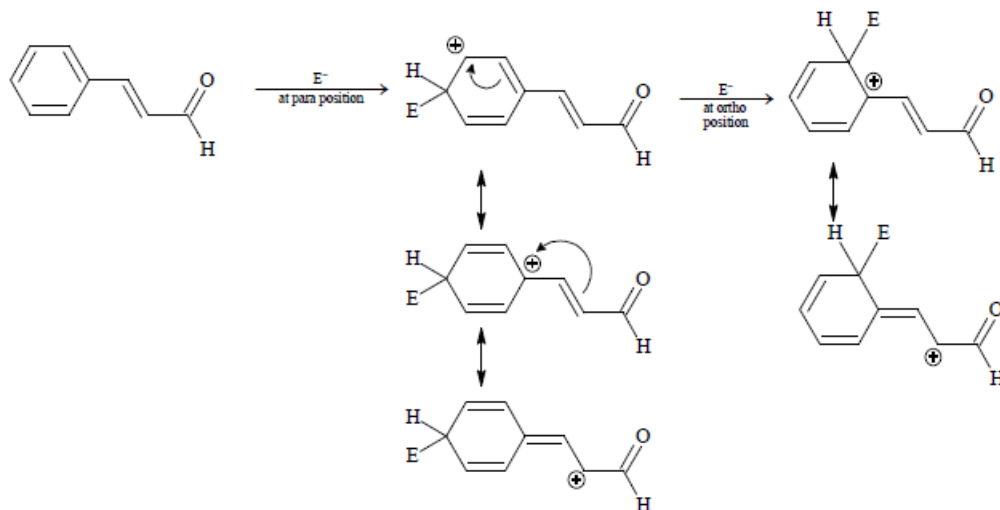
Solution:

29 When cinnamic acid is nitrated, the incoming electrophile (NO_2^+) goes at

Correct Options:

(D) both ortho and para positions

Solution:



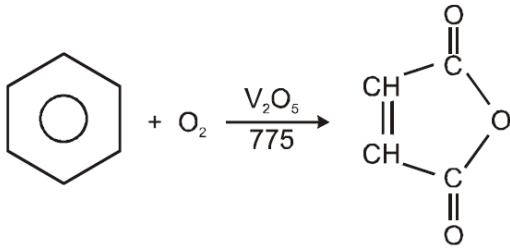
The delocalization of positive charge in arenium ion is extensive (occurs even in the side chain) when the electrophile attacks at ortho and para position in comparison to when it attacks at meta position (where the delocalization all occur only in the ring).

30 Which of the following is/are produced when a mixture of benzene vapour and oxygen is passed over V_2O_5 catalyst at 775 K ?

Correct Options:

(D) Maleic anhydride

Solution:



31 Maximum wave length of Balmer series for H-atom : ($R_H = 10^7 \text{ m}^{-1}$)

Correct Options:

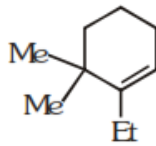
(A) 720 nm

Solution:

720 nm

32

UPAC name of the following compound :-



Correct Options:

(C) 1-Ethyl-6,6-dimethyl-1-cyclohexene

Solution:

C

33 Which of the following groups is ortho and para directing?

Correct Options:

(C) — OH

Solution:

CONCEPTUAL

34 1, 3, 5-Trideuteriobenzene is allowed to react with conc. H_2SO_4 to form monosubstituted product. Predict the relation between D : H ratio of the reactant and product.

Correct Options:

(B)

$[D : H]_{\text{Product}} > [D : H]_{\text{Reactant}}$

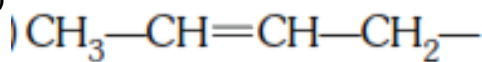
Solution:

sulphonation shows kinetic isotopic effect

35 The structure of 2-butenyl radical is :-

Correct Options:

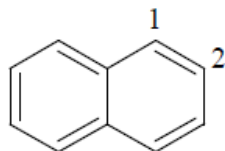
(B)



Solution:

B

36 **STATEMENT - 1**
In naphthalene



the electrophilic attack on indicated position 1 is more hindered so less stable intermediate

is formed hence it takes place at position 2.

STATEMENT - 2

The electrophile attacks on that position which gives more stable intermediate

Correct Options:

(D)

Statement - 1 is False, Statement
- 2 is True.

Solution:

Intermediate carbocation results from attack at position '1' is most stable.

37

Directions: Look at the underlined part of each sentence. Below each sentence are given three possible substitutions for the underlined part. If one of them (a), (b) or (c) is better than the underlined part, indicate your response on the Answer Sheet against the corresponding letter. If none of the substitutions improves the sentence, indicate (d) as your response on the Answer Sheet.

The Prime Minister had wide-ranging discussions on the international situation.

Correct Options:

(A) widely-ranged

Solution:

widely-ranged

38 **DDT is prepared by reacting chlorobenzene with**

Correct Options:

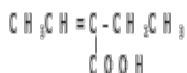
(B) CCl_3 -CHO

Solution:

-

39

The IUPAC name of given compound is :-



Correct Options:

(C) 2-Ethyl-2-butenoic acid

Solution:

40

Caustic soda is :-

Correct Options:

(B) Deliquescent

Solution:

Deliquescent

41

Hydrogen can be obtained by, which of the following

Correct Options:

(B) Sodium + C₂H₅OH

Solution:

Sodium + C₂H₅OH

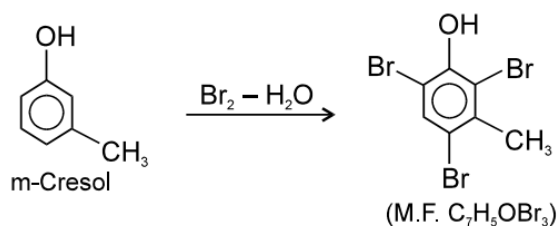
42 An organic compound with molecular formula C₇H₈O dissolves in NaOH and gives a characteristic colour with FeCl₃. On treatment with bromine, it gives a tribromoderivative, C₇H₅OBr₃. The compound is :

Correct Options:

(C) m-Cresol

Solution:

Since the compound dissolves in NaOH, and gives a characteristic colour with FeCl₃, it must be a phenol. Now three phenols having the M.F. C₇H₈O are o-, m- or p-cresol. Since the compound on treatment with Br₂ gives a tribromoderivative, therefore, two o- and one p-position w.r.t. OH group must be free. That is the phenol is m-cresol.



43 Most viruses that infect plants possess

Correct Options:

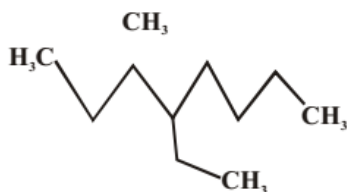
(B) single-stranded RNA

Solution:

single-stranded RNA

44

Name of the compound given below is



Correct Options:

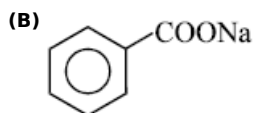
(A) 4-Ethyl-3-methyl octane

Solution:

-

45 Toluene reacts with excess of Cl₂ in presence of sunlight to give a product which on hydrolysis followed by reaction with NaOH gives -

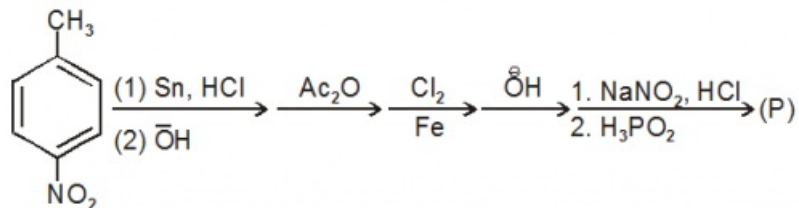
Correct Options:



Solution:

