



Wings

Organic Chemistry_Revision_Set II

DATE: 08-01-2022

TIME: 200mins

1 Choose the correct relation that can be possible for an elementary reaction :

Correct Options:

(D) Rate = $K[P][Q]$

Solution:

Rate = $K[P][Q]$

2 Maltose is changed into monosaccharide (Glucose), in presence of :-

Correct Options:

(A) Maltase

Solution:

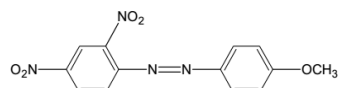
Maltase

3 2, 4 – dinitroaniline $\xrightarrow[\text{ii) Anisole}]{\text{i) NaNO}_2 / \text{HCl, } 0^\circ \text{C}}$ Z

What is compound Z?

Correct Options:

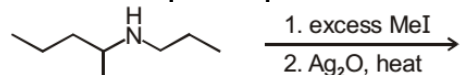
(C)



Solution:

CONCEPTUAL

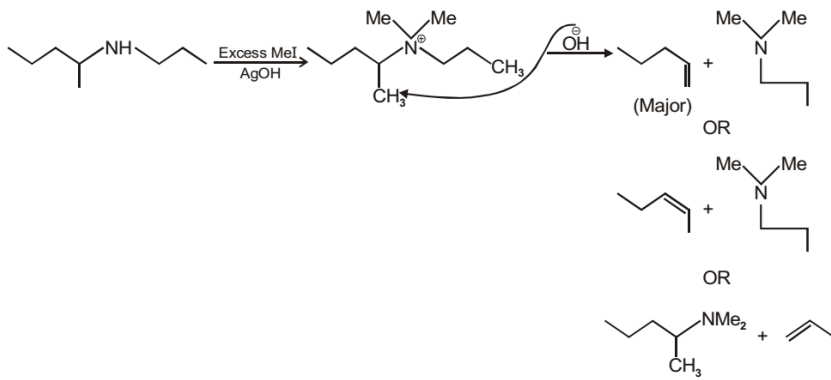
4 Which is not a possible product of the following reaction?



Correct Options:

(D) All the above products are possible

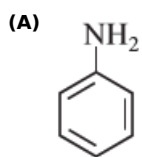
Solution:



5

Which of the following amines will give the carbylamine test?

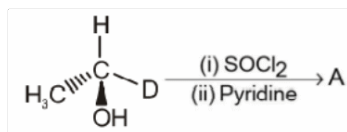
Correct Options:



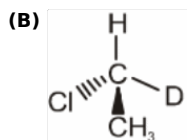
Solution:

6

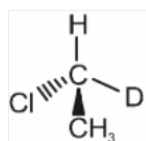
Identify the correct product :



Correct Options:



Solution:



7

Which of the following is a crystalline solid?

Correct Options:

(D) Sugar

Solution:

Sugar

8

Hybridisation of B and N in inorganic benzene respectively are :

Correct Options:

(C) sp^2 , sp^2

Solution:

sp², sp²

9 Which of the following reaction is not used for preparation of 1° amines?

Correct Options:

(D) Reduction of isocyanides

Solution:

isocyanides on reduction gives secondary amines not primary amines.

10 Which of the following reagent is used to determine the presence of carbonyl group in glucose?

(I) Hydrogen cyanide

(II) Hydroxylamine

(III) Hydrogen iodide

Correct Options:

(D) Both (I) and (II)

Solution:

Both (I) and (II)

11 Which of the following reactions is appropriate for converting acetamide to methanamine?

Correct Options:

(A) Hoffmann hypobromamide reaction

Solution:

12 Nitration of aniline in strong acidic medium also gives m-nitroaniline because

Correct Options:

(D) in acidic (strong) medium aniline is present as anilinium ion

Solution:

13 Name the process used for preparation of HNO₃

Correct Options:

(C) Ostwald's process

Solution:

Ostwald's process

14 The solvent that favours S_N2 mechanism :

Correct Options:

(D) DMF

Solution:

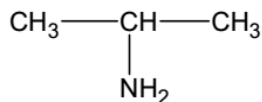
DMF

15 $(\text{CH}_3)_2\text{CO} \xrightarrow[\text{H}^+]{\text{NH}_2\text{OH}} \text{A} \xrightarrow{\text{H}_2/\text{Ni}} \text{B}$

The compound B is

Correct Options:

(A)

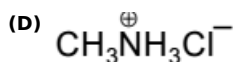


Solution:

CONCEPTUAL

16 Which compound will liberate CO_2 from aqueous solution of NaHCO_3 ?

Correct Options:



Solution:

only option D will liberate CO_2

17 Which of the following is an amorphous solid?

Correct Options:

(A) Tar

Solution:

Tar

18 Which of the following reagents will be able to distinguish between 1-butyne and 2-butyne?

Correct Options:

(A) NaNH_2

Solution:

NaNH_2

19 Which one of the following statements regarding photochemical smog is not correct?

Correct Options:

(D) Photochemical smog does not cause irritation in eyes and throat.

Solution:

Photochemical smog does not cause irritation in eyes and throat.

20 In aqueous phase, most basic among the following is ____.

Correct Options:

(D) dimethylamine

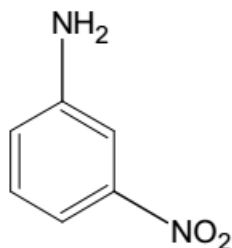
Solution:

dimethylamine

21 The major product (70% to 80%) of the reaction between *m*-dinitrobenzene with NH_4HS is

Correct Options:

(C)



Solution:

Selective reduction.
Hence (C) is correct.

22 Which of the following is biodegradable polymer :-

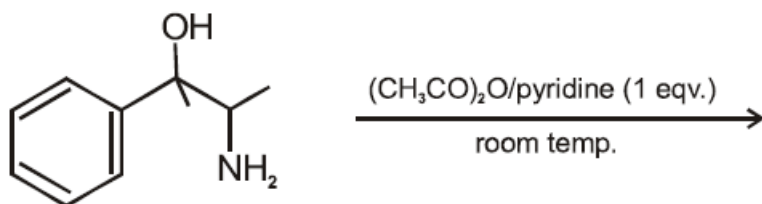
Correct Options:

(D) All of these

Solution:

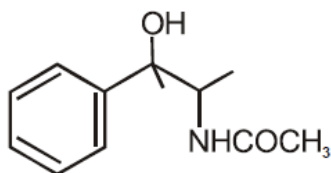
All of these

23 The major product obtained in the following reaction is :



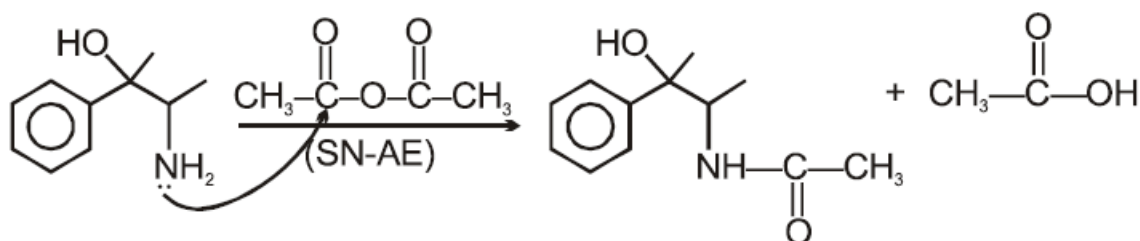
Correct Options:

(B)



Solution:

$\text{—}\ddot{\text{N}}\text{H}_2$ is more nucleophilic than $\text{—}\ddot{\text{O}}\text{H}$ (more EN)



24 Which is correct about real gas :

Correct Options:

(C)
Real gas follows ideal gas equation at very low pressure and high temperature.

Solution:

Real gas follows ideal gas equation at very low pressure and high temperature.

25 **Aniline cannot be prepared by**

Correct Options:

(D) Mendius method

Solution:

mendius method is the method to prepare amines.

26 **Glucose is an example of**

Correct Options:

(A) aldohexose

Solution:

aldohexose

27 **Aniline** $\xrightarrow{\text{Br}_2/\text{aq}}$ **X** $\xrightarrow{\text{NaNO}_2/\text{HCl}}$ **Y** $\xrightarrow[\text{(2) heat}]{\text{(1) HBF}_4}$ **Z** **In this sequence, Z is**

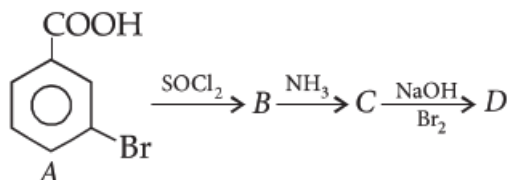
Correct Options:

(D)
2, 4, 6-tribromo-1-fluoro benzene

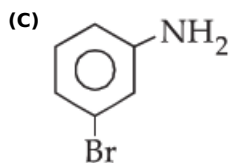
Solution:

aniline will give electrophilic substitution reaction which gives 2,4,6-tribromo aniline which further gives diazotisation reaction .

28 **In a set of reactions *m*-bromobenzoic acid gave a product *D*. Identify the product *D*.**



Correct Options:



Solution:

29 When ZnS and PbS minerals are present together, then NaCN is added to separate them in the froth floatation process as a depressant, because

Correct Options:

(A)
ZnS forms soluble complex $\text{Na}_2[\text{Zn}(\text{CN})_4]$

Solution:

.....