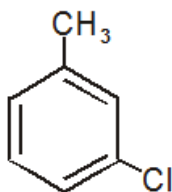
conceptual

46 Below is the sequence to prepare an aryl halide (P) compound (P) can be

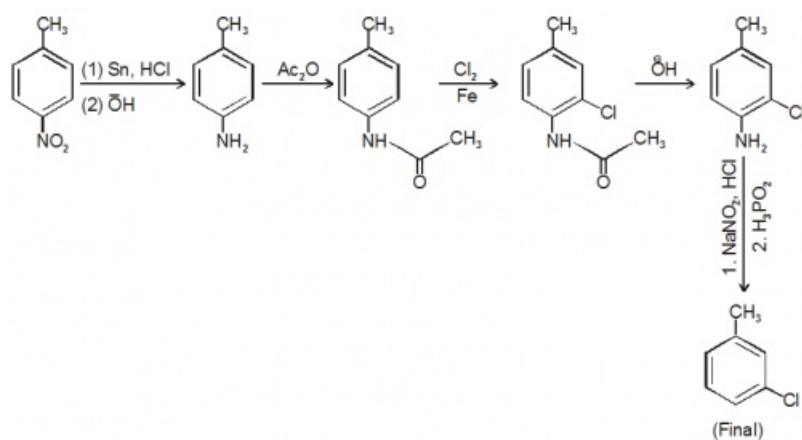


Correct Options:

(B)



Solution:



47 Benzene does not undergo addition reactions easily because

Correct Options:

(C)

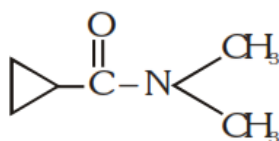
Resonance stabilized system is to be preserved

Solution:

Due to its aromaticity

48

IUPAC name of the following compound.



Correct Options:

(A) N,N-dimethylcyclo propane carboxamide

Solution:

A

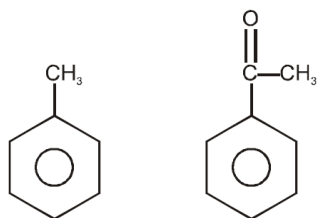
49 For preparing monoalkyl benzene, acylation process is preferred than direct alkylation because

Correct Options:

(C)

In alkylation, polyalkylated product is formed

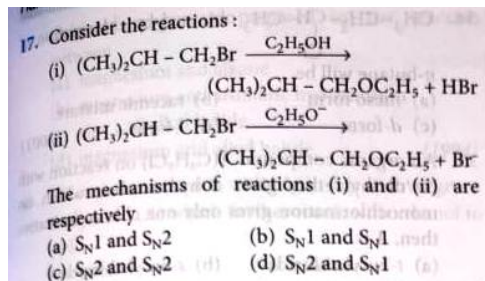
Solution:



- CH₃ → Ortho / para directing / Activating group For E.S.R.

- C(=O)CH₃ → Meta directing / deactivating group For E.S.R.

50



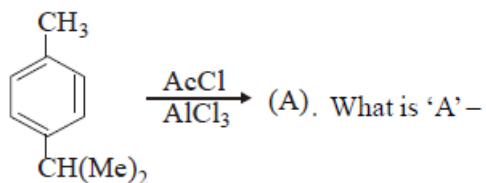
Correct Options:

(C) C

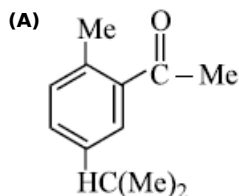
Solution:

C

51 In the following reaction



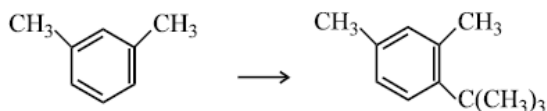
Correct Options:



Solution:

conceptual

52 Each of the following, except one, gives the compound shown as the major product. Identify the reagent or combination that is not suitable.



Correct Options:

(C) (CH₃)₃CCl, AlCl₃

Solution:

CONCEPTUAL

53 78. The geometry of XeF₆ molecule and its hybridisation are:

- (a) tetrahedral, sp³ (b) pentagonal bipyramidal, sp³d²
 (c) octahedral, sp³d² (d) square planar, sp³d²

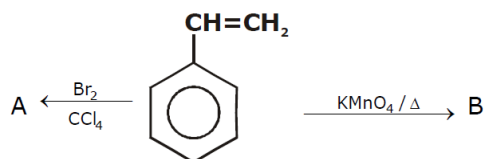
Correct Options:

(B) 2

Solution:

2

54



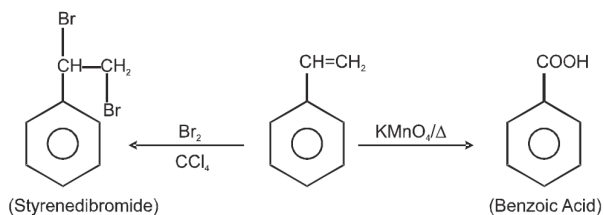
Compound A and B respectively are :

Correct Options:

(D)

Styrene dibromide, benzoic acid

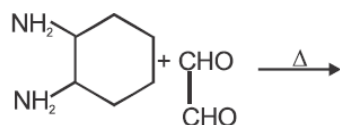
Solution:



55 Which of the following will not produce aromatic compound

Correct Options:

(A)



Solution:

-

56

Which one of the following is a physical change?

Correct Options:

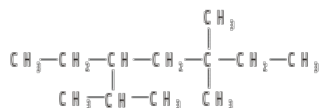
(C) Heating of a platinum crucible

Solution:

Heating of a platinum crucible

57

The IUPAC name of the structure is :-

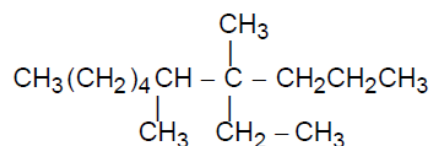


Correct Options:

(D) 3-Ethyl-2,5,5-trimethyl heptane

Solution:

58 What is the correct IUPAC name for the following compound ?



- (A) 3,4 - Dimethyl -3-n - propyl nonane (B) 6, 7 - Dimethyl -2- n- propyl nonane
(C) 6,7- Dimethyl -7- ethyl decane (D) 4- Ethyl- 4, 5 - dimethyl decane

Correct Options:

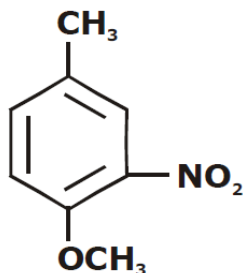
(D) (D)

Solution:

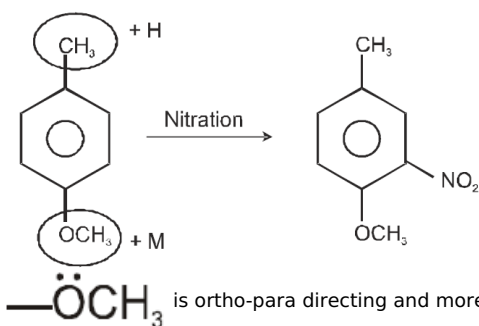
59 if p-methoxy toluene is nitrated, the major product is :

Correct Options:

(B)



Solution:



60 n-Propylbenzene can be obtained in quantitative yield by following method:
(i) By treating benzene with n-propyl chloride in presence of AlCl_3
(ii) By treating excess of benzene with n-propyl chloride in presence of AlCl_3
(iii) By treating benzene with allyl chloride in presence of AlCl_3 followed by reduction
(iv) By treating benzene with propanoyl chloride in presence of AlCl_3 followed by Clemmensen reduction

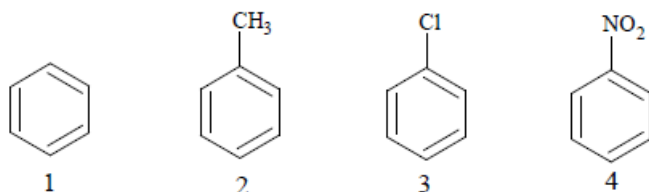
Correct Options:

(C) By (iii) and (iv)

Solution:

conceptual

61 Identify the correct order of reactivity in electrophilic substitution reactions of the following compounds:



Correct Options:

(C) $2 > 1 > 3 > 4$

Solution:

CONCEPTUAL

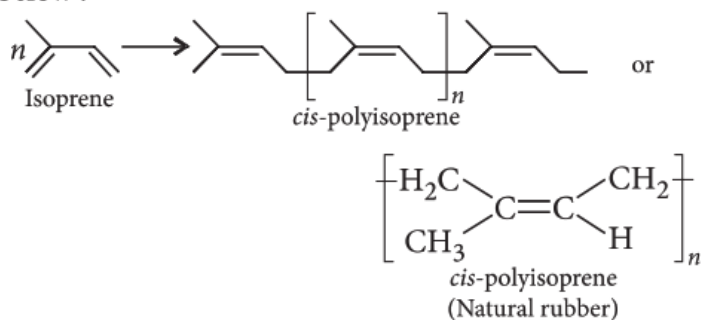
62 Which one of the following statements is not true?

Correct Options:

(D) Natural rubber has the *trans*-configuration at every double bond.

Solution:

(d) : Natural rubber is *cis*-1,4-polyisoprene and has only *cis*-configuration about the double bond as shown below :



whereas in Gutta-percha, only *trans*-configuration exists about the double bond.

63 The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

64 An alkane has C/H ratio (by mass) of 5.1428. Its molecular formula is

Correct Options:

(B) C_6H_{14}

Solution:

Ratio is $\frac{12 \times 6}{14 \times 1} = \frac{72}{14} = 5.1428$. This way the ratio has to be calculated for each case and

the correct choice is to be identified

65 Ozonolysis of *o*-xylene gives

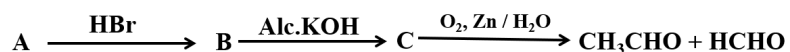
Correct Options:

(D) All the three above.

Solution:

-

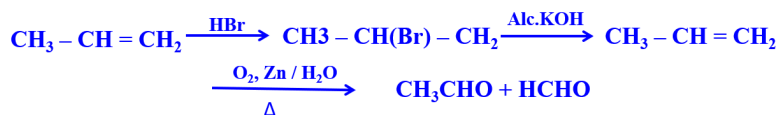
66 In the following sequence of reactions the compound A is



Correct Options:

(C) Propene

Solution:



67 The correct order of catenation is :

Correct Options:

(C) C > Si > Ge \approx Sn

Solution:

C > Si > Ge \approx Sn

68

What is the ratio of the number of neutrons present in potassium atom and magnesium atom with mass numbers 39 and 24 respectively?

Correct Options:

(B) 5 : 3

Solution:

5 : 3

69 The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

70

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

71

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp, 180°

Solution:

Sp, 180°

72 The reaction of propene with HOCl proceeds via the addition of

Correct Options:

(B) Cl⁺ in the first step

Solution:

CONCEPTUAL

73 The hybridization of the central carbon in CH₃C≡N and the bond angle CCN are

Correct Options:

(B) Sp, 180°

Solution:

Sp, 180°

74 Decreasing order of stability of O₂, O₂⁻, O₂⁺ and O₂²⁻ is:

Correct Options:

(D) O₂⁺ > O₂ > O₂⁻ > O₂²⁻

Solution:

O₂⁺ > O₂ > O₂⁻ > O₂²⁻

75

If $a_1, a_2, a_3, \dots, a_{2n+1}$ are in A.P., then $\frac{a_{2n+1} - a_1}{a_{2n+1} + a_1} + \frac{a_{2n} - a_2}{a_{2n} + a_2} + \dots + \frac{a_{n+2} - a_n}{a_{n+2} + a_n}$ is equal to

Correct Options:

(B) $\frac{n(n+1)}{2}$

Solution:

$\frac{n(n+1)}{2}$

76

If $b_i = 1 - a_i$, $na = \sum_{i=1}^n a_i$, $nb = \sum_{i=1}^n b_i$, then $\sum_{i=1}^n a_i b_i + \sum_{i=1}^n (a_i - a)^2 = 6$

Correct Options:

(B) $-nab$

Solution:

$(n+1)ab$

77

If $a_1, a_2, a_3, \dots, a_{2n+1}$ are in A.P., then $\frac{a_{2n+1} - a_1}{a_{2n+1} + a_1} + \frac{a_{2n} - a_2}{a_{2n} + a_2} + \dots + \frac{a_{n+2} - a_n}{a_{n+2} + a_n}$ is equal to

Correct Options:

(B) $\frac{n(n+1)}{2}$

Solution:

$$\frac{n(n+1)}{2}$$

78 The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

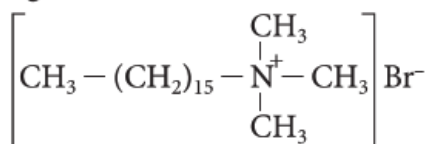
79 Which of the following is a cationic detergent?

Correct Options:

(C) Cetyltrimethyl ammonium bromide

Solution:

(c) : Cetyltrimethyl ammonium bromide is a cationic detergent.



80 The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

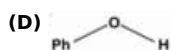
(B) Sp , 180°

Solution:

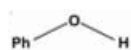
Sp , 180°

81 The compounds that is most difficult to protonate is

Correct Options:



Solution:



82 The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

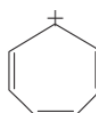
(B) Sp , 180°

Solution:

Sp , 180°

83 Pick out the wrong statement :

Correct Options:

(B)  is non-aromatic

Solution:

-

84 The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

85

If intermolecular forces in a solid, liquid and gas are represented by S, L and G respectively, then identify the correct relation among the three from the following.

Correct Options:

(C) $\text{S} > \text{L} > \text{G}$

Solution:

$\text{S} > \text{L} > \text{G}$

86

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

87

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

88 Which of the following is a cross-linked polymer?

Correct Options:

(D) Bakelite

Solution:

-

89

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

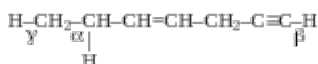
(B) Sp , 180°

Solution:

Sp , 180°

90

Consider the molecule



The order of bond energy is -

Correct Options:

(C) $\square > \square > \square$

Solution:

Greater stability of radical

- less bond energy

stability $\square < \square > \square$

91

If $a_1, a_2, a_3, \dots, a_{2n+1}$ are in A.P., then $\frac{a_{2n+1} - a_1}{a_{2n+1} + a_1} + \frac{a_{2n} - a_2}{a_{2n} + a_2} + \dots + \frac{a_{n+2} - a_n}{a_{n+2} + a_n}$ is equal to

Correct Options:

(B) $\frac{n(n+1)}{2}$

Solution:

$$\frac{n(n+1)}{2}$$

92

If $a_1, a_2, a_3, \dots, a_{2n+1}$ are in A.P., then $\frac{a_{2n+1} - a_1}{a_{2n+1} + a_1} + \frac{a_{2n} - a_2}{a_{2n} + a_2} + \dots + \frac{a_{n+2} - a_n}{a_{n+2} + a_n}$ is equal to

Correct Options:

(B) $\frac{n(n+1)}{2}$

Solution:

$$\frac{n(n+1)}{2}$$

93

If $a_1, a_2, a_3, \dots, a_{2n+1}$ are in A.P., then $\frac{a_{2n+1} - a_1}{a_{2n+1} + a_1} + \frac{a_{2n} - a_2}{a_{2n} + a_2} + \dots + \frac{a_{n+2} - a_n}{a_{n+2} + a_n}$ is equal to

Correct Options:

(B) $\frac{n(n+1)}{2}$

Solution:

$$\frac{n(n+1)}{2}$$

94

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

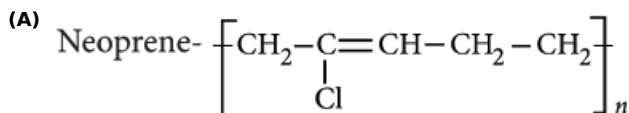
Sp , 180°

95

Structures of some common polymers are given.