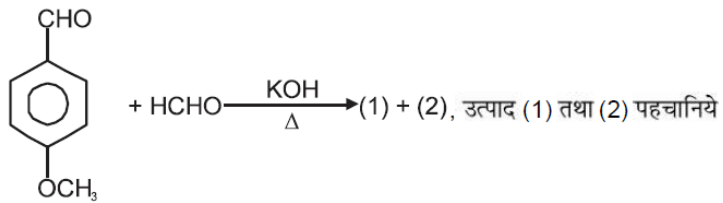
30 The compressibility factor for an ideal gas is :

Correct Options:

(B) 1

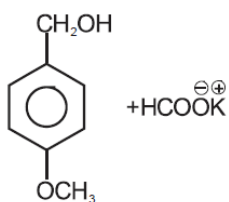
Solution:

1
31

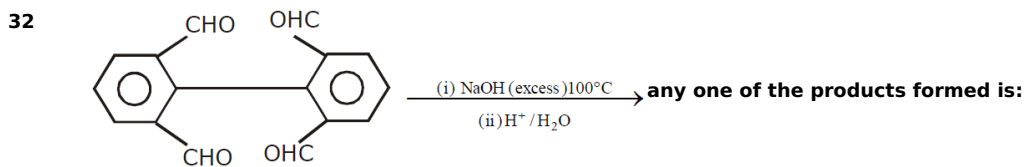
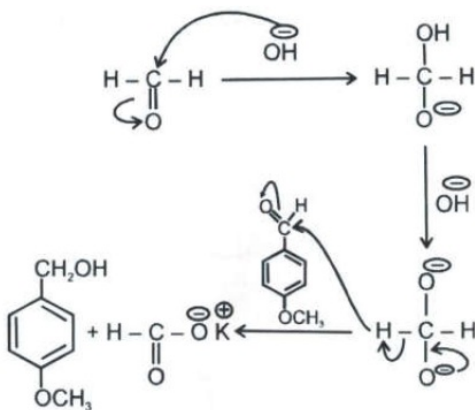


Correct Options:

(A)

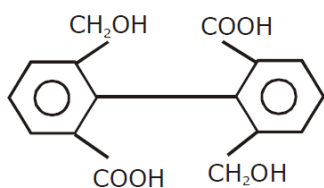


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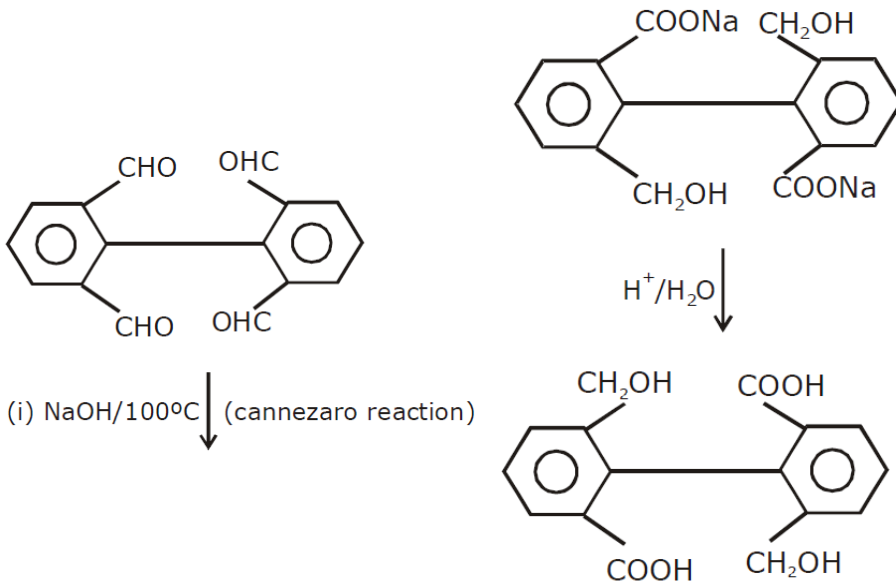


Correct Options:

(C)

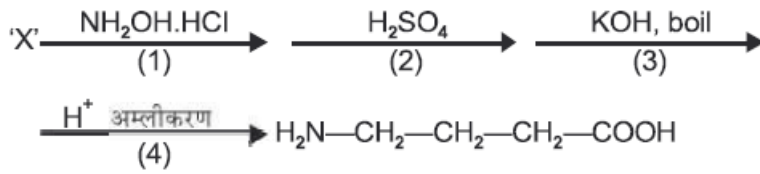


Solution:



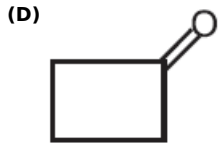
33

निम्नलिखित अभिक्रिया पर विचार कीजिये

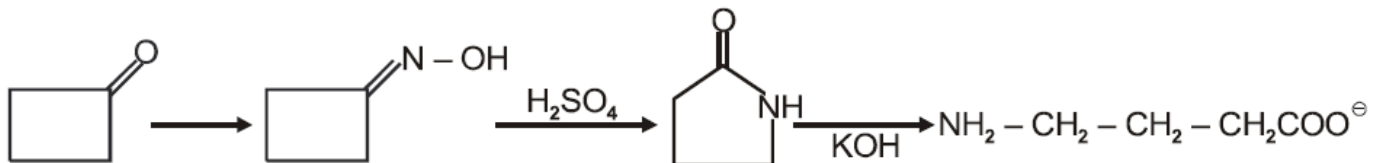


'X' हो सकता है

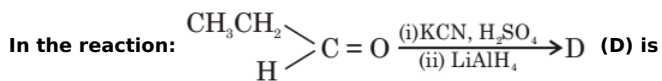
Correct Options:



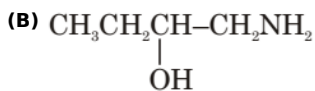
Solution:



34



Correct Options:



Solution:

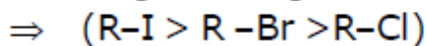
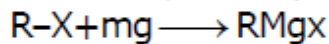
35 The order of reactivity of alkyl halide in the reaction $R-X + Mg \rightarrow RMgX$ is

Correct Options:

(A) $RI > RBr > RCl$

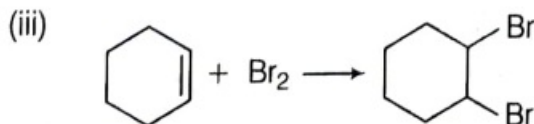
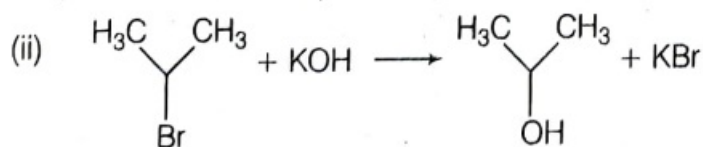
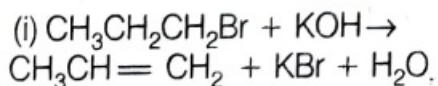
Solution:

Reactivity of Alkyl halide for



36

For the following reactions,



Which of the following statements is correct?

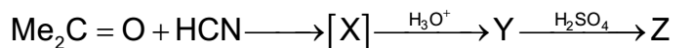
Correct Options:

(A)

(i) is elimination reaction, (ii) is substitution and (iii) is addition reaction

Solution:

37 Identify the final product Z in the following sequence of reaction:



Correct Options:

(B) $CH_2=C(CH_3)COOH$

Solution:

conceptual

38 Which of the following functional derivative of carboxylic acid is least soluble in water?

Correct Options:

(C) amide

Solution:

The correct match between item 'I' and item 'II' is

Item 'I' (Compound)	Item 'II' (Reagent)
(A) Lysine	(P) 1-naphthol
(B) Furfural	(Q) Ninhydrin
(C) Benzyl alcohol	(R) KMnO_4
(D) Styrene	(S) Ceric ammonium nitrate

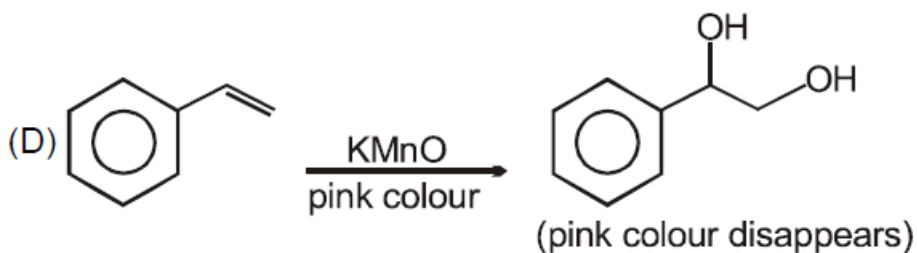
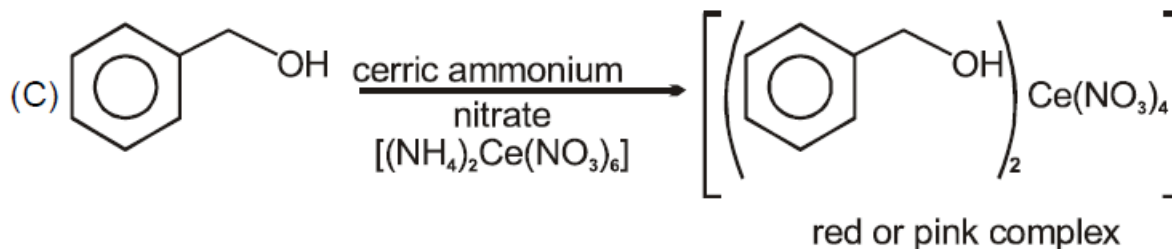
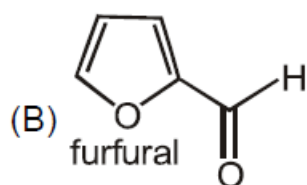
Correct Options:

(B)

A \rightarrow Q, B \rightarrow P, C \rightarrow S, D \rightarrow R

Solution:

(A) Lysine is an amino acid (proteins) it will give ninhydrine test



40 Oxalic acid when reduced with zinc and dil. H_2SO_4 gives

Correct Options:

(D) Glycol

Solution:

41 A dihalo alkane on hydrolysis produces a ketone with formula $\text{C}_3\text{H}_6\text{O}$. The dihalo alkane is

Correct Options:

(A) 2, 2 - dichloropropane

Solution:

CONCEPTUAL

42 The convert a keto group into methylene group, the following reagent can be used :

Correct Options:

(B) Zn-Hg + Conc. HCl

Solution:

-

43 Under Wolf-Kishner reduction conditions, the conversion which may be brought about is

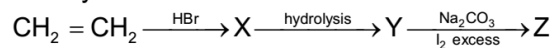
Correct Options:

(D)
benzophenone into
diphenylmethane

Solution:

WKR

44 Identify Z in the series



Correct Options:

(C) CHI_3

Solution:

conceptual

45 Heavy water is a compound of -

Correct Options:

(C) Oxygen and heavier isotope of hydrogen

Solution:

.

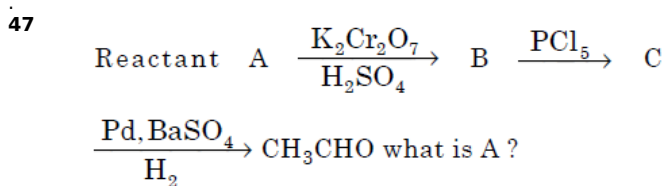
46 The oxidation number of carbon in CH_2O is -

Correct Options:

(C) 0

Solution:

.



Correct Options:

(C) CH_3CHO

Solution:

-

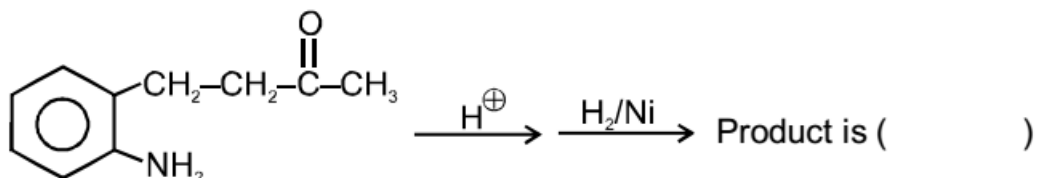
48 Which of the following compounds does not react with NaHSO_3 ?

Correct Options:

(B) $\text{C}_6\text{H}_5\text{COCH}_3$

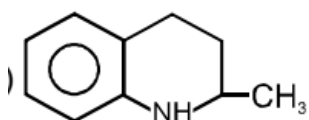
Solution:

49

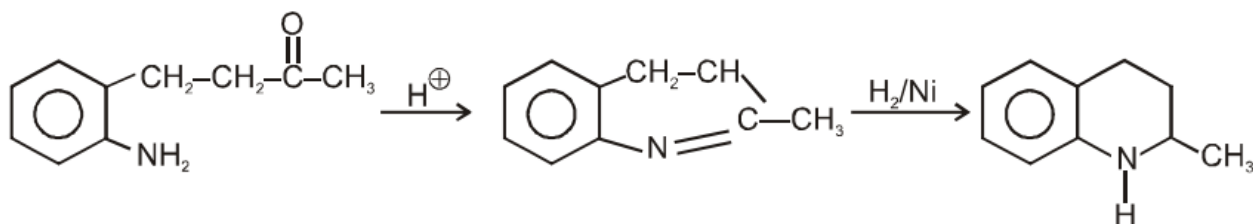


Correct Options:

(B)



Solution:



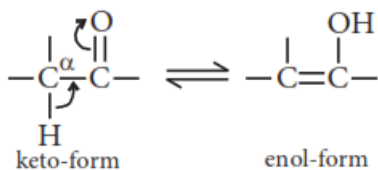
50 The correct statement regarding a carbonyl compound with a hydrogen atom on its alpha-carbon, is

Correct Options:

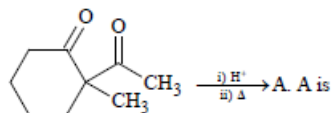
(B) a carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as keto-enol tautomerism

Solution:

Keto-enol tautomerism :

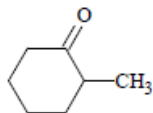


51



Correct Options:

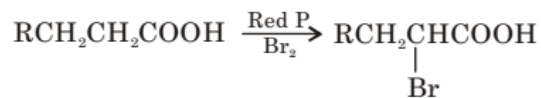
(B)



Solution:

conceptual

52 The reaction



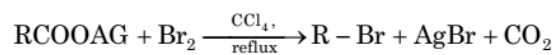
is called

Correct Options:

(B) Hell Volhard Zelinsky reaction

Solution:

53 The reaction



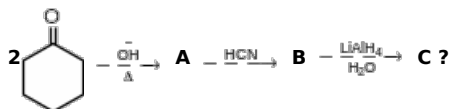
is called

Correct Options:

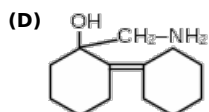
(A) Hunsdiecker reaction

Solution:

54



Correct Options:



Solution:

NA

55

Producer gas is a mixture of -

Correct Options:

(A) CO and N₂

Solution:

56 **Schiff's reagent is used for the differentiation between:**

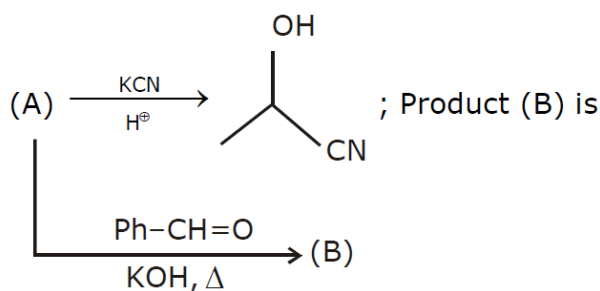
Correct Options:

(B) CH₃COCH₃ and CH₃CHO

Solution:

Schiff's reagent is [P rosaniline + HCl + SO₂] which is used for different b/w Aldehyde or Ketone.

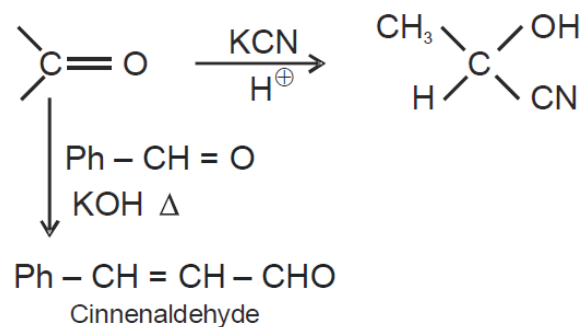
57



Correct Options:

(B) Ph - CH = CH - CH = O

Solution:



58

The correct order of increasing C-O bond length of CO, CO₃⁻² and CO₂ is -

Correct Options:

(D) CO < CO₂ < CO₃⁻²

Solution:

59 An organic compound 'A' has the molecular formula C₃H₆O. It undergoes iodoform test. When saturated with HCl it gives 'B' of molecular formula C₉H₁₄O, 'A' & 'B' respectively are

Correct Options:

(C) propanone & 2, 6 - dimethyl - 2, 5 - heptadien - 4 - one

Solution:

Since the compound A has the molecular formula C₃H₆O & undergoes iodoform test, it should be CH₃COCH₃. Further reaction of B with HCl gives C₉H₁₄O, this should be trimer of acetone, i.e. It should be phorone.

60 Which of the following is the most reactive isomer?

Correct Options:

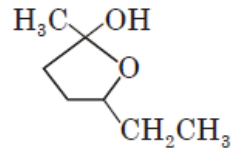


Solution:

(a) : Aldehydes are more reactive than ketones.

61

The compound shown below is the cyclic hemiacetal of



Correct Options:

(C) 5-hydroxy-2-heptanone

Solution:

62 Which will give a yellow precipitate with iodine & alkali?

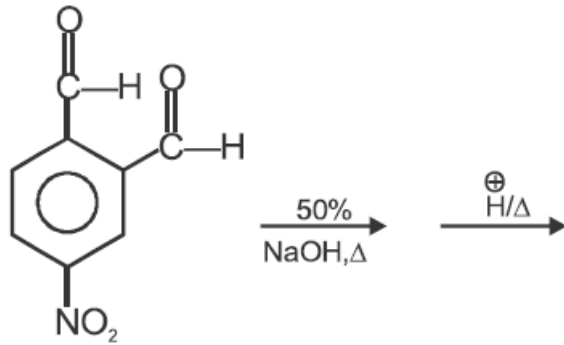
Correct Options:

(A) 2-hydroxypropan

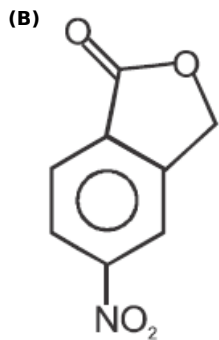
Solution:

CONCEPTUAL

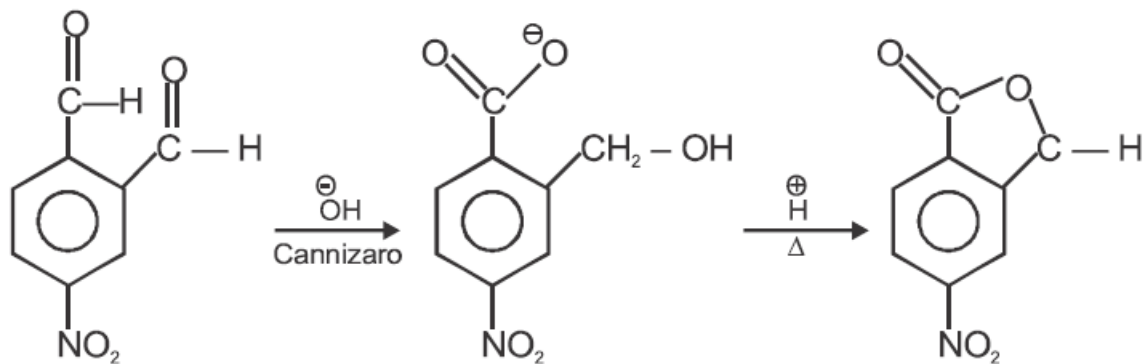
63



Correct Options:



Solution:



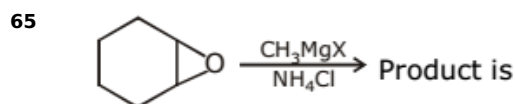
64 The product obtained by reaction of PhCHO & MeCHO are

Correct Options:

(D) None of these

Solution:

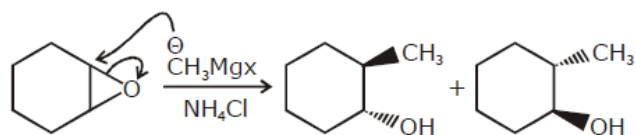
ALDOL, COUNT THE NO. OF CARBON



Correct Options:

(A) Enantiomer

Solution:



66 The most probable structural formula for the compound whose empirical formula is C_3H_6O & which can react with Benedict reagent is

Correct Options:

(B) CH_3CH_2CHO

Solution:

CONCEPTUAL

67 The no. of S-O-S bonds in S_3O_9 & no. of P-O-P bond in $H_3P_3O_9$ respectively :-

Correct Options:

(D) 3, 3

Solution:

3, 3

68 Among the following which one is most basic-

Correct Options:

(C) $CH_3CH_2NH_2$

Solution:

$CH_3CH_2NH_2$

69. The alkyl halide that can be made by free radical halogenation of alkanes are:
(a) RCl and RBr but not RF and RI (b) RF, RCl and RBr but not RI
(c) RF, RCl, RBr and RI (d) RF, RBr and RI but not RCl

Correct Options:

(A) 1

Solution:

1

- 70 Which one of the following compounds shows the presence of intramolecular hydrogen bond?

Correct Options:

(C) Cellulose

Solution:

Cellulose

- 71 Which of the following oxide is amphoteric in nature?

Correct Options:

(A) SnO₂

Solution:

SnO₂

- 72 Which one of the following is least reactive in a nucleophilic substitution reaction?