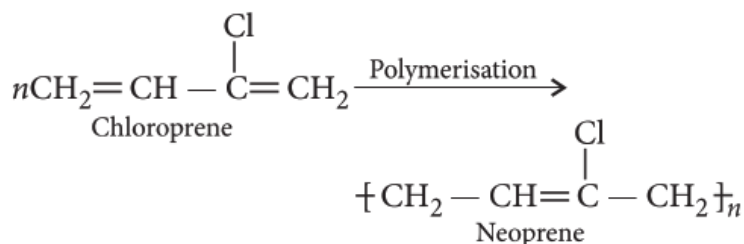
Which one is not correctly presented?

Correct Options:



Solution:

(a) : Neoprene is a polymer of chloroprene.



Rest of the polymers are correctly represented.

96

If $a_1, a_2, a_3, \dots, a_{2n+1}$ are in A.P., then $\frac{a_{2n+1} - a_1}{a_{2n+1} + a_1} + \frac{a_{2n} - a_2}{a_{2n} + a_2} + \dots + \frac{a_{n+2} - a_n}{a_{n+2} + a_n}$ is equal to

Correct Options:

(B) $\frac{n(n+1)}{2}$

Solution:

$$\frac{n(n+1)}{2}$$

97

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

98

Analyse the given statements and choose the correct option.

Statement 1: Colloidal solutions scatter light whereas true solutions do not.

Statement 2: The particles of the colloidal solutions move slower than the particles of the true solutions.

Correct Options:

(B)

Both *statement 1* and *statement 2* are **CORRECT**, but *statement 2* is **NOT THE CORRECT** explanation of the *statement 1*.

Solution:

Both *statement 1* and *statement 2* are **CORRECT**, but *statement 2* is **NOT THE CORRECT** explanation of the *statement 1*.

99

If $b_i = 1 - a_i$, $na = \sum_{i=1}^n a_i$, $nb = \sum_{i=1}^n b_i$, then $\sum_{i=1}^n a_i b_i + \sum_{i=1}^n (a_i - a)^2 = 6$

Correct Options:

(B) $-nab$

Solution:

$(n+1)ab$

100

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

101

$$\text{If } b_i = 1 - a_i, na = \sum_{i=1}^n a_i, nb = \sum_{i=1}^n b_i, \text{ then } \sum_{i=1}^n a_i b_i + \sum_{i=1}^n (a_i - a)^2 = 6$$

Correct Options:

(B) $-nab$

Solution:

$(n+1)ab$

102

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

103

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

104

Which of the following statements is NOT true?

Correct Options:

(D)

The mass of an electron is 1.06×10^{-19} g.

Solution:

The mass of an electron is 1.06×10^{-19} g.

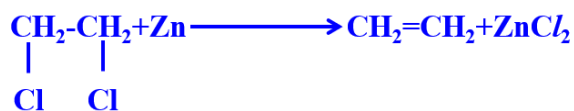
105

The structural formula of the compound which yields ethylene upon reaction with alcoholic zinc is

Correct Options:

(C) $\text{CH}_2\text{Cl} - \text{CH}_2\text{Cl}$

Solution:



106

If $a_1, a_2, a_3, \dots, a_{2n+1}$ are in A.P., then $\frac{a_{2n+1} - a_1}{a_{2n+1} + a_1} + \frac{a_{2n} - a_2}{a_{2n} + a_2} + \dots + \frac{a_{n+2} - a_n}{a_{n+2} + a_n}$ is equal to

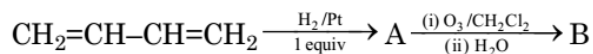
Correct Options:

(B) $\frac{n(n+1)}{2}$

Solution:

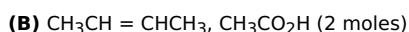
$$\frac{n(n+1)}{2}$$

107



A and B are

Correct Options:



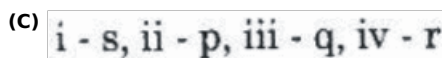
Solution:

108

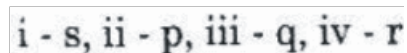
Match the entries of Column-I with those in Column-II.

	Column - I		Column - II
i.	Drying of wet clothes	p.	Sublimation
ii.	Decrease in the size of naphthalene balls	q.	Condensation
iii.	Formation of clouds	r.	Solidification
iv.	Formation of ice from water	s.	Evaporation

Correct Options:



Solution:



109

If $a_1, a_2, a_3, \dots, a_{2n+1}$ are in A.P., then $\frac{a_{2n+1} - a_1}{a_{2n+1} + a_1} + \frac{a_{2n} - a_2}{a_{2n} + a_2} + \dots + \frac{a_{n+2} - a_n}{a_{n+2} + a_n}$ is equal to

Correct Options:

(B) $\frac{n(n+1)}{2}$

Solution:

$$\frac{n(n+1)}{2}$$

110

. When glucose reacts with bromine water it forms

Correct Options:

(D) Gluconic acid

Solution:

Gluconic acid

111

If $a_1, a_2, a_3, \dots, a_{2n+1}$ are in A.P., then $\frac{a_{2n+1} - a_1}{a_{2n+1} + a_1} + \frac{a_{2n} - a_2}{a_{2n} + a_2} + \dots + \frac{a_{n+2} - a_n}{a_{n+2} + a_n}$ is equal to

Correct Options:

(B) $\frac{n(n+1)}{2}$

Solution:

$$\frac{n(n+1)}{2}$$

112

If $a_1, a_2, a_3, \dots, a_{2n+1}$ are in A.P., then $\frac{a_{2n+1} - a_1}{a_{2n+1} + a_1} + \frac{a_{2n} - a_2}{a_{2n} + a_2} + \dots + \frac{a_{n+2} - a_n}{a_{n+2} + a_n}$ is equal to

Correct Options:

(B) $\frac{n(n+1)}{2}$

Solution:

$$\frac{n(n+1)}{2}$$

113

Maximum deviation from ideal gas is expected from :

Correct Options:

(D) $\text{NH}_3(\text{g})$

Solution:

$\text{NH}_3(\text{g})$

114

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) $\text{Sp}, 180^\circ$

Solution:

$\text{Sp}, 180^\circ$

115

The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) $\text{Sp}, 180^\circ$

Solution:

$\text{Sp}, 180^\circ$

116 The Reagent & conditions to convert methyl iodide to methane

Correct Options:

(D) Mg in dry ether followed by boiling with water.

Solution:

Methyl iodide on reaction with Mg metal gives Grignard's reagent i.e. methyl magnesium iodide, which on further hydrolysis gives methane.

117 The peroxide effect involves

Correct Options:

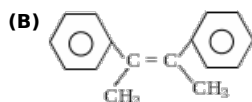
(B) Free radical mechanism

Solution:

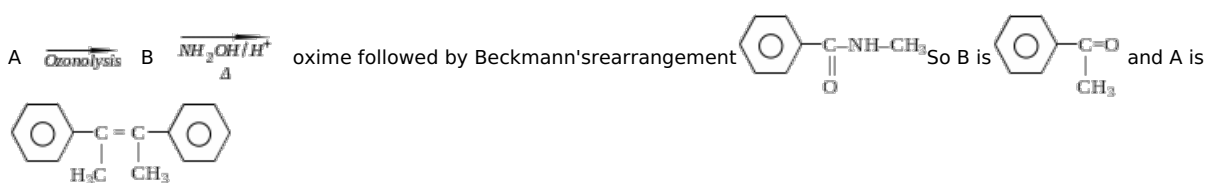
Conceptual

118 An alkene (A) $C_{16}H_{16}$ on ozonolysis gives only one product (B) (C_8H_8O). Compound (B) on reaction with NH_2OH/H_2SO_4 , gives N-methyl benzamide the compound 'A' is -

Correct Options:



Solution:



119 The hybridization of the central carbon in $CH_3C\equiv N$ and the bond angle CCN are

Correct Options:

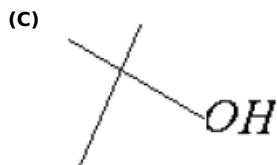
(B) sp , 180°

Solution:

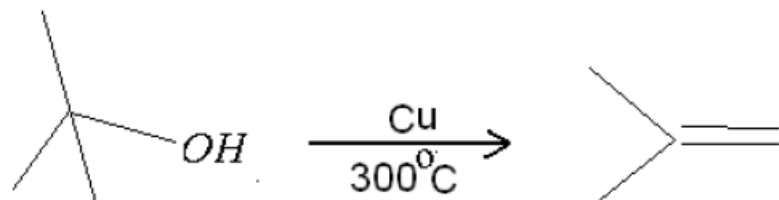
sp , 180°

120 The alcohol which gives alkene on reaction with $Cu/300^\circ C$, with M.F. 4 10 C H O is

Correct Options:



Solution:



121 Glucose cyanohydrin is obtained when

Correct Options:

(B) Glucose is reacted with HCN

Solution:

conceptual

122 The no. of geometrical isomers possible for the complex $[Pt(NH_3)(Py)(Cl)(Br)]$ is

Correct Options:

(C) 3

Solution:

CONCEPTUAL

123 In the presence of alumina catalyst, two alcohol molecules will undergo dehydration and form an ____.

Correct Options:

(B) ether

Solution:

ether

124 α - D glucose and β - D glucose are _____ of D-glucose?

Correct Options:

(D) Anomers

Solution:

α - D glucose and β - D glucose are anomers of D-glucose

125 Which one is not an example of Alien species?

Correct Options:

Solution:

Wheat

126 Q.70 Molybdenum (At wt. = 96 g mol⁻¹) crystallizes as bcc crystal. If density of crystal is 10.3 g/cm³, then radius of Mo atom is (use $N_A = 6 \times 10^{23}$) -
(1) 111 pm (2) 314 pm
(3) 135.96 pm (4) None of these

Correct Options:

(C) 3

Solution:

3

127 Which carbohydrate cannot be metabolized by human being?

Correct Options:

(B) Cellulose

Solution:

coneputal

128 अभिक्रिया, $aA + bB \rightarrow P$ के लिये, दर = $k[A]^a[B]^b$ है। यदि A की सान्द्रता दुगुनी होती है, तो दर दुगुनी हो जाती है। यदि B की सान्द्रता दुगुनी होती है तो दर चार गुना हो जाती है। सही संबंध है

Correct Options:

(A) $-2 \frac{d[A]}{dt} = -\frac{d[B]}{dt}$

Solution:

$$R = k[A]^a [B]^b \quad a = 1, b = 2 \quad A + 2B \longrightarrow P$$

$$\therefore -\frac{d[A]}{dt} = -\frac{1}{2} \frac{d[B]}{dt}$$

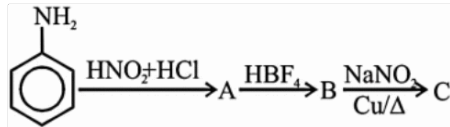
129 The reactivity of the halogens towards methane decreases in the order

Correct Options:

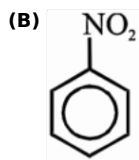
(A) $F_2 > Cl_2 > Br_2 > I_2$

Solution:

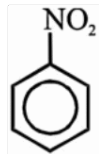
130 Find out the final product in given reaction :-



Correct Options:



Solution:



131 Diethyl ether is a metamer of :

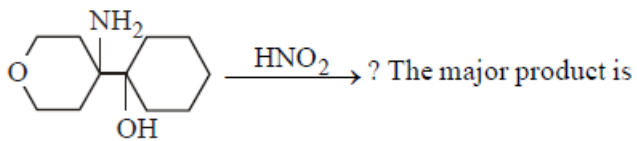
Correct Options:

(C) 2-Methoxy propane

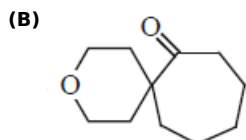
Solution:

C

132



Correct Options:



Solution:

conceptual

133 Glycosidic linkage is present in -

Correct Options:

(D) All

Solution:

Glycosidic linkage is present in sucrose, maltose & lactose.

134 Which of the following chemical system is non aromatic?

Correct Options:

(D)



Solution:

The molecules which do not satisfy Huckel rule or $(4n + 2)\pi$ -electron rule are said to be non-aromatic. The compound (d) has total 4π e⁻. It does not follow $(4n + 2)\pi$ rule. So, it is non-aromatic compound.

135 The hybridization of the central carbon in $\text{CH}_3\text{C}\equiv\text{N}$ and the bond angle CCN are

Correct Options:

(B) Sp , 180°

Solution:

Sp , 180°

136 Which can give aldol condensation :

Correct Options:

(B) $\text{CH}_3\text{-CH}_2\text{-CO-CH}_3$

Solution:

$\text{CH}_3\text{-CH}_2\text{-CO-CH}_3$

137 In an eco system if the net primary productivity is $2000 \text{ Kcal/m}^2 \cdot \text{year}$ then what will be the amount of energy stored in biomass at third trophic level?

Correct Options:

Solution:

$20 \text{ Kcal/m}^2 \cdot \text{year}$

138 Ostwald's dilution law is not applicable for strong electrolytes because -

Correct Options:

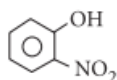
(A) Strong electrolytes are completely ionised

Solution:

139 Which one of the following compounds is most acidic?

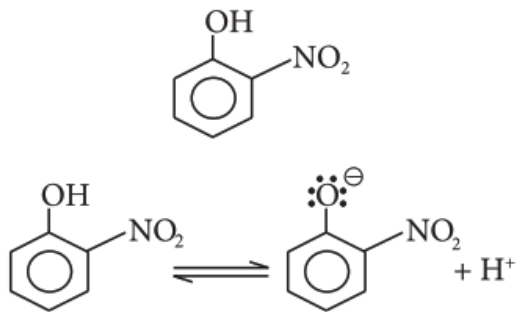
Correct Options:

(C)

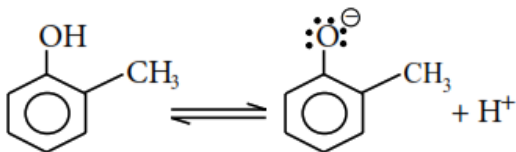


Solution:

Phenols are much more acidic than alcohols, due to the stabilisation of phenoxide ion by resonance.

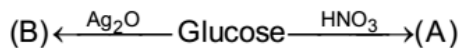


—NO₂ is the electron withdrawing group and helps in stabilizing the negative charge on the oxygen hence equilibrium shifts in forward direction and more H⁺ ions remove easily. Hence, it is most acidic.



—CH₃ is the electron donating group. Hence, electron density increases on the oxygen and destabilizes the product. Thus, equilibrium shifts in backward direction.

140



(A) and (B) respectively are

Correct Options:

(A)

Saccharic acid and Gluconic acid

Solution:

conceptual

141

Order of dissociation of 0.1 N CH₃COOH is - (Dissociation constant = 1 × 10⁻⁵)

Correct Options:

(D) 10⁻²

Solution:

142

The hybridization of the central carbon in CH₃C≡N and the bond angle CCN are

Correct Options:

(B) Sp, 180°

Solution:

Sp, 180°

143 STATEMENT - 1

The major products formed by heating C₆H₅CH₂OCH₃ and HI are C₆H₅CH₂I and CH₃OH.

STATEMENT - 2

Benzyl cation is more stable than methyl cation

Correct Options:

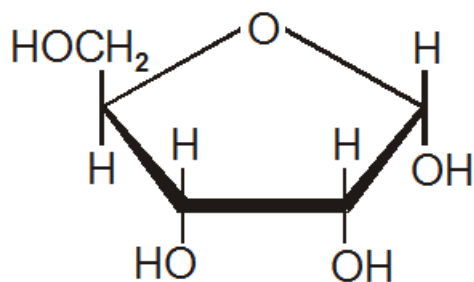
(A)
Statement - 1 is True, Statement
- 2 is True; Statement - 2 is a
correct explanation for Statement
- 1.