Correct Options:

(D) $CH_2=CHCl$

Solution:

- 73 In calcium fluoride, having the fluorite structure, the coordination numbers for calcium ion (Ca²⁺) and fluoride ion (F⁻) are

Correct Options:

(A) 8 and 4

Solution:

8 and 4

- 74 Chloropicrin is formed when HNO₃ reacts with

Correct Options:

(B) CHCl₃

Solution:

- 75 Identify the incorrect reaction product :-

Correct Options:

(C) $Zn + \text{Very dilute } HNO_3 \rightarrow Zn(NO_3)_2 + N_2O$

Solution:

$Zn + \text{Very dilute } HNO_3 \rightarrow Zn(NO_3)_2 + N_2O$

76 In which of the following orders the ionic radii is correctly represented?

Correct Options:

(D) None of these

Solution:

None of these

77 The typical reaction of carbonyl group is suppressed the most in

Correct Options:

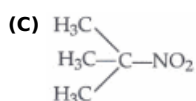
(B) CH_3CONH_2

Solution:

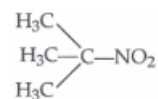
CONCEPTUAL

78 Which of the following nitro compounds does not react with nitrous acid?

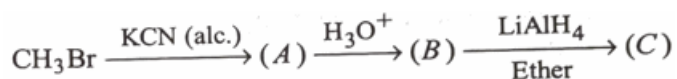
Correct Options:



Solution:



79 The end production of the following sequence is :



Correct Options:

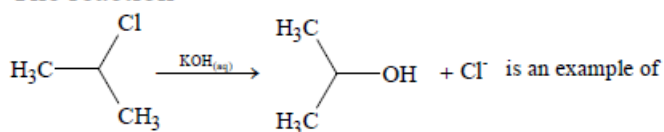
(B) $\text{CH}_3\text{CH}_2\text{OH}$

Solution:

$\text{CH}_3\text{CH}_2\text{OH}$

80

The reaction



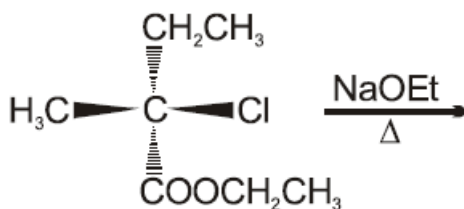
Correct Options:

(D) Nucleophilic substitution

Solution:

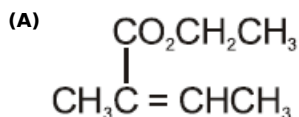
CONCEPTUAL

81

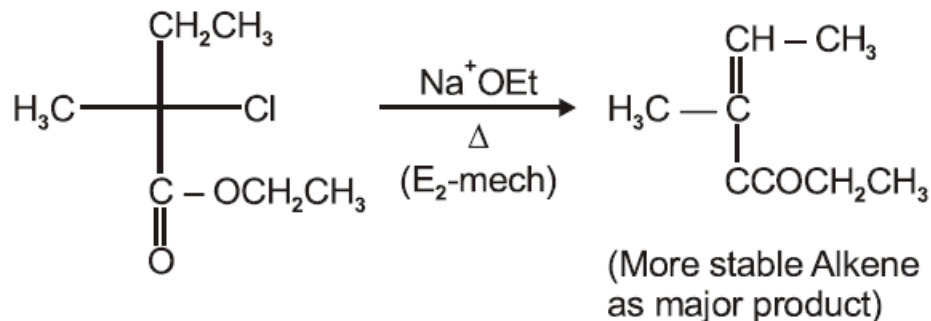


The major product of the following reaction is :

Correct Options:



Solution:



82 Which of the following gives white ppt with ammonical silver nitrate most readily.



Correct Options:

(C) III

Solution:

CONCEPTUAL

83 To differentiate between pentan-2-one and pentan-3-one a test is carried out. Which of the following is the correct answer?

Correct Options:

(B) Pentan-2-One will give iodoform test.

Solution:

(b) : Pentan-2-one will give positive iodoform test while pentan-3-one will not give this test.



CHI_3 + other produces
(Iodoform)

84 67. Which one of the following is employed as a Tranquilizer drug?

- (a) Promethazine (b) Valium (c) Naproxen (d) Mifepristone.

Correct Options:

(B) 2

Solution:

2

85

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

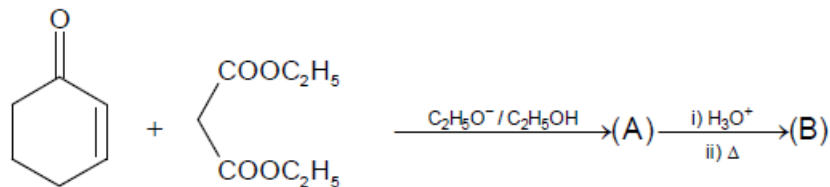
Correct Options:

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

Solution:

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

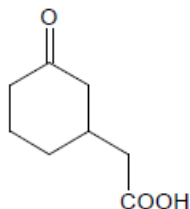
86



The compound B is

Correct Options:

(A)



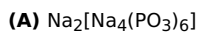
Solution:

CONCEPTUAL

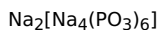
87

Calgon used as a water softener, is :

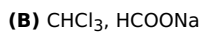
Correct Options:



Solution:

88 In the reaction, $\text{CCl}_3\text{CHO} + \text{NaOH} \rightarrow \text{X} + \text{Y}$. Then X and Y are

Correct Options:



Solution:

89



in IUPAC called :-

Correct Options:



Solution:

90 Molecular formula $C_4H_8O_2$ represents :-

Correct Options:

(D) An acid and an ester also

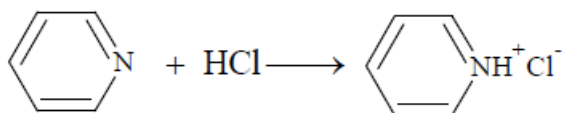
Solution:

91 **STATEMENT - 1**
When butan-2-ol is treated with $SOCl_2$ in presence of pyridine, inversion takes place.
STATEMENT - 2
Pyridine is a weak base.

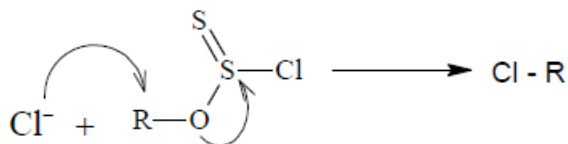
Correct Options:

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

Solution:



Cl^- is free to attack from back side to alkyl group in alkyl chlorosulphite.



92 In which of the following reactions, aldehydes & ketones are distinguished

Correct Options:

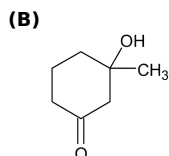
(D)
reactions with silver nitrate mixed with ammonia

Solution:

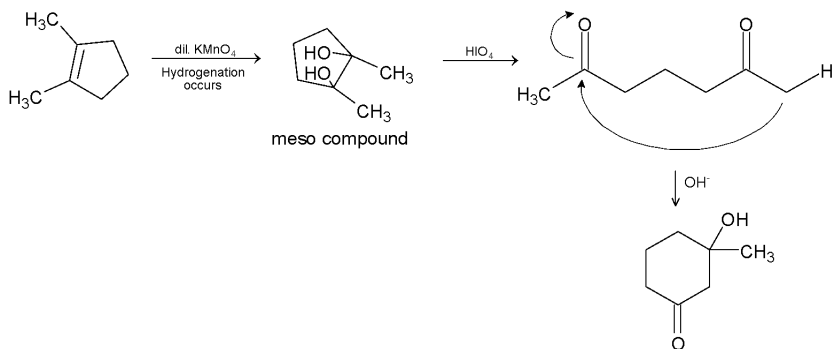
CONCEPTUAL

93 Identify the final product (Z) in the following sequence of reactions.

Correct Options:



Solution:



94 'Cis-1, 4-polyisoprene' is

Correct Options:

(C) Elastic (rubber)

Solution:

Natural rubber is the only addition polymer of nature and is known as Cis - 1,4 - polyisoprene.

95 Chlorex which is a good solvent for aromatic impurities is:

Correct Options:

(B) dichlorodiethyl ether

Solution:

dichlorodiethyl ether

96 Colloids can be prepared by :

Correct Options:

(C) Peptisation

Solution:

Peptisation

97 The correct order regarding the electronegativity of hybrid orbitals of C is :

Correct Options:

(B) $sp > sp^2 > sp^3$

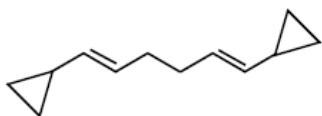
Solution:

$sp > sp^2 > sp^3$

98 Identify the compound (Z), of molecular formula $\text{C}_{12}\text{H}_{18}$ which gives only two products of molecular formula $\text{C}_4\text{H}_6\text{O}$ and $\text{C}_4\text{H}_6\text{O}_2$ on ozonolysis and both the products are oxidised to $\text{C}_4\text{H}_6\text{O}_2$ and $\text{C}_4\text{H}_6\text{O}_4$ with H_2O_2 . The product $\text{C}_4\text{H}_6\text{O}_4$ on heating gives anhydride.

Correct Options:

(A)



Solution:

CONCEPTUAL

99 Which of the following compounds would be hydrolysed most easily ?

Correct Options:

(D) $\text{CH}_2 = \text{CH} - \text{CH}_2\text{Br}$.

Solution:

Allylic halides undergo substitution very easily.

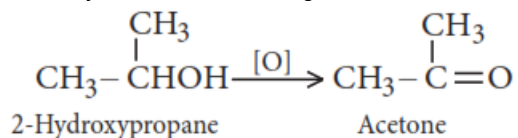
100 Which one of the following can be oxidised to the corresponding carbonyl compound?

Correct Options:

(A) 2-Hydroxypropane

Solution:

Secondary alcohol on oxidation gives a ketone containing the same number of carbon atoms.



101 Which one is the characteristic feature of a free radical :

Correct Options:

(B) presence of unpaired electron

Solution:

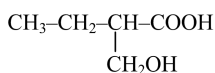
presence of unpaired electron

102 Which optically active compound on reduction with LiAlH_4 will give optically inactive compound ?

Correct Options:

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

Solution:



103 Two electrons occupying the same orbital are distinguished by:

Correct Options:

(B) spin quantum number

Solution:

spin quantum number

104 Which of the following oxidation states is common for all lanthanoids?

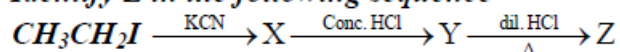
Correct Options:

(B) +3

Solution:

+3

105 Identify Z in the following sequence



Correct Options:

(D) $\text{CH}_3\text{CH}_2\text{COOH}$.

Solution:

X = $\text{CH}_3\text{CH}_2\text{CN}$, Y = $\text{CH}_3\text{CH}_2\text{CONH}_2$, Z = $\text{CH}_3\text{CH}_2\text{COOH}$.

106 Which one of the following organo halogen compounds when heated with alcoholic potassium hydroxide does not undergo dehydrohalogenation reaction?

Correct Options:

(B) neopentyl chloride

Solution:

107 How many Π and σ bond are present in ethylene

Correct Options:

(A) 5 σ , 1 Π

Solution:

108 The ketone that does not form a cyanohydrin easily is

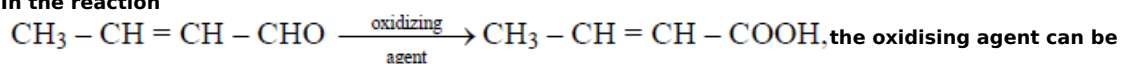
Correct Options:

(C) $C_6H_5COC_6H_5$

Solution:

CONCEPTUAL

109 In the reaction



Correct Options:

(D) all of the above

Solution:

ALL MILD AND STRONG OXIDISER

110 Nylon 6,6 is a strong crystalline fibre due to the presence of intermolecular forces which are :

Correct Options:

(A) H-bond

Solution:

nylon 6,6 is a strong crystalline fibre due to higher level of hydrogen bonding

111 Of the following which one is classified as polyester polymer?

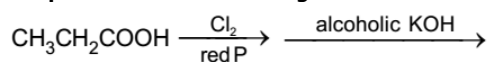
Correct Options:

(A) Terylene

Solution:

Terylene (Dacron) is a polyester polymer because it is made by monomer units ethylene glycol and terephthalic acid.

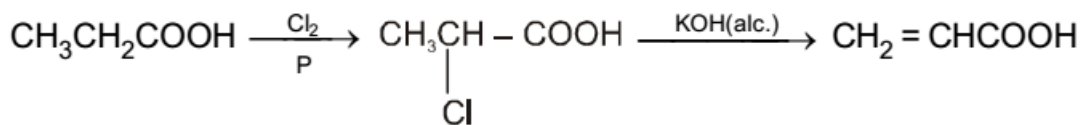
112 End product of the following reaction is :



Correct Options:

(C) $CH_2 = CHCOOH$

Solution:



113 Which of the following compounds is not an aliphatic acid ?

Correct Options:

(D) p-nitro benzoic acid

Solution:

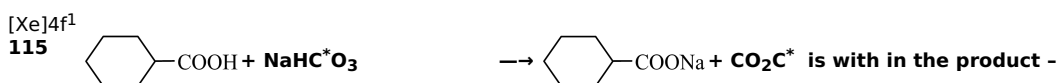
conceptual

114 The atomic number of cerium (Ce) is 58. The CORRECT electronic configuration of Ce^{3+} ion is ____.

Correct Options:

(A) $[\text{Xe}]4f^1$

Solution:

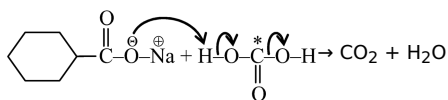


Correct Options:

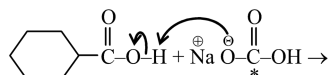
(A) CO_2

Solution:

Sod. Bicarbonate

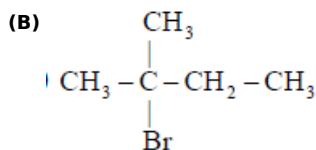


Therefore option (A) is correct.



116 $\text{C}_5\text{H}_{11}\text{Br}$ (A) when treated with alcoholic KOH gives alkene (B) while with aqueous KOH gives alcohol (C). (C) when heated with copper gives (B). The structure of (A) is

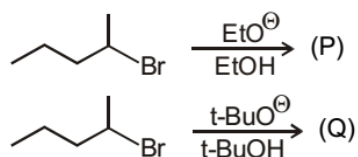
Correct Options:



Solution:

CONCEPTUAL

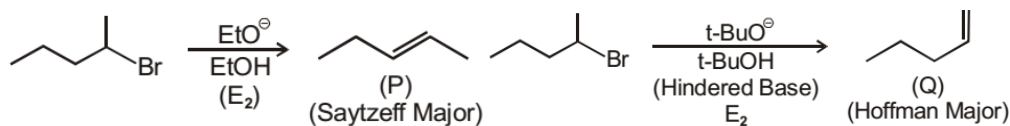
117 Predict the relationship between major products (P) and (Q) ?



Correct Options:

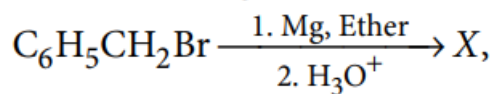
(A) Positional isomers

Solution:



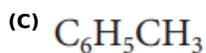
118

In the following reaction,

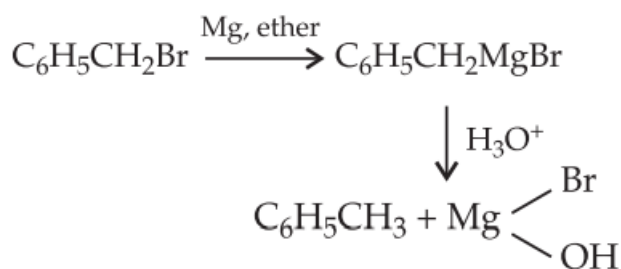


the product 'X' is

Correct Options:



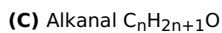
Solution:



119

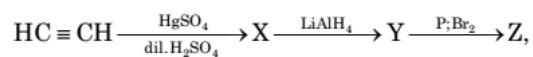
Which of the following homologous series has incorrect general formula :-

Correct Options:



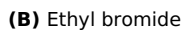
Solution:

120 In the reaction



Z is

Correct Options:



Solution:

121 Which one of the following is a bacteriostatic drug ?

Correct Options:



Solution:

122

Which substance is not greenish in colour?

Correct Options:

(D) $\text{Fe}(\text{OH})_3$

Solution:

123

66. Presence of nitro group in a benzene ring:

- (a) renders the ring basic
- (b) deactivates the ring towards nucleophilic substitution
- (c) deactivates the ring towards electrophilic substitution
- (d) activates the ring towards electrophilic substitution

Correct Options:

(C) 3

Solution:

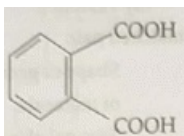
3

124

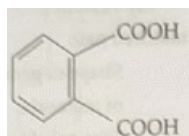
Which of the following acid will form an (a) Anhydride on heating and (b) Acid amide on strong heating with ammonia?

Correct Options:

(A)



Solution:



125 Formalin is a

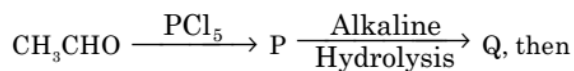
Correct Options:

(A) 40% aqueous solution of formaldehyde

Solution:

-

126



the compound Q is

Correct Options:

(A) CH_3CHO

Solution:

-

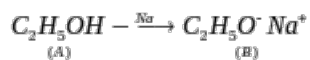
127

The compound A on treatment with Na gives B, and with PCl_5 gives C. B and C react together to give diethyl ether. A, B and C are in the order

Correct Options:

(D) $\text{C}_2\text{H}_5\text{OH}, \text{C}_2\text{H}_5\text{ONa}, \text{C}_2\text{H}_5\text{Cl}$

Solution:



128 Optically active compounds among the following are,

1. 1-phenyl ethanol
2. 2-phenyl propan-1-ol
3. 2-phenyl propan-2-ol
4. 2-methyl propan-2-ol

Correct Options:

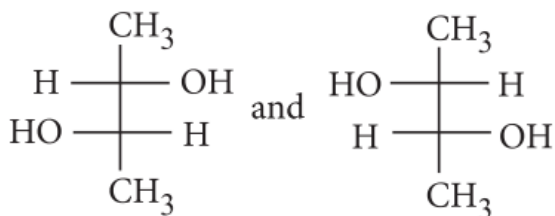
(B) 1 and 2

Solution:

129 Which of the following pairs of compounds are enantiomers?

Correct Options:

(A)



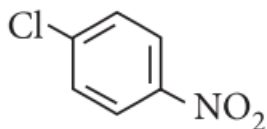
Solution:

These two are non-superimposable mirror images of each other, so they are enantiomers.

130 Which of the following compounds undergoes nucleophilic substitution reaction most easily?

Correct Options:

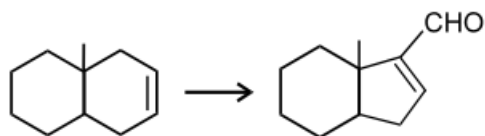
(A)



Solution:

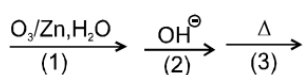
: Electron withdrawing groups like $-NO_2$ facilitates nucleophilic substitution reaction in chlorobenzene.

131

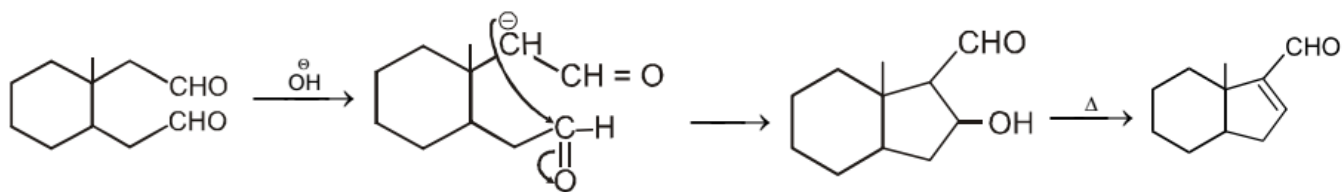


Correct Options:

(A)



Solution:



132 Plaster of paris is -

Correct Options:

(C) $(\text{CaSO}_4)_2 \cdot \text{H}_2\text{O}$

Solution:

133 Aqueous solution of which of the following compounds is the best conductor of electric current?

Correct Options:

(A) Hydrochloric acid, HCl

Solution:

Hydrochloric acid, HCl

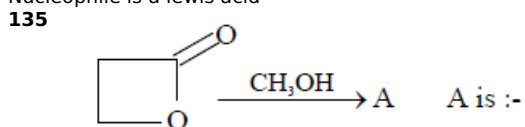
134 Which of the following statement is not correct for a nucleophile?