Solution:

CONCEPTUAL

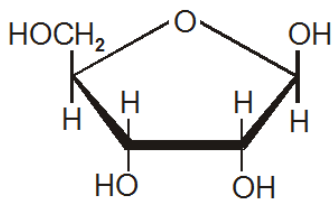
144

Which of the following represents the anomer of the compound shown?

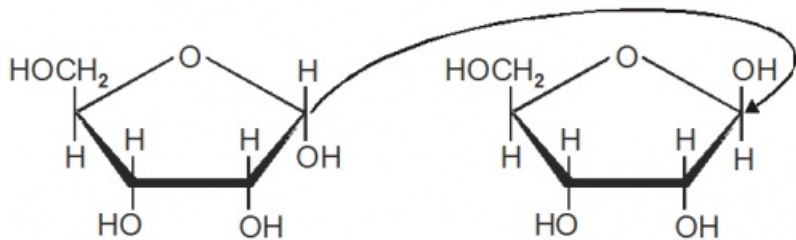


Correct Options:

(B)



Solution:



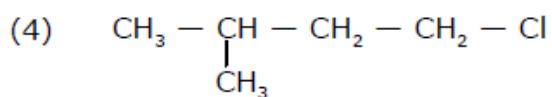
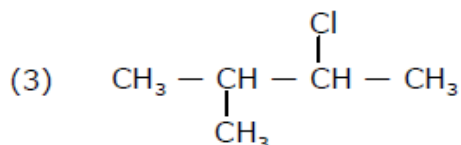
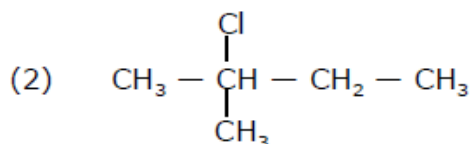
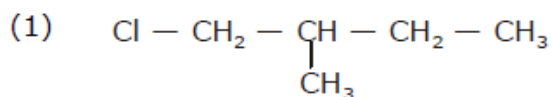
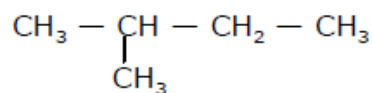
Change at anomeric carbon only.

145 How many chiral compounds are possible on
monochlorination of 2-methyl butane?

Correct Options:

(A) 4

Solution:



Total 4 product

146 The acids present in acid rain are :

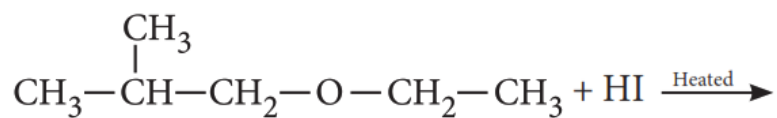
Correct Options:

(C) Both 1 and 2

Solution:

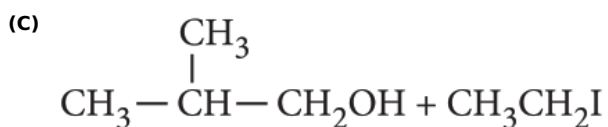
Both 1 and 2

147 In the reaction :



which of the following compounds will be formed?

Correct Options:



Solution:

The alkyl iodide produced depends on the nature of the alkyl groups. If one group is Me and the other a primary or secondary alkyl group, it is methyl iodide which is produced. This can be explained on the assumption that the mechanism is S_N2 , and because of the steric effect of the larger group, I^- attacks the smaller methyl group.

When the substrate is a methyl *t*-alkyl ether, the products are *t*-RI and MeOH. This can be explained by S_N1 mechanism, the carbonium ion produced being the *t*-alkyl since tertiary carbonium ion is more stable than a primary or secondary carbonium ion.

148

- Q.74 Which is not true for beryllium -
- (1) Beryllium oxide is amphoteric
 - (2) It forms unusual carbide Be_2C
 - (3) $Be(OH)_2$ is basic
 - (4) $BeCl_2$ in solid state has tetrahedral shape

Correct Options:

(C) 3

Solution:

3

149 The dehydration of 1 - butanol gives

Correct Options:

(B)

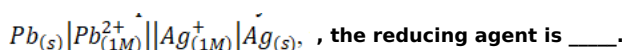
2 - butene as the main product

Solution:

due to rearrangement

150

In the cell represented by



Correct Options:

(A) Pb

Solution:

Pb

151

The non-essential amino acid among the following is ____ .

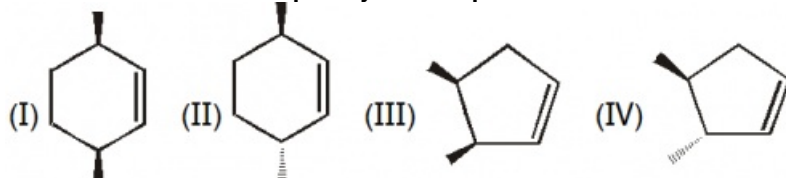
Correct Options:

(B) alanine

Solution:

alanine

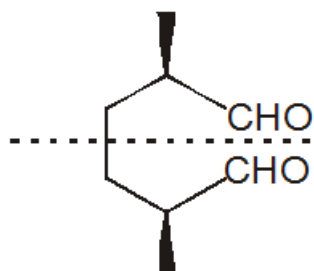
152 Which of the reactant is optically inactive product formed after reductive ozonolysis.



Correct Options:

(A) 1

Solution:

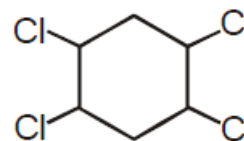


(Inactive)

POS : ✓

153

Find the number of diastereomers possible for 1, 2, 4, 5, tetrachloro cyclohexane



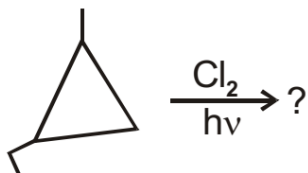
Correct Options:

(A) 5

Solution:

- (1) Total S.I. = 7
- (2) Enantiomer pair = 2
- (3) Number of fraction = 5 (On fractional distillation)
- (4) Number of diastereomers = number of fraction 5

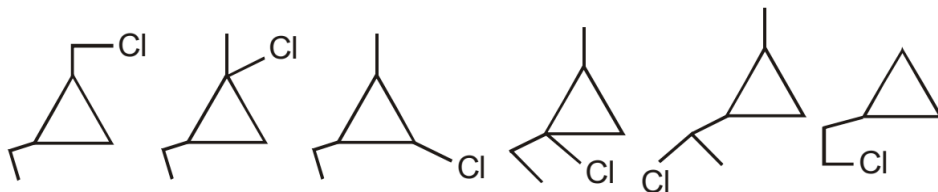
154 Total number of different types of monochlorinated products obtained by the following compound (excluding stereoisomers) are :-



Correct Options:

(B) 6

Solution:



155 $A \xrightarrow{O^- Br} CHBr_3$ Here A is nothing but

Correct Options:

(A) Isopropyl alcohol

Solution:

156

Which of the following when passed through conc. H₂SO₄ followed by hydrolysis with boiling water would give tert-butyl alcohol?

Correct Options:

(B) Isobutylene

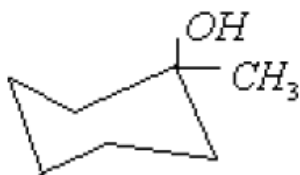
Solution:

Isobutylene

157 Which one of the following reacts with HBr at the fastest rate ?

Correct Options:

(B)



Solution:

Is a tertiary alcohol and hence undergoes dehydration at the fastest rate.

158 The compressibility factor of a gas is greater than unity at 1 atm and 273 K. Therefore :-

Correct Options:

(A) $V_m > 22.4$ L

Solution:

$V_m > 22.4$ L

159 β -Pleated structure of proteins is-

Correct Options:

(B) Secondary structure

Solution:

β - pleated sheet is secondary structure of protein

Therefore option (B) is correct.

160 Glucose and fructose are

Correct Options:

(C) functional isomers

Solution:

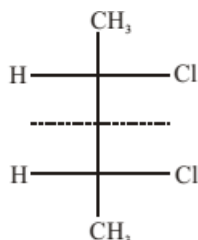
functional isomer

161 The meso form of 2,3-dichlorobutane is optically inactive due to

Correct Options:

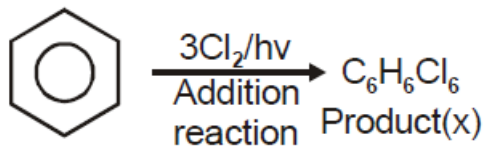
(C) Internal compensation

Solution:



Due to plane of symmetry internal compensation makes the compound optically inactive

162 Find the number of meso & optically active isomers possible for product(x) respectively

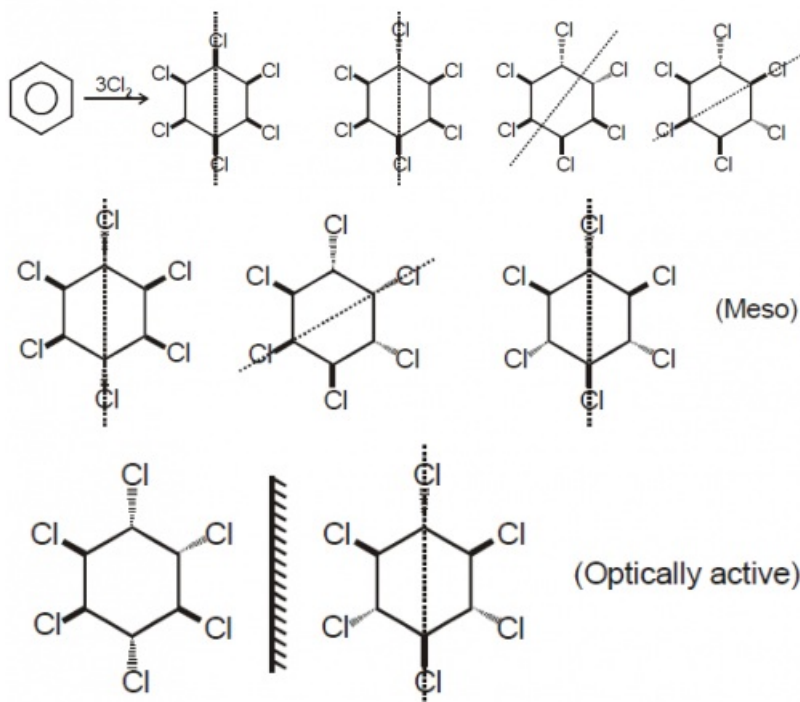


Correct Options:

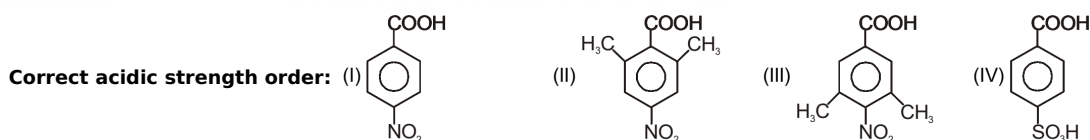
(D) 7,2

Solution:

So, 7 meso and 2 enantiomer



163



Correct Options:

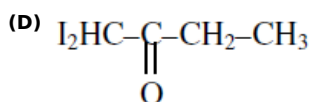
(D) IV > II > I > III

Solution:

On the basis of stability of conjugate base due to electronic effects.

164 Which of the following will give a yellow precipitate of iodoform on heating with I₂ and NaOH ?

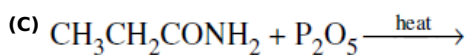
Correct Options:



Solution:

165 Which of the following reactions will not give an isocyanide

Correct Options:



Solution:

166 HBr reacts with $\text{CH}_2 = \text{CH} - \text{OCH}_3$ under anhydrous conditions at room temperature to give -

Correct Options:

(D) CH_3CHO and CH_3Br

Solution:

bromide ion attacks on methyl group

167 In which of the following species 180° bond angle is not present

Correct Options:

(B) CO_2

Solution:

CO_2

168 A drug that is antipyretic as well as analgesic is

Correct Options:

(C) paracetamol

Solution:

-

169 The two cyclic hemiacetal forms of glucose differ only in the configuration of the hydroxyl group at C-1 the carbon is called :-

Correct Options:

(A) Anomeric

Solution:

Anomeric

170 Ethyl acetate is not a functional group isomer of

Correct Options:

(C) Butane-2,3-diol

Solution:

C

171 The minimum number of carbon atoms present in an organic compound to be able to show position isomerism is

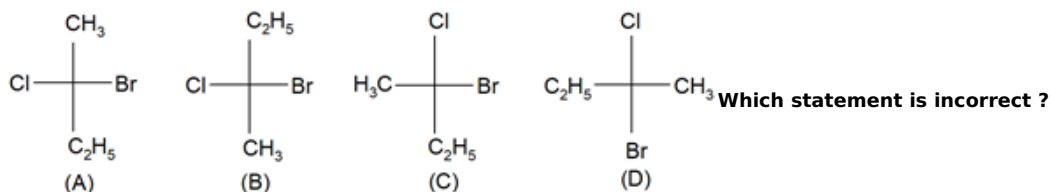
Correct Options:

(C) 2

Solution:

C

172 2..Consider the following structure (A), (B), (C), (D)



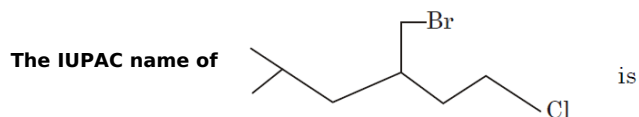
Correct Options:

(D) B & D are enantiomers

Solution:

4, b and d enantiomers

173



Correct Options:

(D) 3-bromomethyl-1-chloro-5-methylhexane

Solution:

-

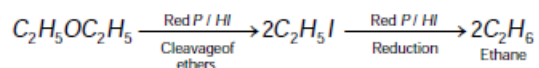
174 In the following reaction



Correct Options:

(A) Ethane

Solution:



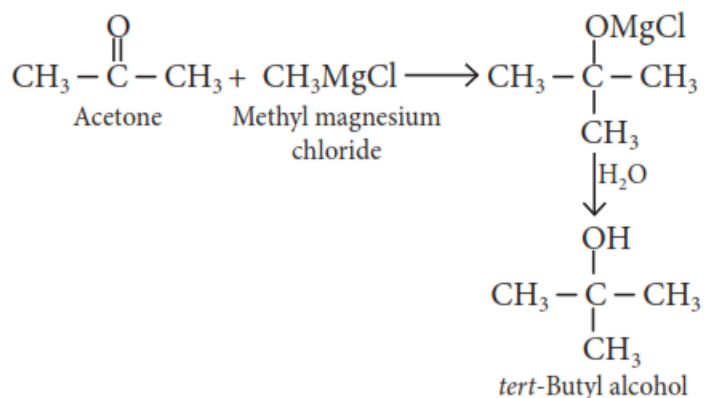
175

Reaction between acetone and methyl magnesium chloride followed by hydrolysis

Correct Options:

(C) tert-butyl alcohol

Solution:



176 Phenol is less acidic than

Correct Options:

(C) o-nitrophenol

Solution:

CONCEPTUAL

177 Coconut oil upon alkaline hydrolysis gives

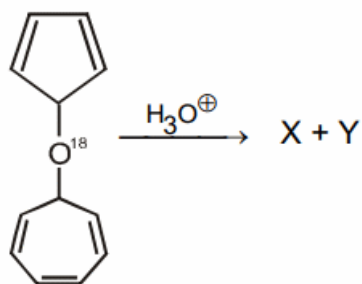
Correct Options:

(C) Glycerol

Solution:

Coconut oil + Alkali → Soap + Glycerol
It is a saponification reaction.