Correct Options:

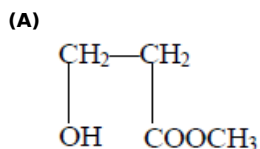
(A) Nucleophile is a lewis acid

Solution:

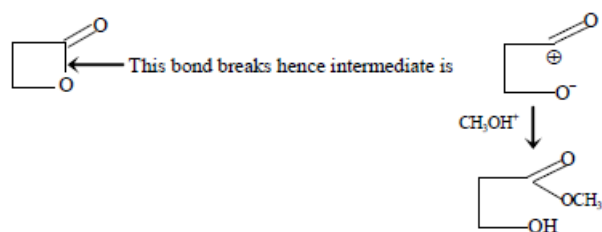
Nucleophile is a lewis acid



Correct Options:



Solution:



∴ (a)

136 Benzoic acid gives benzene on being heated with X and phenol gives benzene on being heated with Y. Therefore X and Y respectively are

Correct Options:

(D) sodalime and Zn dust

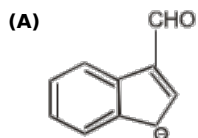
Solution:

CONCEPTUAL

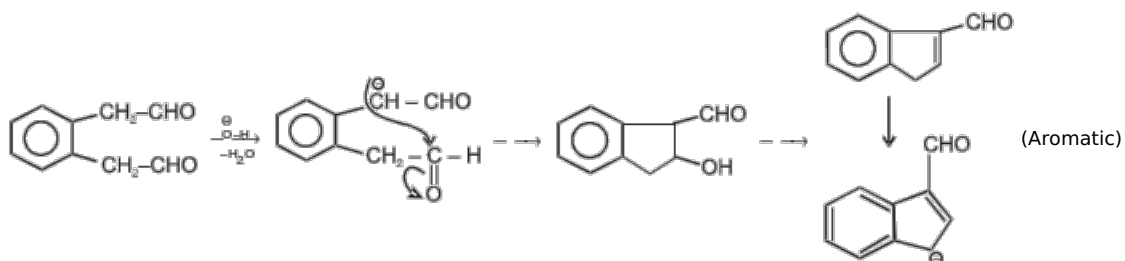
137 What is the principal product of the following reaction ?



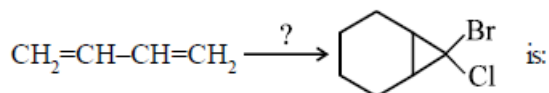
Correct Options:



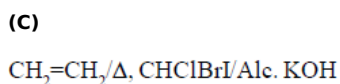
Solution:



138 The correct sequence of reagents in the reaction



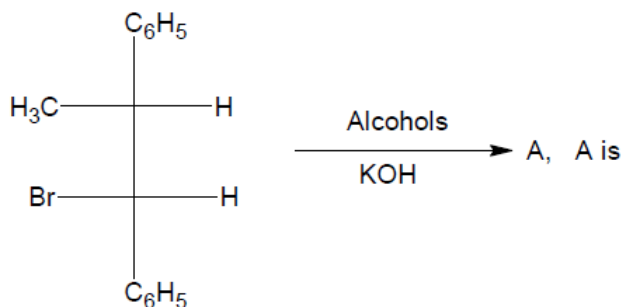
Correct Options:



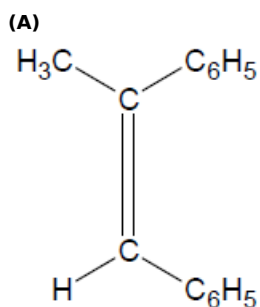
Solution:

CONCEPTUAL

139



Correct Options:



Solution:

CONCEPTUAL

140 The higher homologue of dimethylamine

(CH₃—NH—CH₃) has the structure :-

Correct Options:

(C) CH₃—NH—CH₂—CH₃

Solution:

141 Which of the following gas can be dried by conc. H₂SO₄?

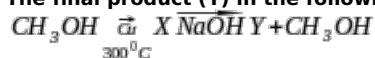
Correct Options:

(A) HCl

Solution:

HCl

142 The final product (Y) in the following sequence of chemical reactions is.



Correct Options:

(D) Sodium salt of carboxylic acid.

Solution:



143 Column I

- (A) Cellulose
- (B) Nylon-6, 6
- (C) Protein
- (D) Sucrose

Column II

- (p) Natural Polymer
- (q) Synthetic polymer
- (r) Amide polymer
- (s) Glycoside polymer

Correct Options:

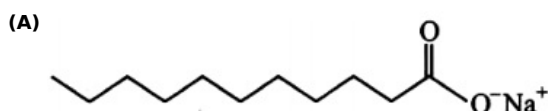
(C) (A - p,s); (B - q,r); (C - p,r); (D - s)

Solution:

conceptual

144 Which of the following molecules is most suitable to disperse benzene in water ?

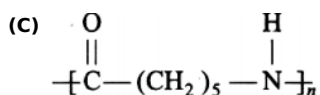
Correct Options:



Solution:

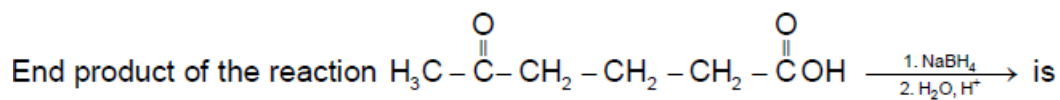
145 The structure of Nylon-6 is

Correct Options:



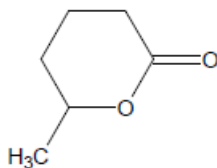
Solution:

146



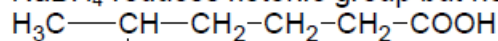
Correct Options:

(A)

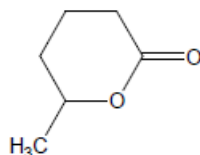


Solution:

NaBH_4 reduces ketonic group but not acidic group



is the intermediate which forms cyclic ester.



\therefore (A)

- 147 **Statement - 1:**
Oxalic acid $\text{H}_2\text{C}_2\text{O}_4$, can be used to clean rust stains from sinks and bathtubs.
Statement - 2:
Oxalic acid is a chelating ligand and form a stable complex with Fe^{2+} .

Correct Options:

(A)

STATEMENT-1 is True,
STATEMENT-2 is True;
STATEMENT-2 is a correct
explanation for STATEMENT-1

Solution:

oxalic acid chelate Fe^{2+}

- 148 **What is the general molecular formula of the product obtained when lanthanoids (Ln) react with nitrogen?**

Correct Options:

(A) LnN

Solution:

 LnN

- 149 **Which of the following compounds gives precipitate with I_2 and alkali**

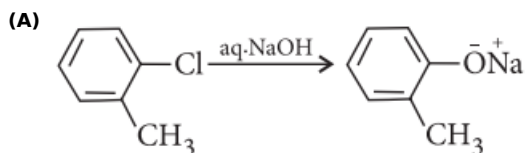
Correct Options:

(D) $\text{CH}_3\text{CH}_2\text{OH}$

Solution:

- 150 **The hydrolysis reaction that takes place at the slowest rate, among the following is**

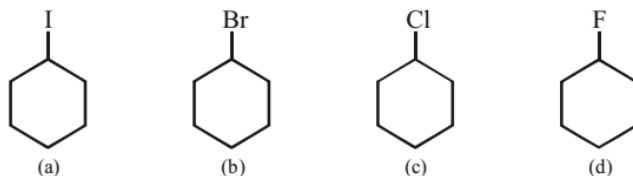
Correct Options:



Solution:

Aryl halides are less reactive as compared to alkyl halides as the halogen atom in these compounds is firmly attached and cannot be replaced by nucleophiles such as OH^- , NH_2^- , etc. In chlorobenzene, the electron pair of chlorine atom is in conjugation with p-electrons of benzene ring. Thus C—Cl bond acquires double bond character and is difficult to break

151 Compare rate of elimination bimolecular.



Correct Options:

(A) $a > b > c > d$

Solution:

On the basis of leaving group ability.

152



Correct Options:

(B) 1-Chloro-3-ethyl-2-methyl cyclopentane

Solution:

153

In an $\text{S}_{\text{N}}1$ reaction on chiral centres, there is

Correct Options:

(A) inversion more than retention leading to partial racemisation

Solution:

(a) : In case of optically active alkyl halides,

$\text{S}_{\text{N}}1$ reaction is accompanied by racemisation. The carbocation formed in the slow step being sp^2 hybridised is planar and attack of nucleophile may take place from either side resulting in a mixture of products, one having the same configuration and other having inverted configuration.

The isomer corresponding to inversion is present in slight excess because $\text{S}_{\text{N}}1$ also depends upon the degree of shielding of the front side of the reacting carbon.

154

$a \text{ Zn} + b \text{ NO}_3^- + c \text{ H}^+ \rightarrow d \text{ NH}_4^+ + e \text{ H}_2\text{O} + f \text{ Zn}^{+2}$ a, b, c, d, e and f are -

Correct Options:

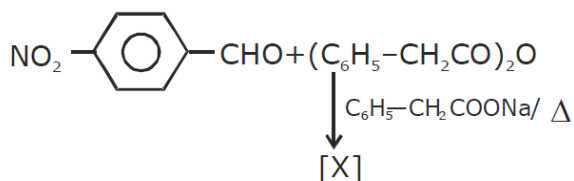
(C) a b c d e f

4 1 10 1 3 4

Solution:

155

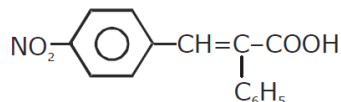
The product of the reaction:



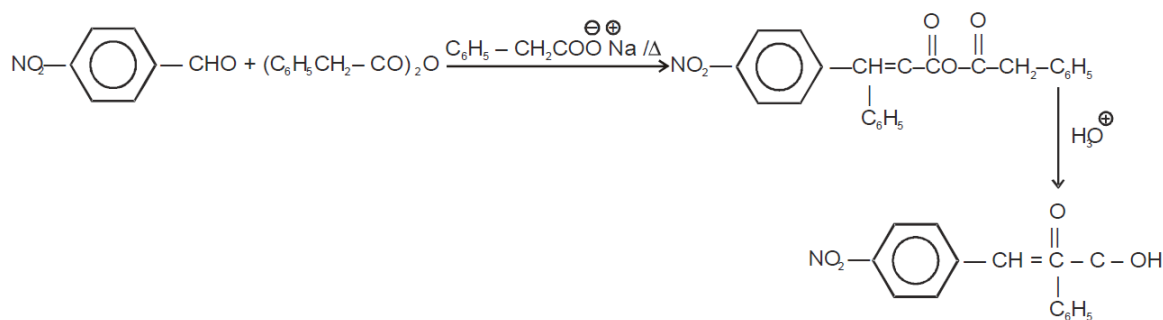
[X] will be:

Correct Options:

(D)



Solution:



156 Which one is classified as a condensation polymer ?

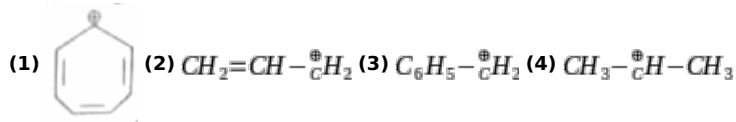
Correct Options:

(B) dacron

Solution:

157

Decreasing order of stability of given carbocations is



Correct Options:

(C) 1 > 3 > 2 > 4

Solution:

1 > 3 > 2 > 4

158

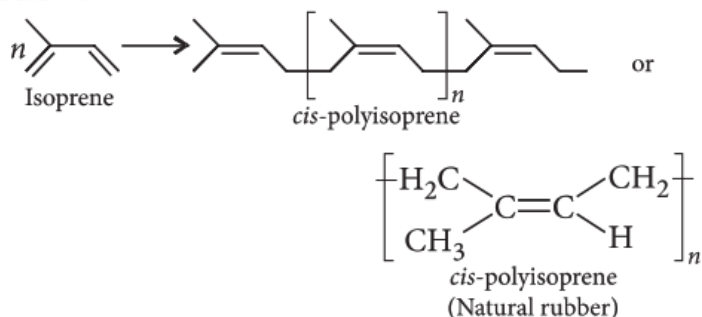
Which one of the following statements is not true?

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 :



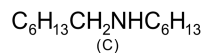
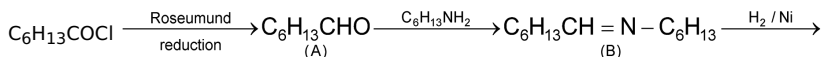
whereas in Gutta-percha, only *trans*-configuration exists about the double bond.

159 Identify (C) in the following sequence $\text{C}_6\text{H}_{13}\text{COCl} \xrightarrow[\text{S}, \Delta]{\text{H}_2, \text{Pd}/\text{BaSO}_4} \text{(A)} \xrightarrow{\text{C}_6\text{H}_{13}\text{NH}_2} \text{(B)} \xrightarrow{\text{H}_2/\text{Ni}} \text{(C)}$

Correct Options:

(A) $\text{C}_6\text{H}_{13}\text{CH}_2\text{NHC}_6\text{H}_{13}$

Solution:



160 The value of Planck's constant is 6.63×10^{-34} Js. The speed of light is 3×10^{17} nms⁻¹. Which value is closest to the wavelength in nanometer of a quantum of light with frequency of 6×10^{15} s⁻¹ ?

Correct Options:

(C) 50

Solution:

50

161 The change in the oxidation of Cl when it reacts with dilute alkali is :

Correct Options:

(B) 0 to -1, 0 to +1

Solution:

0 to -1, 0 to +1

162 Which is incorrect IUPAC name :-

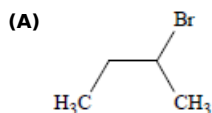
Correct Options:

(A) 3-Pentyne

Solution:

163 n-butane reacts with Br_2 at 130° to give more amount of

Correct Options:



Solution:

CONCEPTUAL

164 2,4,6 trinitro chlorobenzene on warming with water produces

Correct Options:

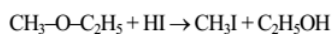
(B) Picric acid

Solution:

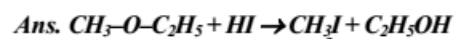
165 Which is correct reaction?

Correct Options:

(D)



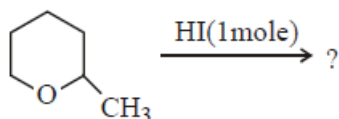
Solution:



Hint : By zeisel method (S_N^2)

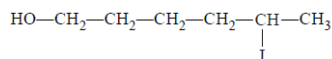
sn2 from less steric side

166



Correct Options:

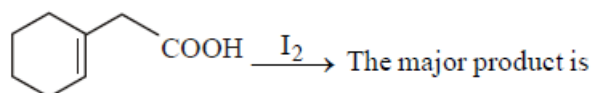
(A)



Solution:

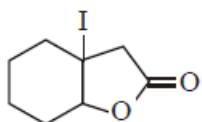
CONCEPTUAL

167



Correct Options:

(C)



Solution:

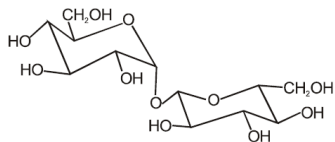
CONCEPTUAL

168

निम्न में से कौनसा डाइसेकेराइड एक अन-अपचायक शर्करा है (टॉलेन अभिकर्मक के साथ क्रिया नहीं करता है) ?

Correct Options:

(C)

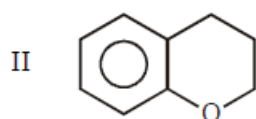
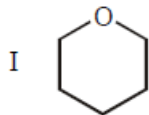


Solution:

-

169

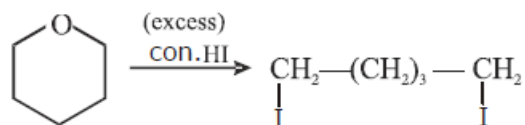
Which forms di-iodide on reaction with HI (excess)?
Consider the reaction of HI with the following



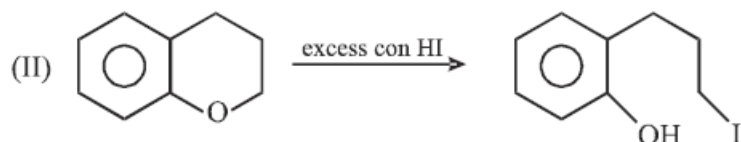
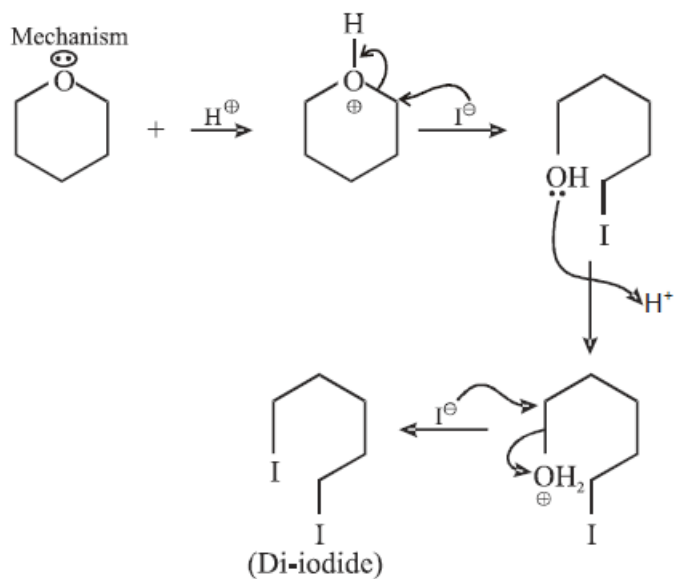
Correct Options:

(C) I only

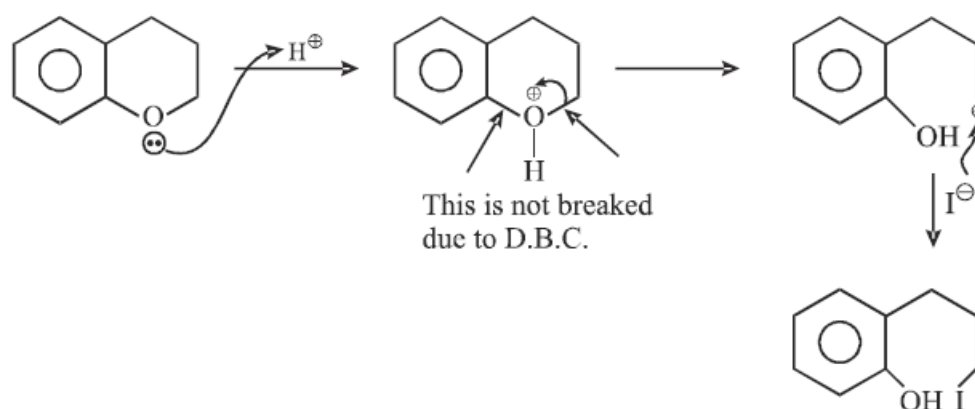
Solution:



Mechanism



Mechanism



170

For a first order reaction, when a graph is plotted between $\log_{10} [A]_0/[A]_t$ on y-axis and time (t) on x-axis, slope of the graph is equal to ____.

Correct Options:

(D) $k/2.303$

Solution:

$k/2.303$

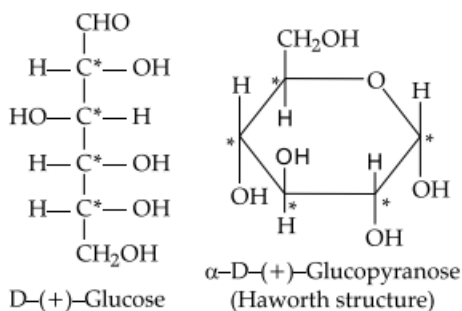
171

The number of asymmetric carbon atom in the glucose molecule in open and cyclic form is:

Correct Options:

(A) Four, Five

Solution:



Four asymmetric carbon Five asymmetric carbon

172 When ethanol and KI reacted in presence of Na_2CO_3 , the yellow precipitate obtained was that of

Correct Options:

(B) CHI_3

Solution:

CONCEPTUAL

173 Which of the following tests cannot be used for identifying amino acids?

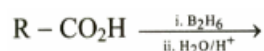
Correct Options:

(A) Barfoed test

Solution:

Barfoed test is a chemical test used for detecting the presence of monosaccharides.

174 Find the suitable product for the following reaction.



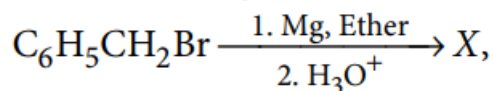
Correct Options:

(B) $\text{R}-\text{CH}_2\text{OH}$

Solution:

$\text{R}-\text{CH}_2\text{OH}$

175 In the following reaction,

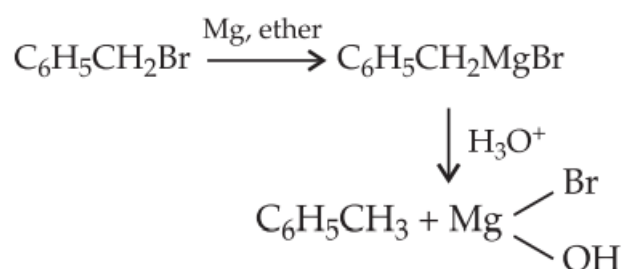


the product 'X' is

Correct Options:

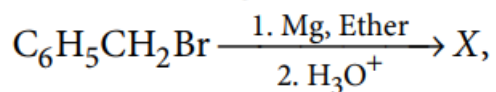
(C) $\text{C}_6\text{H}_5\text{CH}_3$

Solution:



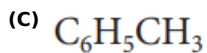
176

In the following reaction,

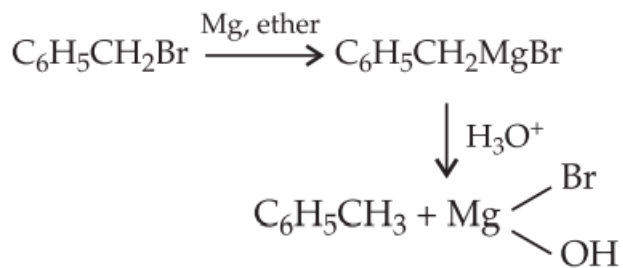


the product 'X' is

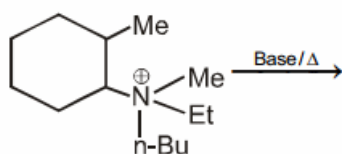
Correct Options:



Solution:

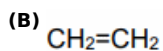


177



The alkene formed as a major product in the above elimination reaction is :

Correct Options:

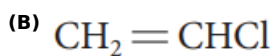


Solution:

178

Which of the following is least reactive in a nucleophilic substitution reaction?

Correct Options:



Solution:

The non-reactivity of the chlorine atom in vinyl chloride can be explained from the molecular orbital point of view as follows. If the chlorine atom has sp^2 hybridisation, the C - Cl bond will be a σ -bond and the two lone pairs of electrons would occupy the other two sp^2 orbitals. This would leave a p orbital containing a lone pair, and this orbital could now conjugate with the π -bond of the ethylenic link. Thus two M.O's will be required to accommodate these four π -electrons. Furthermore, since chlorine is more electronegative than carbon, the electrons will tend to be found in the vicinity of the chlorine atom. Nevertheless, the chlorine atom has now lost full control of the lone pair and so, is less negative than it would have been had there been no conjugation. Since two carbon atoms have acquired a share in the lone pair, each carbon atom acquires a small negative charge. Hence, owing to delocalisation of bonds (through conjugation), the vinyl chloride molecule has an increased stability. Before the chlorine atom can be displaced by some other group, the lone pair must be localised again on the chlorine atom. This requires energy, and so the chlorine is more firmly bound.



179 The sweetest sugar is

Correct Options:

(D) Fructose

Solution:

conceptual

180 Biodegradable polymer which can be produced from glycine and amino caproic acid is

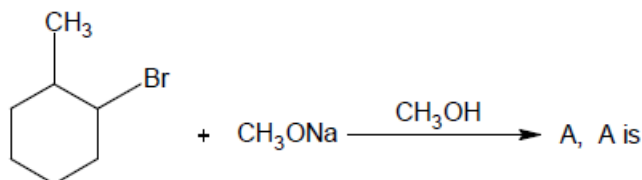
Correct Options:

(C) nylon-2-nylon-6

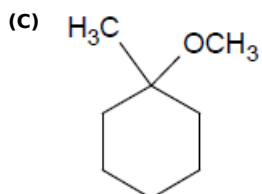
Solution:

-

181



Correct Options:



Solution:

conceptual

182 The synthesis of 3-octyne is achieved by adding a bromoalkane into a mixture of sodium amide and an alkyne. The bromoalkane and alkyne respectively are :

Correct Options:

(D) $\text{BrCH}_2\text{CH}_2\text{CH}_2\text{CH}_3$ and $\text{CH}_3\text{CH}_2\text{C}\equiv\text{CH}$

Solution:

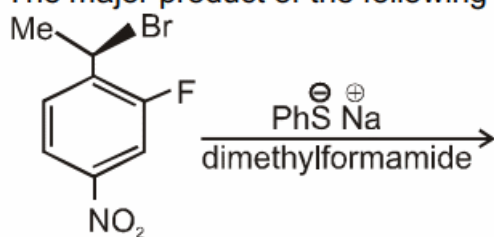
183 Which of the following vitamins contains isoprene unit ?

Correct Options:

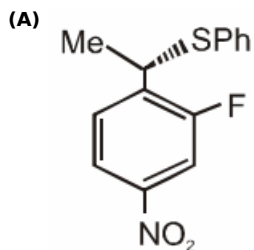
(A) vitamin A

Solution:

184 The major product of the following reaction is

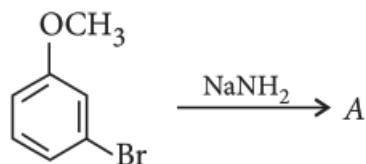


Correct Options:

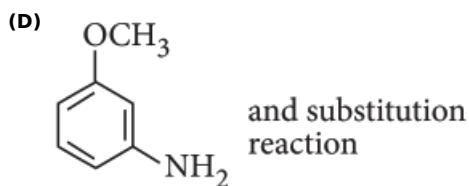


Solution:

185 Identify A and predict the type of reaction.

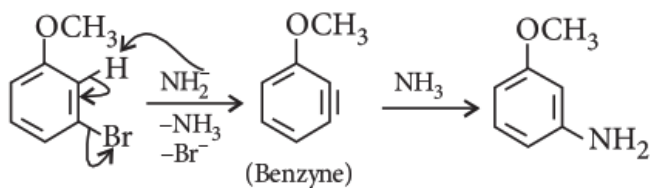


Correct Options:



Solution:

(d) : *m*-Bromoanisole gives only the respective *meta* substituted aniline. This is a substitution reaction which goes by an elimination-addition pathway.



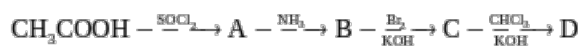
186 Which of the following product will be obtained when neopentyl alcohol is treated with conc. HCl in presence of ZnCl₂.

Correct Options:

(C) t- pentyl chloride

Solution:

187



Identify D in above reaction sequence.

Correct Options:

(B) CH₃ - NC

Solution:

CH₃ - NC

188

Glucose and fructose gives same osazone.

STATEMENT - 2

STATEMENT - 1. During osazone formation stereochemistry at C₁ and C₂ is destroyed.

Correct Options:

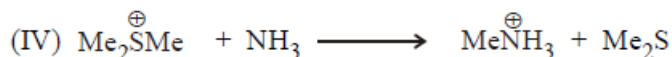
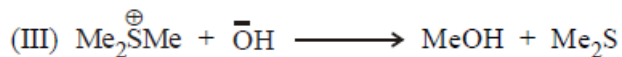
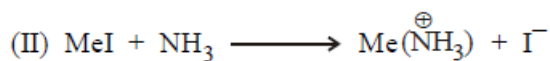
(A)

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

Solution:

CONCEPTUAL

189



in which of the S_N2 reaction rate of the reaction increases on increasing the polarity of the solvents

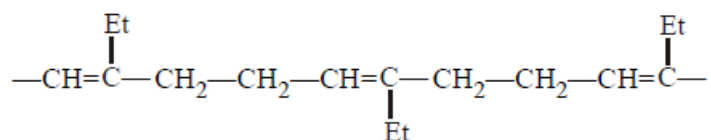
Correct Options:

(B) II`

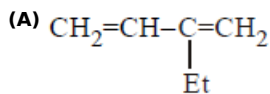
Solution:

CONCEPTUAL

190 The structure of monomer from which the below polymer is obtained is



Correct Options:



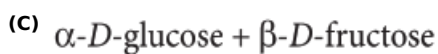
Solution:

CONCEPTUAL

191

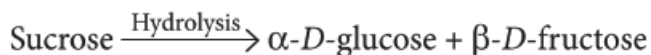
Sucrose on hydrolysis gives

Correct Options:



Solution:

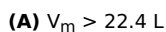
(c) : In sucrose, two monosaccharides are held together by a glycosidic linkage between C-1 of $\alpha\text{-D-glucose}$ and C-2 of $\beta\text{-D-fructose}$.



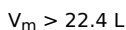
192

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

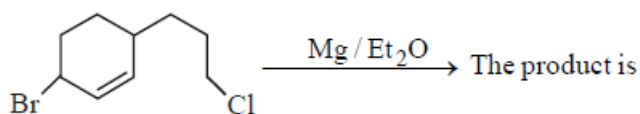
Correct Options:



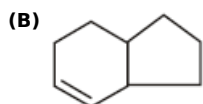
Solution:



193



Correct Options:

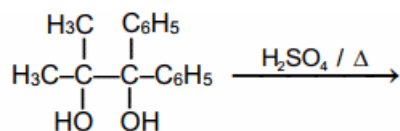


Solution:

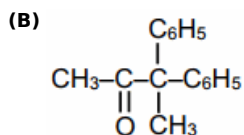
CONCEPTUAL

194

Identify the major product formed in the following reaction



Correct Options:



Solution:

195 Ring structure of glucose is due to formation of hemiacetal and ring formation between

Correct Options:

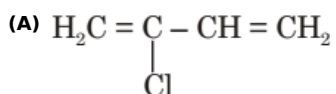
(A) C₁ and C₅

Solution:

Glucose has six membered pyranose ring.

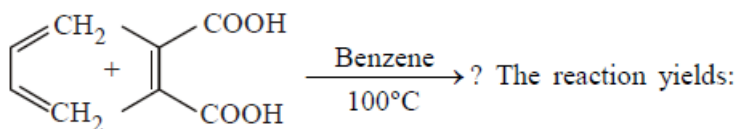
196 Which is a monomer of Neoprene in the following?

Correct Options:



Solution:

197



Correct Options:

(A) a single product

Solution:

CONCEPTUAL

198 1-chlorobutane on reduction with alcoholic KOH gives

Correct Options:

(A) 1-butene

Solution:

conceptual

199 On treating glucose with Fehling's solution we get a precipitate whose colour is

Correct Options:

(B) Red

Solution:

conceptual

200

Which of the following compounds can form a zwitter ion?

Correct Options:

(D) Glycine