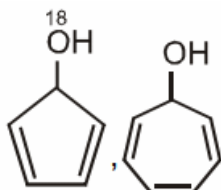
178



The products X and Y are

Correct Options:

(B)



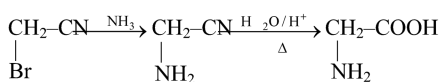
Solution:

179 $X + 3NH_3 \longrightarrow Y \xrightarrow{H^+/H_2O} H_2N-CH_2-COOH$, compound X is-

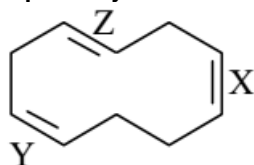
Correct Options:

(C) Both A & B

Solution:



180 Types of geometrical isomerism shown at point X, Y and Z of the following compound respectively are :



Correct Options:

(A) cis cis trans

Solution:

Ans. cis ; cis ; trans

181 Which of the following statements is false -

- (A) Enantiomers have same m.p. and b.p.
- (B) A mixture containing equal amounts of enantiomers is optically inactive
- (C) Enantiomers have identical chemical properties
- (D) A mixture containing two enantiomers can be separated into fractions containing pure enantiomers

Correct Options:

(C) (C)

Solution:

182

The IUPAC name of the compound having the formula $\text{CH}\equiv\text{C}-\text{CH}=\text{CH}_2$ is

Correct Options:

(C) 1-butene-3-yne

Solution:

183 The process of the isolation of a metal by dissolving the ore in a suitable chemical reagent followed by precipitation of the metal by a more electropositive metal is called :

Correct Options:

(A) hydrometallurgy

Solution:

CONCPETUAL

184

Which of the following alcohols is difficult to oxidise?

Correct Options:

(D) 2-Methylpropan-2-ol

Solution:

2-Methylpropan-2-ol

185 The reaction of elemental sulphur with Grignard reagent followed by acidification leads to the formation of

Correct Options:

(A) mercaptan

Solution:

conceptual

186 Which of the following can exist as enantiomers -

(A) CH_3COOH

(B) $\text{CH}_3\text{CH}(\text{OH})\text{COOH}$

(C) $\text{CH}_3\text{CH}_2\text{COOH}$

(D) $\text{HOOCCH}_2\text{COOH}$

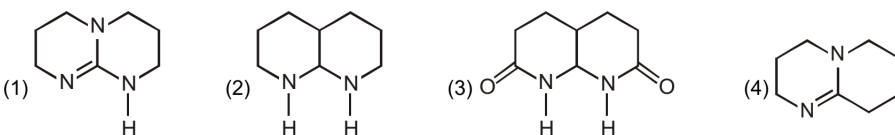
Correct Options:

(B) (B)

Solution:

187

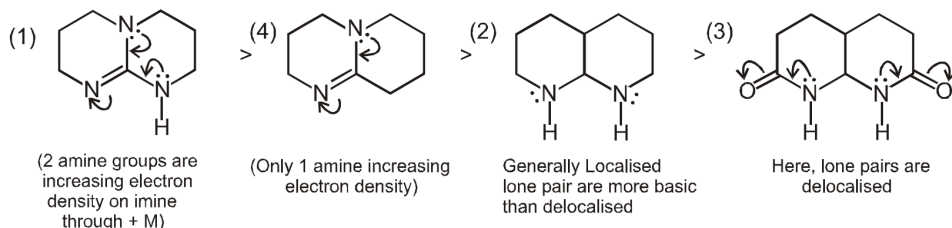
Compare the Basic strength :



Correct Options:

(A) 1 > 4 > 2 > 3

Solution:



188 In vulcanization of rubber

Correct Options:

(B) Sulphur cross-links are introduced

Solution:

CONCEPTUAL

189 How many isomeric pentynes (C_5H_{10}) are possible -

(A) 3

(B) 4

(C) 5

(D) 6

Correct Options:

(A) (A)

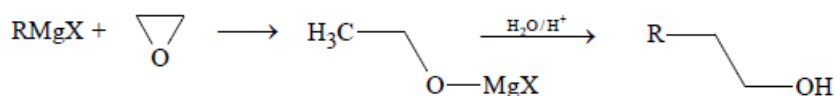
Solution:

190 Followed by hydrolysis will lead to produce **Reaction of  with $RMgX$**

Correct Options:

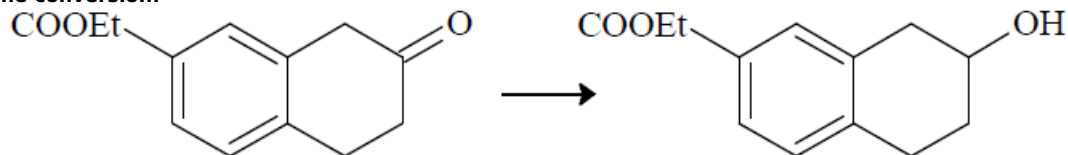
(D) RCH_2CH_2OH

Solution:



∴ (d)

191 The conversion:



Can be effected

by

Correct Options:

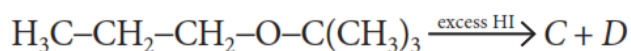
(C) NaBH₄ reduction

Solution:

CONCEPTUAL

192

The major products *C* and *D* formed in the following reactions respectively are

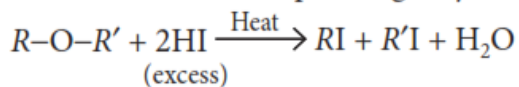


Correct Options:

(A) $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{I}$ and $\text{I}-\text{C}(\text{CH}_3)_3$

Solution:

Ethers are readily attacked by HI to give an alkyl halide and alcohol. But when heated with excess of HI, the product alcohol first formed reacts further with HI to form the corresponding alkyl iodide.



193 Alpha-glucose & beta-glucose are called-

Correct Options:

(B) Anomers

Solution:

α -D(+) & β -D(+) glucose are called anomies

194

Which of the following acids is a vitamin ?

Correct Options:

(B) Ascorbic acid

Solution:

Ascorbic acid

195 Which of the following belong to the class of natural polymers?

Correct Options:

(D) All of the above

Solution:

conceptual

196

Source of energy in deep sea water is

Correct Options:

Solution:

Fossils

197

The most appropriate measure of population density is?

Correct Options:

(A) Number

Solution:

Number

198

Which of the following alkane cannot be made in good yield by Wurtz reaction?

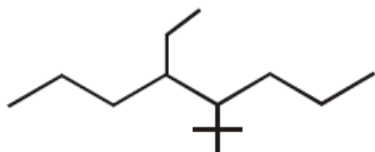
Correct Options:

(C) *n*-Heptane

Solution:

(c) : Wurtz reaction is used for the preparation of higher alkanes containing even number of C-atoms. Thus this reaction cannot be used for the preparation of *n*-heptane.

199



Correct IUPAC name of the following compound is -

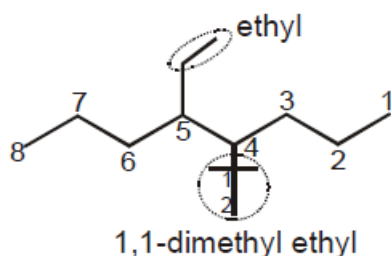
Correct Options:

(A)

4-(1,1-dimethylethyl)-5-ethyloctane

Solution:

(A)



Since, while naming of compounds containing complex locants is done then di, tri, tetra etc are considered in alphabetical sequence.
∴ IUPAC name : 4-(1,1-dimethyl ethyl)-5-ethyl octane

200

The most stable carbocation, among the following is

Correct Options:



Solution: