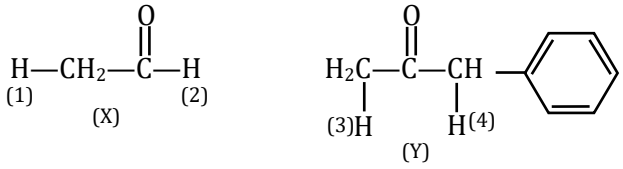
EXERCISE - O

SINGLE CORRECT TYPE QUESTIONS

Classification and General Introduction

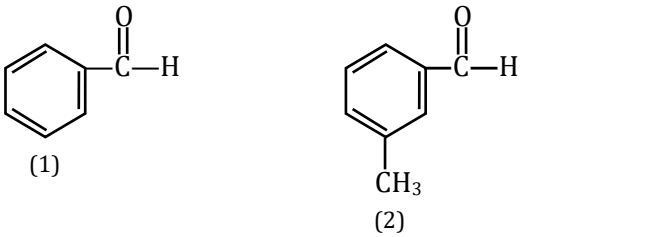
1. Most acidic H in the given compounds X & Y are :-

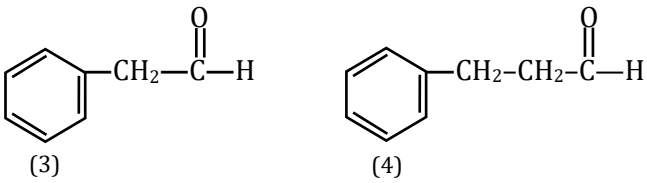


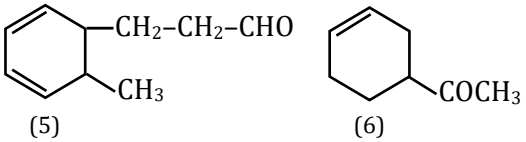
(A) 1, 4 (B) 2, 4 (C) 1, 3 (D) 2, 3

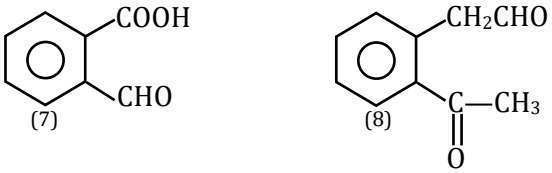
CCL089

2. Which among the following are aliphatic aldehydes :-









(A) 3, 5, 7 (B) 3, 4, ,5, 8 (C) 1, 2, 3, 7, 8 (D) 6, 8, 4, 2

CCL090

3. Select the correct statement for C=O and C=C bond.

(A) Carbon–Oxygen double bond is polar but carbon–carbon double bond is non-polar

(B) Carbon–Oxygen bond length is 123 pm than that of carbon–carbon bond length is 134 pm

(C) Carbonyl compounds undergo nucleophilic addition reaction but compounds containing ethylenic double bonds undergo electrophilic addition reaction

(D) All of these

CCL091

4. What is the hybridization of the carbon of a carbonyl group?

(A) sp^3d (B) sp (C) sp^3 (D) sp^2

CCL101

5. Which is the true statement?

(A) The double bond of a typical carbonyl group is shorter and stronger than the double bond of a typical alkene

(B) The double bond of a carbonyl group is longer and shorter than the double bond of an alkene

(C) The double bond of a carbonyl group is shorter but weaker than the double bond of an alkene

(D) The double bond of a carbonyl group is longer but weaker than the double bond of an alkene

CCL103

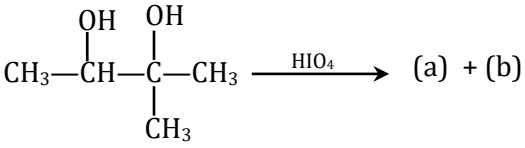
Preparation of Carbonyl Compound

6. Ozonolysis of benzene and subsequent hydrolysis gives :-

(A) Glycol (B) Glycolic acid (C) Glycine (D) Glyoxal

CCL092

7. In the given reaction :



(A) and (b) respectively be :

(A) CH_3CHO and CH_3CHO (B) CH_3COCH_3 and CH_3CHO

(C) CH_3COCH_3 and CH_3COCH_3 (D) CH_3COOH and CH_3COCH_3

CCL094

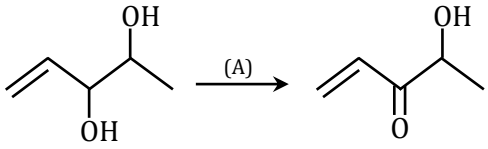
8. The most suitable reagent for the conversion of $CH_3 - CH_2 - OH \rightarrow CH_3 - CHO$ is :-

(A) CrO_3, H_2SO_4, H_2O (B) PCC (Pyridinium chlorochromate)

(C) $KMnO_4$ (D) $K_2Cr_2O_7$

CCL095

9.



'A' can be :-

(A) $H^{\oplus}/K_2Cr_2O_7, \Delta$ (B) PDC (C) HIO_4 (D) MnO_2

CCL096

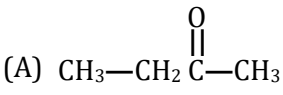
10. An unknow compound on ozonolysis gives acetaldehyde and benzophenone. What is the structure of the compound?

(A) 1,2–diphenylpropene (B) 1,1–diphenylpropene

(C) 2–phenyl–2–hexene (D) 1,2–diphenylhexene

CCL102

11. The product (s) obtained via oxymercuration ($HgSO_4 + H_2SO_4$) of 1-butyne would be :-

(A) 

(B) $CH_3 - CH_2 - CH_2 - CHO$

(C) $CH_3 - CH_2 - CHO + HCHO$ (D) $CH_3\ CH_2COOH + HCOOH$

CCL105

12. Which alkene of ozonolysis does not produce formaldehyde:-

(A) Isobutylene (B) Ethene (C) I-Hexene (D) 2 -Butene

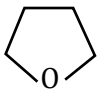
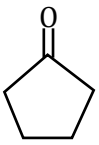
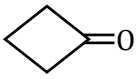
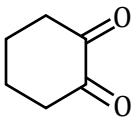
CCL106

13. Hydration of which alkyne does not give ketone:-

(A) 2-Butyne (B) Propyne (C) 1- Butyne (D) Ethyne

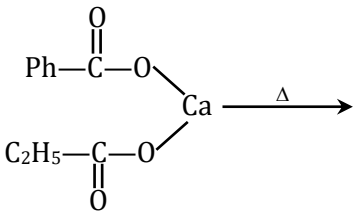
CCL107

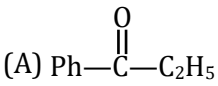
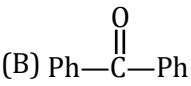
14. Dry distillation of calcium salt of adipic acid gives?

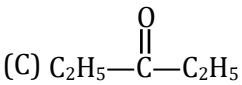
(A)  (B)  (C)  (D) 

CCL112

15. Possible product on dry distillation:-

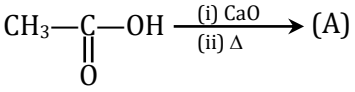


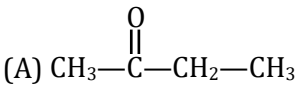
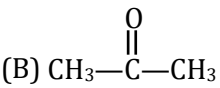
(A)  (B) 

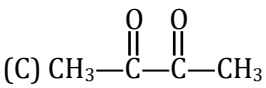
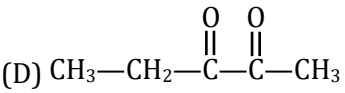
(C)  (D) None of these

CCL113

16. Major product of :-



(A)  (B) 

(C)  (D) 

CCL114

17. In Etard reaction, Toluene is oxidised to Benzaldehde using :-

(A) H_2O_2 (B) CO + HCl (C) CrO_3 or CrO_2Cl_2 (D) $KMnO_4$

CCL116

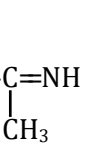
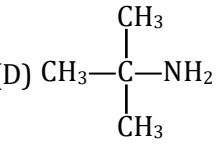
18. What is formed after the hydrolysis of product formed after the reaction between benzonitrile and methyl magnesium bromide in dry ether?

(A) Phenyl acetaldehyde (B) Acetophenone

(C) 1–Phenylpropanone (D) Benzaldehyde

CCL118

19. $CH_3–C\equiv N + CH_3MgBr \xrightarrow{H_3O^{\oplus}} ?$

(A) CH_3COOH (B) CH_3COCH_3 (C)  (D) 

CCL120

20. $CH_3COOH \xrightarrow[300^\circ C]{MnO} (A) + CO_2 + H_2O$

Product (A) will be ?

(A) $CH_3 - CHO$ (B)  (C) $CH_3–CH_3$ (D) CH_4

CCL121

21. On heating calcium propionate, the product formed is

(A) 3-Pentanone (B) 2-Pentanone

(C) 3-Methyl-2-butanone (D) Propanone

CCL122

22. A mixed salt of calcium acetate formate on dry distillation gives

(A) ethanal (B) methanal (C) propanone (D) All the three above.

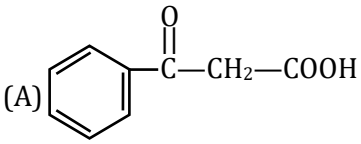
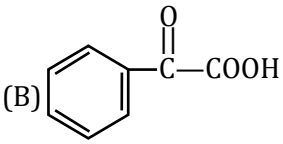
CCL123

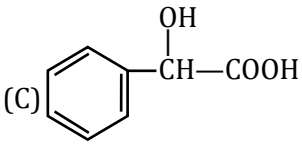
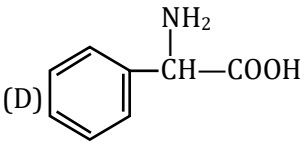
23. Acetic acid when heated (300°C) with MnO gives

(A) formaldehyde (B) acetaldehyde (C) acetone (D) butaone

CCL124

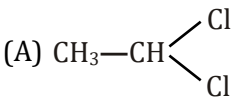
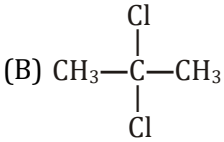
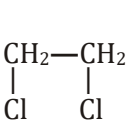
24. Which of the following carboxylic acids undergoes decarboxylation most easily :-

(A)  (B) 

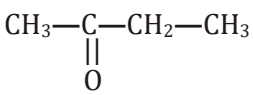
(C)  (D) 

CCL125

25. Which gives acetaldehyde with aqueous KOH

(A)  (B)  (C)  (D) $CH_3—CH_2—Cl$

CCL126

26. 'x' + $H_2O \xrightarrow[H_2SO_4]{HgSO_4}$ 

reactant 'x' in above reaction is–

(A) $CH_3—CH_2—C\equiv CH$ (B) $CH_3—C\equiv C—CH_3$

(C) $CH_3—C\equiv CH$ (D) Both (A) & (B)

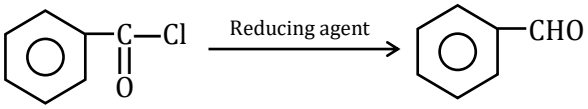
CCL127

Reduction of carbonyl compound

27. In the Rosenmund's reduction, $BaSO_4$ taken with Pd-catalyst act as a :-

(A) Promotor (B) Catalytic poison (C) Co-operator (D) Absorber

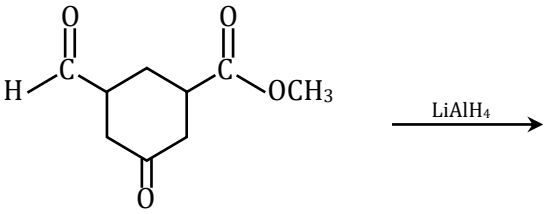
CCL097

28. 

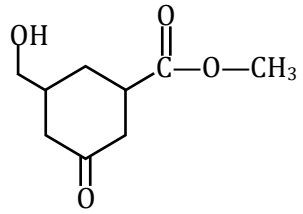
Reducing agent is

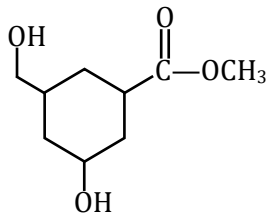
(A) Red P and HI (B) Pd + $BaSO_4$ / H_2 (C) $LiAlH_4$ / $H^{\oplus}$ (D) Zn–Hg / conc. HCl

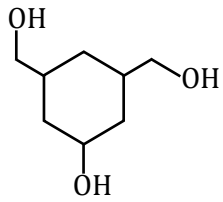
CCL104

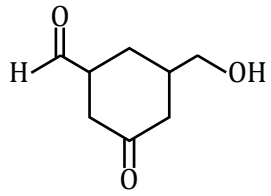
29. 

The product formed is

(A) 

(B) 

(C) 

(D) 

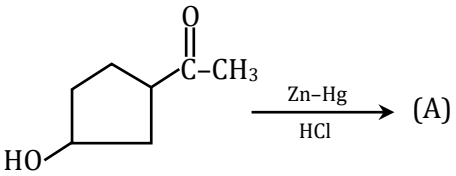
CCL128

30. Which one reaction is Wolf-Kishner reaction

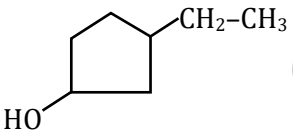
(A) Benzaldehyde into benzyl alcohol (B) Cyclohexanol into cyclohexane

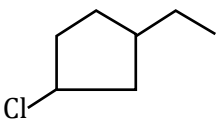
(C) Cyclohexanal into cyclohexanol (D) Benzophenone into diphenyl methane

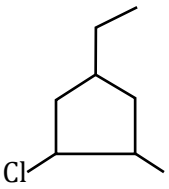
CCL130

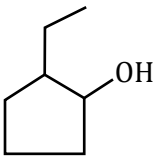
31. 

A is

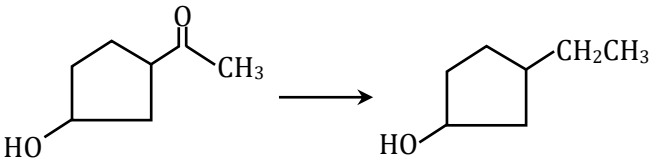
(A) 

(B) 

(C) 

(D) 

CCL131

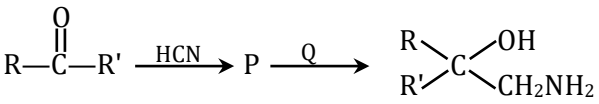
32. 

The appropriate reagent for this transformation:

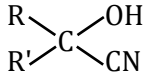
(A) Zn-Hg, HCl (B) $NH_2NH_2/\overset{\ominus}{O}H$ (C) H_2/Ni (D) $NaBH_4$

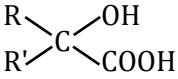
CCL132

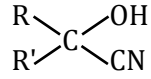
Nucleophilic addition of Carbonyl Compound

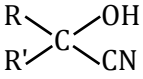
33. 

P and Q in the above reactions are

(A) P ⇒  , Q ⇒ $LiAlH_4$

(B) P ⇒  , Q ⇒ NH_3

(C) P ⇒  , Q ⇒ $H_3O^{\oplus}$

(D) P ⇒  , Q ⇒ NaOH

CCL129

34. The nucleophilic addition reaction of aldehydes are carried out in _____ medium :-

(A) Neutral (B) Acidic (C) Weakly basis (D) Extremely basic

CCL134

35. Which of the following is least reactive towards a nucleophilic attack?

(A) Acetaldehyde (B) Butanone

(C) Diisopropyl ketone (D) Ditert-butyl ketone

CCL135

36. The reaction of Ethanal with $NH_2OH/H^{\oplus}$ gives a product. The product shows

(A) Structural Isomerism (B) Geometrical isomerism

(C) official isomerism (D) None

CCL136

37. Which of the following reagents react differently with HCHO, CH_3CHO and CH_3COCH_3

(A) HCN (B) $NH_2–NH_2$ (C) $NH_2–OH$ (D) NH_3

CCL137

38. $CH_3CHO + HCN \longrightarrow P \xrightarrow{H_3O^{\oplus}} Q$

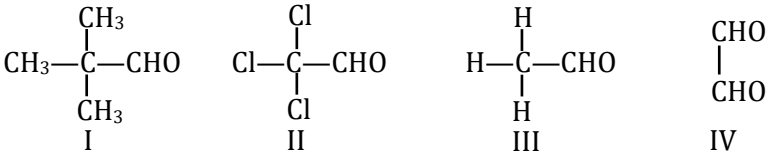
The product (Q) obtained is

(A) D-isomer (B) L-isomer

(C) (80% D + 20% L) mixture (D) (50% D + 50% L) mixture

CCL138

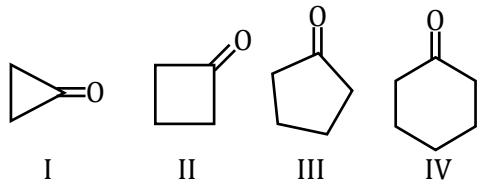
39. The relative rates of following compounds towards nucleophilic addition reaction follow the order



(A) I > II > III > IV (B) II > IV > I > IIII (C) III > IV > II > I (D) IV > II > I > III

CCL139

40. Among the following identify the one which form stable hydrate.



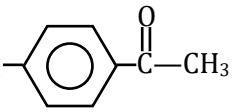
I II III IV

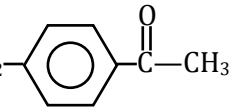
(A) I (B) II (C) III (D) IV

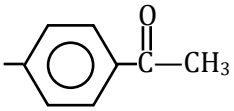
CCL140

41. Arrange the following compounds in decreasing order of K_{eq}. For hydrate formation.

(1) $C_6H_5COCH_3$

(2) 

(3) 

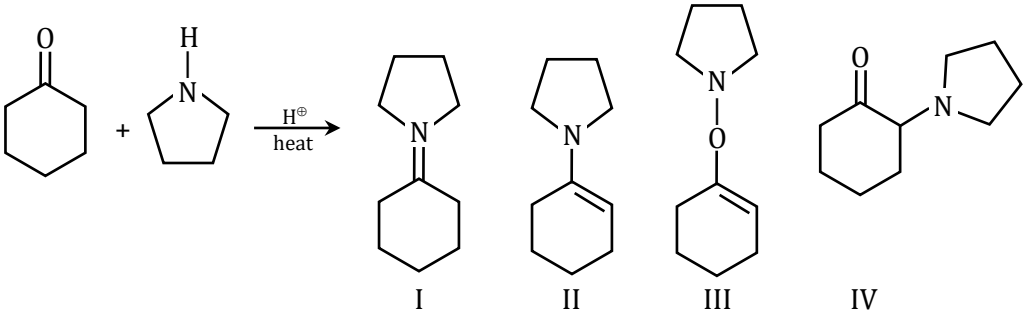
(4) 

(A) 3 > 2 > 1 > 4 (B) 1 > 2 > 3 > 4

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

CCL141

42. The most favourable product of the following reaction is :



I II III IV

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

CCL214

Oxidation of carbonyl compound

43. When a mixture of 1–butyne and 2–butyne is subjected to ozonolysis, the products are :-

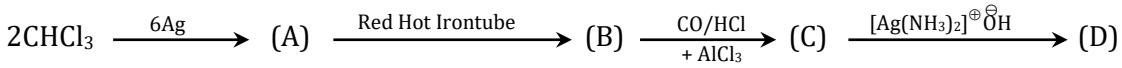
(A) Only acetic acid

(B) Acetic acid, formic acid

(C) Acetic acid, formic acid and propionic acid

(D) Only propionic acid

CCL093

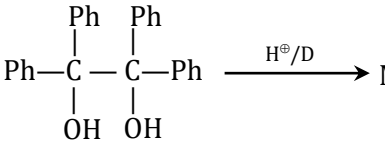
44. 

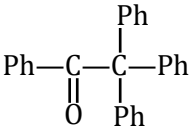
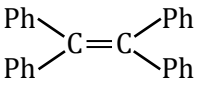
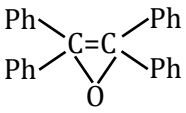
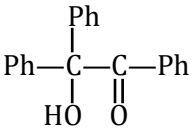
Product 'D' will be :

(A) Aldehyde (B) Ketone

(C) Carboxylic acid (D) Alcohol

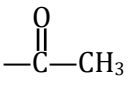
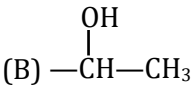
CCL099

45.  Major product is

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

CCL100

46. Haloform reaction is given by compounds having the group.

(A) 
(B) 
(C) A & B Both
(D) –CHO

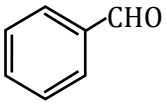
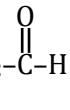
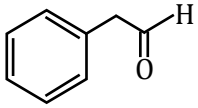
CCL133

47. During a reaction of Tollen's test, the formation of mirror inside the tube is due to :-

(A) Silver ions (B) Silver atoms (C) Silver compounds (D) Silver nitrate

CCL150

48. Which of the following compound doesn't give fehling's test :-

(A) CH_3CHO
(B) 
(C) 
(D) 

CCL151

49. When aldehyde react with Benedict's Solution, the precipitates obtained gives:

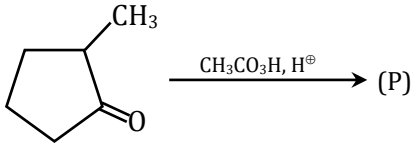
(A) Blue colour (B) Brick–red colour (C) Red colour (D) Green colour

CCL152

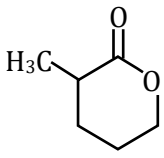
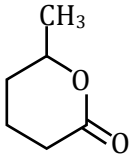
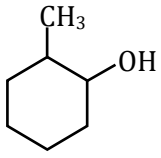
50. The red colour ppt of Cu_2O is obtained in :-

(A) Tollen's test (B) Fehling test (C) Benedict test (D) Both (B) and (C)

CCL153

51. 

Product P is :-

(A) 
(B) 
(C) 
(D) None of these

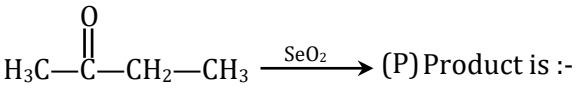
CCL154

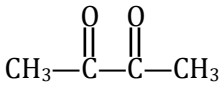
52. $CH_3CHO \xrightarrow[H_2O]{2HgCl_2}$ (P) $+ Hg_2Cl_2 + 2HCl$

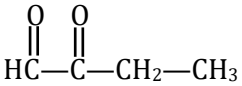
Product P is :-

(A) CH_3CH_2OH (B) CH_4 (C) CH_3COOH (D) CH_3CH_3

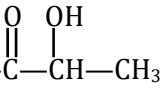
CCL155

53.  (P) Product is :-

(A) 

(B) 

(C) Mixture of (A) and (B)

(D) 

CCL156

54. Ketones are normally inert for further oxidation. Ketones can be converted to carboxylic acid using :-

(A) Jone's Reagent

(B) $KMnO_4/H^{\oplus}$ at 0°C

(C) Conc. HNO_3 at drastic condition

(D) Tollen's Reagent

CCL157

55. The reagent that gives an orange coloured precipitate with acetaldehyde.

(A) NH_2OH

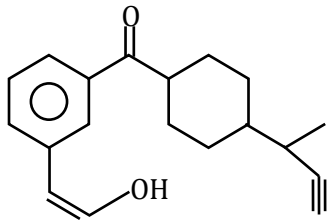
(B) $NaHSO_3$

(C) Iodine

(D) 2,4–DNP

CCL158

56. A set of reagents (1 to 7) are successively reacted with the following compound



1. $NaHCO_3$
2. 2,4–DNP
3. Na metal
4. $AgNO_3 + {}^{\ominus}OH$
5. Fehling's solution
6. $Cu_2Cl_2 + NH_4OH$

The reagents which given positive test with the given compound are :

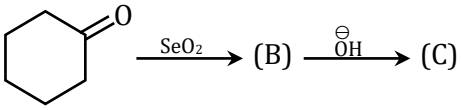
(A) 1, 2, 3, 4, 5

(B) 1, 3, 4, 5, 6

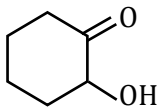
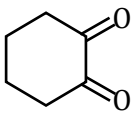
(C) 1, 2, 3, 4, 7

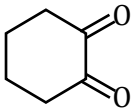
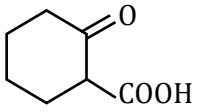
(D) All reagents except 1

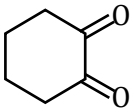
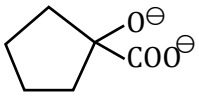
CCL159

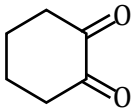
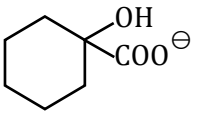
57. 

Compounds (B) and (C), respectively, are :

(A)  

(B)  

(C)  

(D)  

CCL216

Aldol condensation and cannizaro reaction

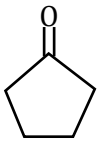
58. Aldol condensation will not be observed in

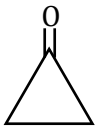
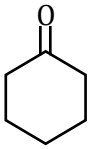
(A) Chloral (B) Phenylacetaldehyde

(C) Hexanal (D) Ethanal

CCL172

59. In mixed aldol condensation with ethanal as one aldehyde, which one of the following is expected to give maximum yield of cross product

(A) $C_2H_5-\overset{\overset{O}{\|}}{C}-CH_3$ (B) 

(C)  (D) 

CCL173

60. The product formed in the following reaction will be

$$\begin{matrix}CHO\\|\\CHO\end{matrix} \xrightarrow[\text{Conc.}]{NaOH} (P)$$

(A) $\begin{matrix}CH_2OH\\|\\CH_2OH\end{matrix}$ (B) $\begin{matrix}CH_2OH\\|\\COONa\end{matrix}$ (C) $\begin{matrix}COONa\\|\\COONa\end{matrix}$ (D) All of these

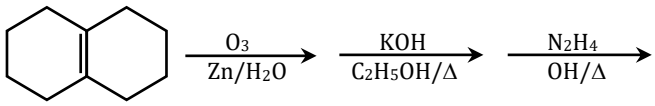
CCL174

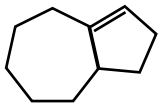
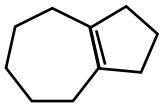
61. The Key step in cannizaro's reaction in the intermolecular shift of

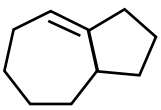
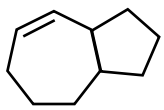
(A) Proton (B) Hydride ion (C) Hydronium ion (D) Hydrogen bond

CCL175

62. What is the major final product of the following sequence of a reaction



(A)  (B) 

(C)  (D) 

CCL176

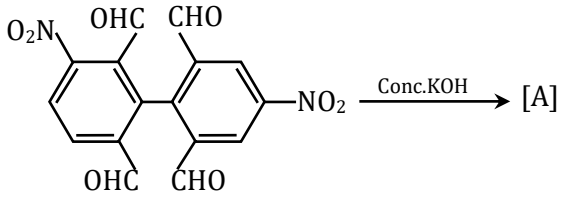
63. What is the major organic product in the following reaction ?

$$\underset{\text{(excess)}}{CH_2O} + CH_3CH_2CHO \xrightarrow{\text{conc. NaOH}} \xrightarrow{H_3O^{\oplus}}$$

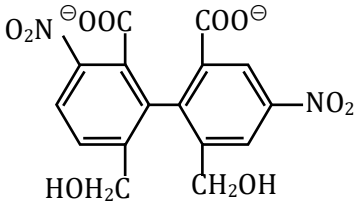
(A) $CH_3-C(CH_2OH)_3$ (B) CH_3OH (C) HCOOH (D) Both (A) & (C)

CCL177

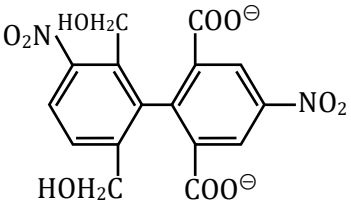
64.



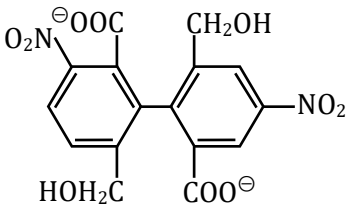
(A)



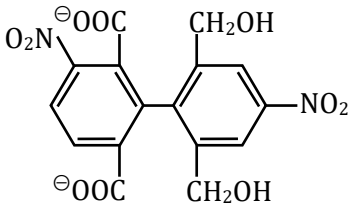
(B)



(C)

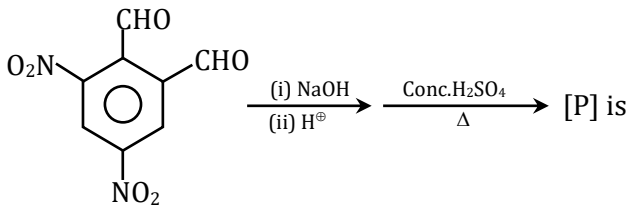


(D)

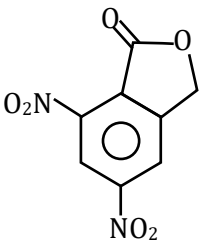


CCL178

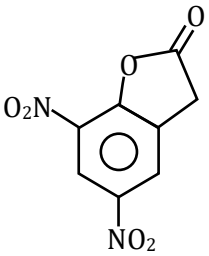
65.



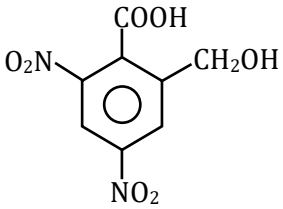
(A)



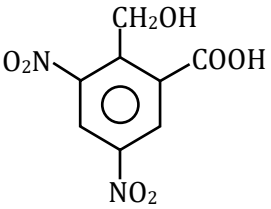
(B)



(C)

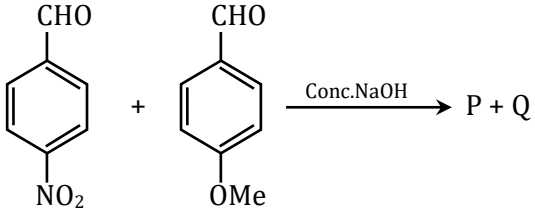


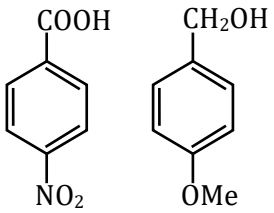
(D)

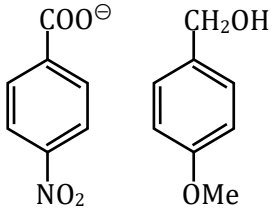


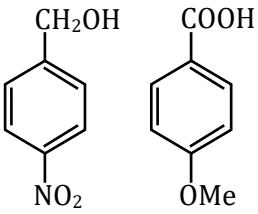
CCL179

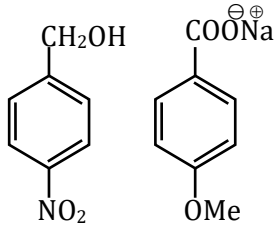
66. Product P and Q in the following reaction



(A) 

(B) 

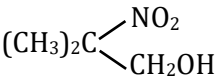
(C) 

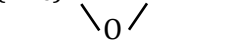
(D) 

CCL180

67. In the reaction $(CH_3)_2CHNO_2 + HCHO \xrightarrow{NaOH}$ the major product is

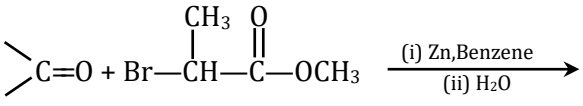
(A) $(CH_3)_2CHCH_2ONO_2$

(B) 

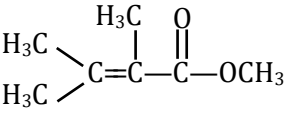
(C) 

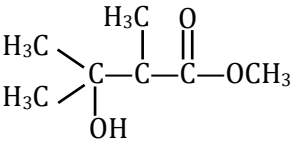
(D) 

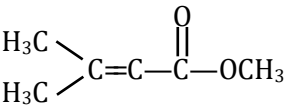
CCL181

68. 

Product P is

(A) 

(B) 

(C) 

(D) None of these

CCL194

69. Perkin reaction is undergone by .....

(A) Aromatic aldehydes (B) Aliphatic aldehydes

(C) Aromatic Ketone (D) Unsaturated acids

CCL195

70. In Michael addition, the α, β-unsaturated carbonyl compound acts as

(A) Michael Acceptor (B) Michael Donor (C) Michael Product (D) Michael Adduct

CCL196

71. Which of the following reaction can be used to prepare cinnamic acid

(A) Cannizzaro reaction (B) Perkin condensation

(C) Knoevenagel condensation (D) Both (B) and (C)

CCL197

72. $CH_3CHO + \underset{\underset{OEt}{|}}{\overset{O}{\overset{\|}{C}}}-CH_2-\overset{O}{\overset{\|}{C}}-OEt \xrightarrow[H_2O/\Delta]{\text{Pyridine}}$ product is

(A) Cinnamic acid (B) Crotonic acid (C) Benzoic acid (D) Cinnamaldehyde

CCL198

73. Which of the following combination will give Michael addition

(A) Benzaldehyde + Ethanol (B) Nitropropane + methyl vinyl Ketone

(C) Ethyl chloride + Propanol (D) 1-butene + Ethanol

CCL199

74. $PhCHO + BrCH_2CO_2C_2H_5 \xrightarrow[(ii)\ H_2O]{(i)\ Zn} (A) \xrightarrow{-H_2O} (B)$;

Product (B) of the above reaction is :

(A) $Ph-CH=CH-CO_2C_2H_5$ (B) $Ph-CH=CH-CH_3$

(C) $Ph-CH=CH-CH_2-OH$ (D) $Ph-CH=CH-(CO_2)_2-OH$

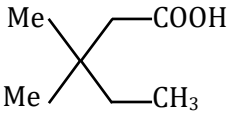
CCL200

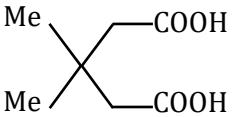
75. $\begin{matrix}CHCOOEt\\ \|\\ CHCOOEt\end{matrix} + CH_2(COOEt)_2 \xrightarrow[(iii)\ \Delta]{(i)\ NaOEt,\ (ii)\ H_2O}$ Product (P) is

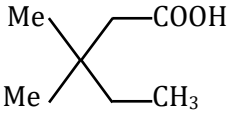
(A) $\begin{matrix}CH_3\\ |\\ CHCOOH\end{matrix}$ (B) $\begin{matrix}CH_2COOH\\ |\\ CH_2\\ |\\ CH_2COOH\end{matrix}$ (C) $\begin{matrix}CH_2COOH\\ |\\ CHCOOH\\ |\\ CH_2COOH\end{matrix}$ (D) $\begin{matrix}CH_2COOH\\ |\\ CHCOOH\\ |\\ CH_3\end{matrix}$

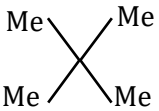
CCL201

76. $\begin{matrix}Me\\ \\ Me\end{matrix}\!\!>\!\!=CH-COOEt + NC-CH_2COOEt \xrightarrow[(iii)\ \Delta,\ -CO_2]{(i)\ C_2H_5ONa,\ (ii)\ H_2O}$

(A) 

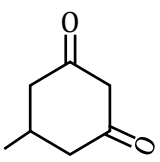
(B) 

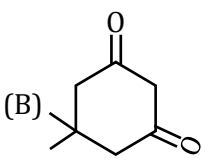
(C) 

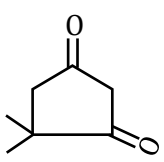
(D) 

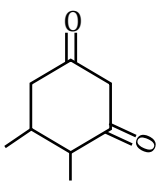
CCL202

77. $\begin{matrix}Me\\ \\ Me\end{matrix}\!\!>\!\!=CH-COCH_3 + CH_2(COOEt)_2 \xrightarrow[(iii)\ \Delta]{(i)\ EtONa,\ (ii)\ H_2O}$

(A) 

(B) 

(C) 

(D) 

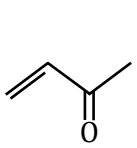
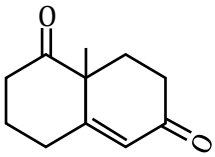
CCL203

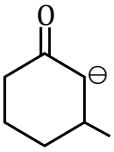
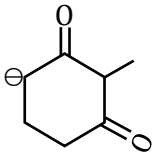
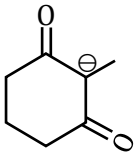
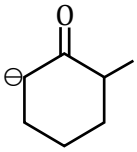
78. PhCHO + $H_2C(Me)-C(=O)-O-C(=O)-CH_2Me$ $\xrightarrow{C_2H_5COONa}$ (P) find Product 'P'.

(A) $PhCH=C(CH_3)-COOH$ (B) $CH_3CH=C(Ph)-COOH$ (C) $CH_3CH=C(H)-COOH$ (D) $PhCH=C(H)-COOH$

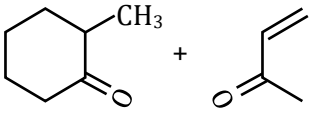
CCL204

79. The enolate ion that reacts with

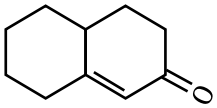
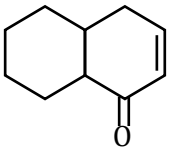
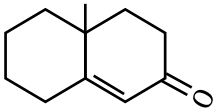
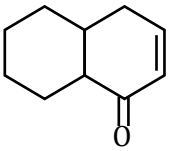
 To form  is

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

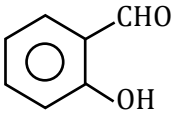
CCL205

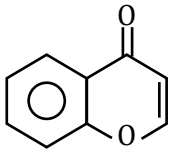
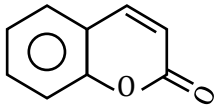
80.  $\xrightarrow[\text{(Conjugate–addition)}]{HO^{\ominus}}$ (A); Product

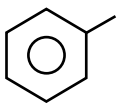
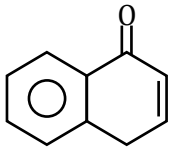
(A) is :

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

CCL206

81.  $\xrightarrow[\text{(ii) } H_2O]{\text{(i) } Ac_2O,\ AcONa}$ (A); Identify product and name of reaction.

(A)  (Aldol condensation) (B)  (Perkin reaction)

(C)  (Claisen condensation) (D)  (Cannizzaro reaction)

CCL207

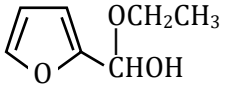
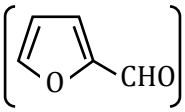
82. $PhCHO + (CH_3CO)_2O \xrightarrow[\text{(ii) hydrolysis}]{\text{(i) } CH_3COONa}$ (A) $\xrightarrow{HBr}$ (B)

The product B is :

(A) $PhCHBr-CH_2-COOH$ (B) $PhCH=CHCH_2Br$

(C) $PhCH_2CH(Br)COOH$ (D) $PhCH=CH-COBr$

CCL208

83. Compound  formed by the reaction of furfural  with ethanol is :

(A) an aldol (B) an acetal (C) a hemiacetal (D) a ketal.

CCL209

84. Industrial production of acetaldehyde is done by

(A) oxidation of ethanol (B) reduction of acetic acid

(C) oxidation of ethylene (D) hydration of acetylene

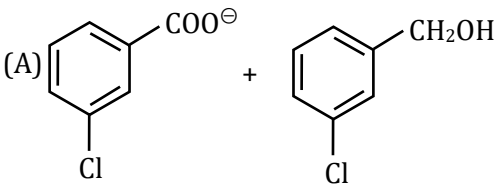
CCL210

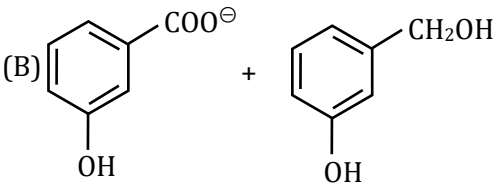
85. Acetaldehyde reacts with a mixture of KCN and NH_4Cl to give a product X which upon hydrolysis yields alanine. The product X is

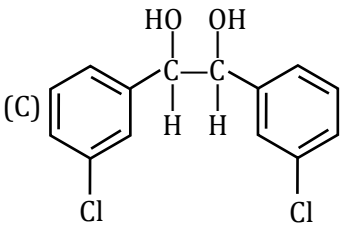
(A) an aminonitrile (B) a cyanohydrin (C) an aminoalcohol (D) a chlorohydrin

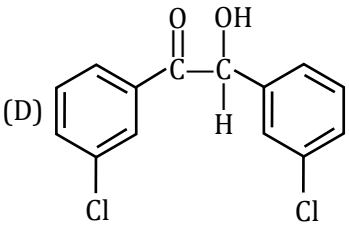
CCL211

86. When meta chlorobenzaldehyde is treated with 50% KOH, the product obtained is

(A) 

(B) 

(C) 

(D) 

CCL212

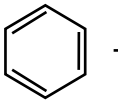
Name reaction

87. $CH_4 \xrightarrow{Cl_2/h\nu} (A) \xrightarrow[\text{Acetone}]{KCN} (B) \xrightarrow[HCl]{SnCl_2} (C) \xrightarrow{H_3O^{\oplus}} (D)$

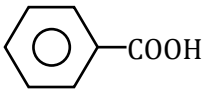
Product 'D' will be :-

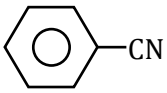
(A) CH_3CH_2CHO (B) $CH_3CH{=}NH$ (C) CH_3CHO (D) CH_3COOH

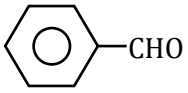
CCL098

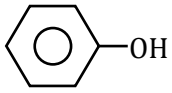
88.  $\xrightarrow[\text{(ii) } AlCl_3 \\ \text{(iii) } H_2O]{\text{(i) HCN/HCl}}$ (A)

Product 'A' is :-

(A) 

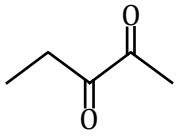
(B) 

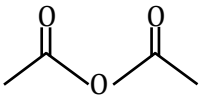
(C) 

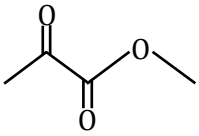
(D) 

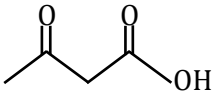
CCL111

89. The compound give upon heating results ketone with MW 58 is

(A) 

(B) 

(C) 

(D) 

CCL115

90. Which of the following is not a method of preparation of Benzaldehyde?

(A) Etard's Reaction (B) Gattermann Koch synthesis

(C) Stephen's Reduction (D) Wurtz Reaction

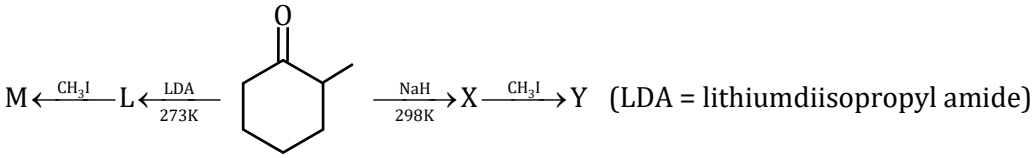
CCL117

91. Friedel-craft's acylation of benzene gives _____ :-

(A) acetophenone (B) propiophenone (C) benzophenone (D) no reaction

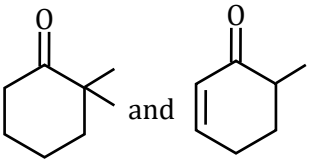
CCL119

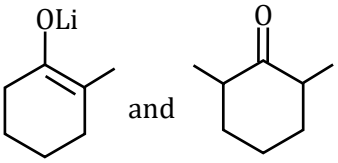
92. Consider the following reactions :

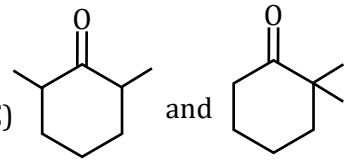


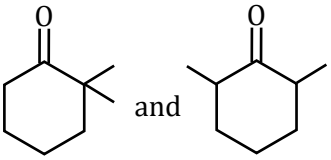
(LDA = lithiumdiisopropyl amide)

The product M and Y respectively are:

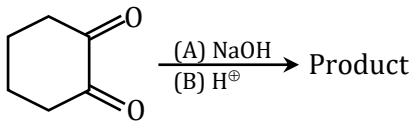
(A) 

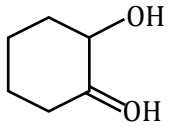
(B) 

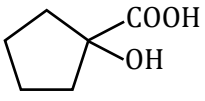
(C) 

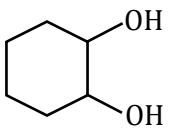
(D) 

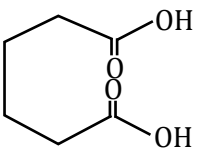
CCL213

93. 

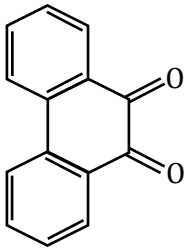
(A) 

(B) 

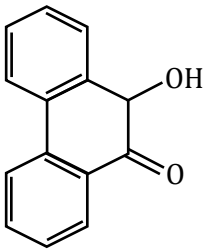
(C) 

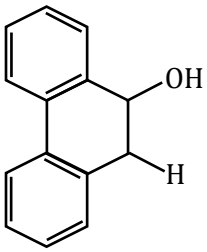
(D) 

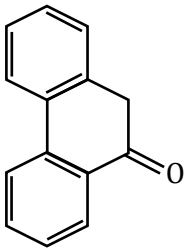
CCL217

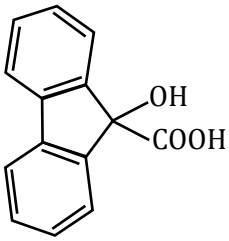
94.  $\xrightarrow[(B)\ H^{\oplus}]{(A)\ NaOH}$ P

Product P is :

(A) 

(B) 

(C) 

(D) 

CCL218

95. $CH_3-\overset{O}{\overset{\|}{C}}-OC_2H_5 + H-\overset{O}{\overset{\|}{C}}-OC_2H_5 \xrightarrow[(ii)\ H_3O^{\oplus}]{(i)\ C_2H_5O^{\ominus}Na^{\oplus}/EtOH}$ Product

Product of the above reaction is

(A) $CH_3-\overset{O}{\overset{\|}{C}}-CH_2-\overset{O}{\overset{\|}{C}}-OH$

(B) $H-\overset{O}{\overset{\|}{C}}-CH_2-\overset{O}{\overset{\|}{C}}-OH$

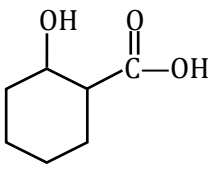
(C) $CH_3-\overset{O}{\overset{\|}{C}}-CH_2-\overset{O}{\overset{\|}{C}}-H$

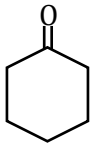
(D) Both (A) and (B)

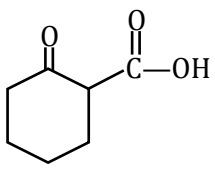
CCL219

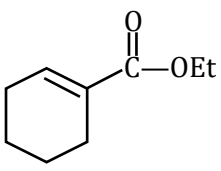
96. $EtO-\overset{O}{\overset{\|}{C}}-(CH_2)_5-\overset{O}{\overset{\|}{C}}-OEt \xrightarrow[(iii)\ HCl/\Delta]{\substack{(i)\ C_2H_5O^{\ominus}Na^{\oplus}\\(ii)\ NaOH}}$ Product

Product of the above reaction is

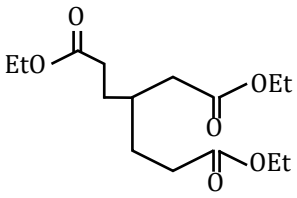
(A) 

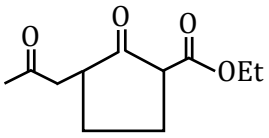
(B) 

(C) 

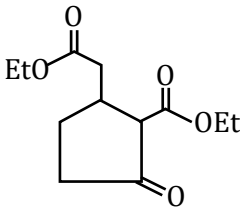
(D) 

CCL220

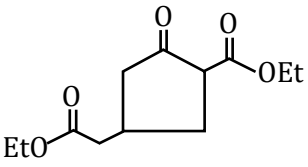
97.  $\xrightarrow{NaOEt/EtOH}$ Product will be



(I)



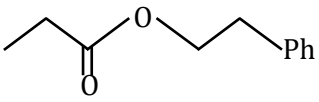
(II)



(III)

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

CCL221

98. (A) $\xrightarrow[\Delta]{Al(OEt)_3}$ 

(A) Ph—CH(CHO)—CH$_2$—CH$_3$ (B) Ph—CH$_2$—CH$_2$—CHO

(C) Ph—CHO (D) None of these

CCL222

99. $CH_3CHO \xrightarrow{Al(OC_2H_5)_3}$ (A) $\xrightarrow{C_2H_5ONa}$ (B);

'A' and 'B' are

(A) $CH_3COOC_2H_5$, $CH_3COCH_2COOC_2H_5$ (B) CH_3COOH, $CH_3COOC_2H_5$

(C) CH_3COOH, $CH_3COOC_2H_5$ (D) None of these

CCL223

100. $MeCH_2CHO \xrightarrow{Al(OEt)_3}$ (P), find product (P)

(A) $MeCH_2\overset{O}{\overset{\|}{C}}—O—CH_2CH_2Me$ (B) $MeCH_2—O—\overset{O}{\overset{\|}{C}}—CH_2CH_2Me$

(C) $MeCH_2—O—\overset{O}{\overset{\|}{C}}—CH_2Me$ (D) None of these

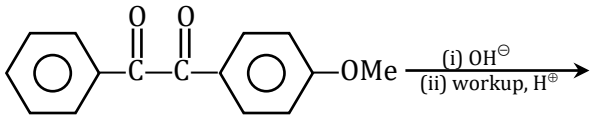
CCL224

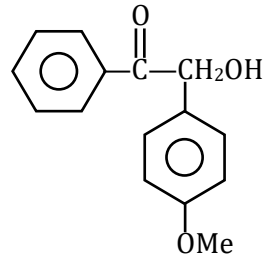
101. $HCHO \xrightarrow{Al(OEt)_3}$ (P) Product P is.

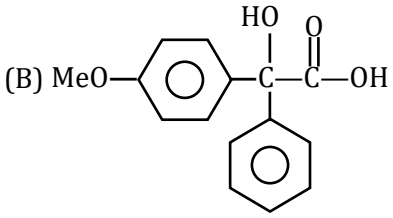
(A) $H—O—\overset{O}{\overset{\|}{C}}—Me$ (B) $H—\overset{O}{\overset{\|}{C}}—Me$

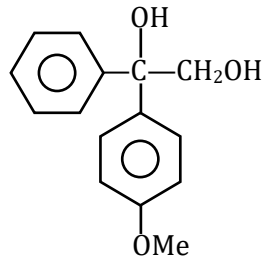
(C) $H—\overset{O}{\overset{\|}{C}}—O—Me$ (D) $H—\overset{O}{\overset{\|}{C}}—O—Me$

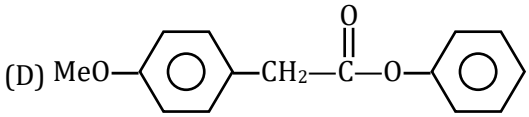
CCL225

102. 

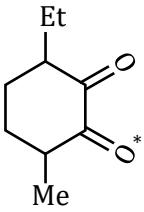
(A) 

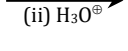
(B) 

(C) 

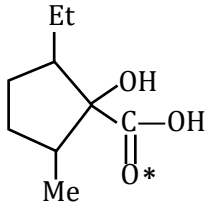
(D) 

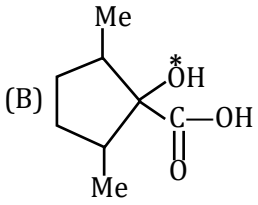
CCL226

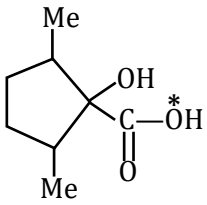
103. 



(B) Compound (B) is;

(A) 

(B) 

(C) 

(D) None of these

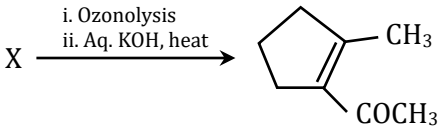
CCL227

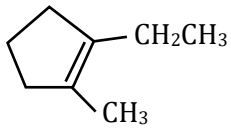
104. The compound that would undergo hydration very easily is :

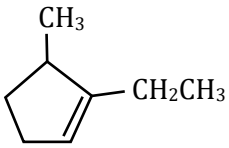
(A) CH_3COCH_2Cl (B) CH_3CH_2CHO (C) $Cl_3C–CHO$ (D) $Cl_3CCH_2COCH_3$

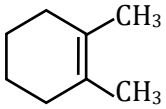
CCL229

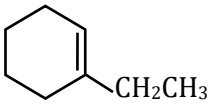
105. Compound 'X' in the following reaction is



(A) 

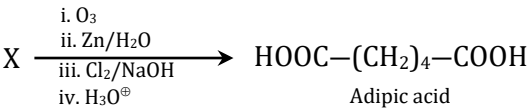
(B) 

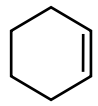
(C) 

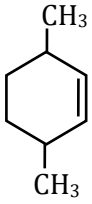
(D) 

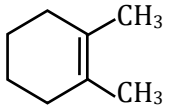
CCL230

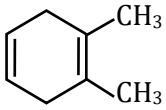
106. Compound 'X' in the following reaction is



(A) 

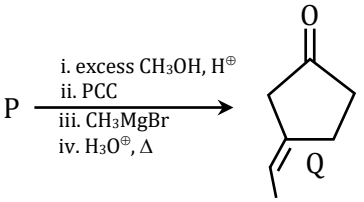
(B) 

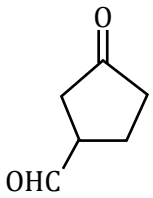
(C) 

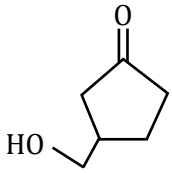
(D) 

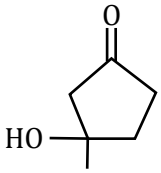
CCL231

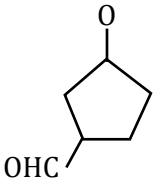
107. Compound 'P' that undergoes the sequence of reactions given below to give the product Q is



(A) 

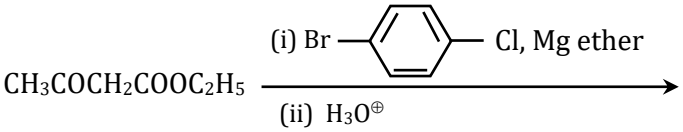
(B) 

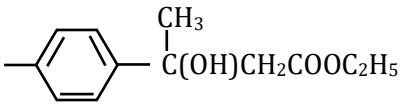
(C) 

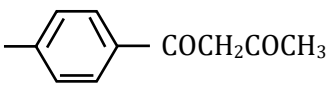
(D) 

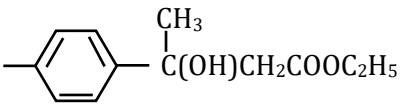
CCL232

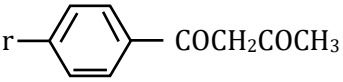
108. The major product of the following reaction is



(A) 

(B) 

(C) 

(D) 

CCL233

MULTIPLE CORRECT TYPE QUESTIONS

Preparation of Carbonyl Compound

109. Which of the following compounds form aldehyde or ketones on reaction with HIO_4 :-

(A) $CH_3-\underset{OH}{CH}-\underset{OH}{CH}-CH_3$

(B) $CH_3-\underset{OH}{CH}-CH_2-CH_2-OH$

(C) $CH_3-\overset{O}{\overset{\|}{C}}-CH_2-\underset{OH}{CH}-CH_3$

(D) $CH_3-\underset{OH}{CH}-\underset{OH}{CH}-\underset{OH}{CH}-CH_3$

CCL108

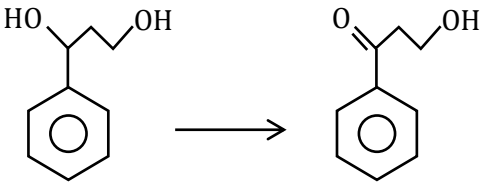
110. The reagent which does not carry out the following transformation.

$RCH_2OH \longrightarrow RCHO$

(A) $KMnO_4$ (B) CrO_3

(C) OsO_4 (D) Pyridiniunmchromate (PCC)

CCL109

111. 

The oxidizing agent who cannot convert the above conversion is/are

(A) PDC (B) PCC (C) MnO_2 (D) $KMnO_4$

CCL110

Nucleophilic addition of Carbonyl Compound

112. The compound which give addition product with sodium bisulphite

(A) Ph–CHO (B) $Ph-\overset{O}{\overset{\|}{C}}-Ph$ (C) $Ph-\overset{O}{\overset{\|}{C}}-CH_3$ (D) $CH_3-\overset{O}{\overset{\|}{C}}-CH_3$

CCL144

113. Consider the structure of given alcohol:

$C_6H_5-\underset{C_2H_5}{\overset{OH}{\underset{|}{\overset{|}{C}}}}-CH_3$

This alcohol can be prepared form :

(A) $C_6H_5-\overset{O}{\overset{\|}{C}}-CH_3$ and C_2H_5MgBr

(B) $CH_3-CH_2-\overset{O}{\overset{\|}{C}}-CH_3$ and C_6H_5MgBr

(C) $C_6H_5-\overset{O}{\overset{\|}{C}}-C_2H_5$ and CH_3MgBr

(D) $C_6H_5-\overset{O}{\overset{\|}{C}}-Cl$ and C_2H_5MgCl

CCL145

114. Stability of hydrates of carbonyl compounds depends on :

(A) Steric hindrance (B) Presence of –I group on gem–diol carbon

(C) Intramolecular hydrogen bonding (D) angle strain in carbonyl compound

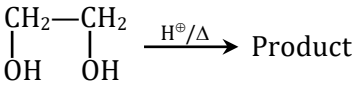
CCL146

115. Which of the following statements are correct regarding to the reactivity of carbonyl functional group?

(A) –I effect increase the reactivity
(B) Steric crowding decreases the reactivity
(C) +I effect increases the reactivity
(D) None of these

CCL148

Oxidation of carbonyl compound

116. 

Which of the following statement is correct about product?

(A) It gives positive tollen's test
(B) It gives positive fehling test
(C) It gives positive lodoform test
(D) It gives positive test with $NaHCO_3$

CCL161

117. Two isomeric ketones, 3–pentanone and 2–pentanone can be distinguished by:

(A) I_2/NaOH (B) $NaHSO_3$ (C) NaCN/HCl (D) 2,4–DNP

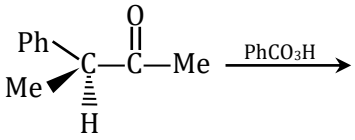
CCL162

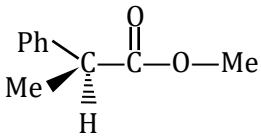
118. Which of the following reagent can be used to convert aldehyde into carboxylic acid :-

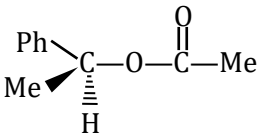
(A) $KMnO_4/H^{\oplus}$
(B) Not oxidize aldehyde to acid
(C) Tollen's Reagent
(D) All of the above

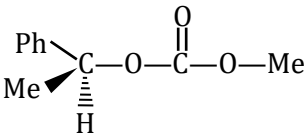
CCL163

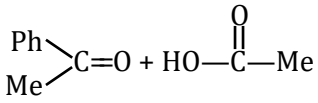
119. The major and minor product of the following reaction is



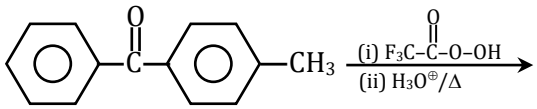
(A) 

(B) 

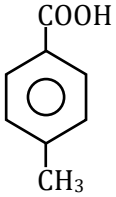
(C) 

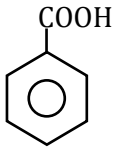
(D) 

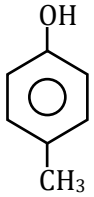
CCL164

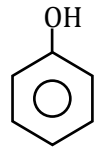
120. 

The major products formed are

(A) 

(B) 

(C) 

(D) 

CCL165

121. In which of the following reactions migration of alkyl group from carbon to electron deficient oxygen is observed ?

(A) Pinacol–Pinacolone rearrangement

(B) Bayer–Villiger oxidation

(C) Preparation of phenol from cummenehydroperoxide

(D) Hoffmann Bromamide Reaction

CCL166

122. In given compounds which one give silver mirror test ?

(A) C_6H_5CHO

(B) Ph—OH

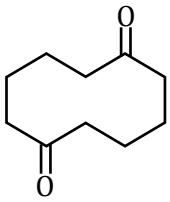
(C) $C_6H_5—CH_2—\overset{\overset{O}{\|}}{C}—CH_2OH$

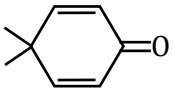
(D) CH_3CHO

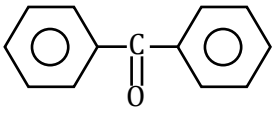
CCL167

Aldol condensation and connizaro reaction

123. Which of the following cannot show aldol condensation reaction:

(A) 

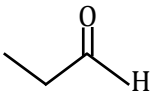
(B) 

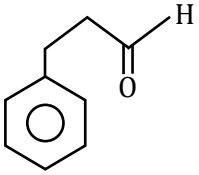
(C) 

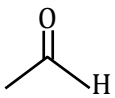
(D) 

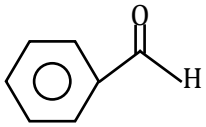
CCL182

124. Which of the following compounds gives aldol condensation but no haloform reaction?

(A) 

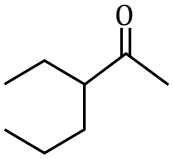
(B) 

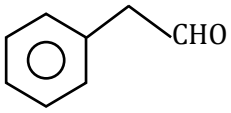
(C) 

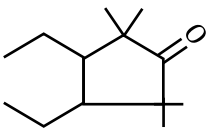
(D) 

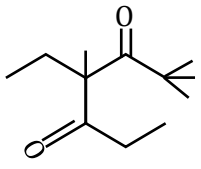
CCL183

125. The compound that undergo aldol condensation is

(A) 

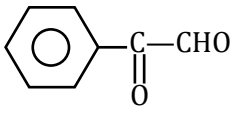
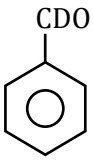
(B) 

(C) 

(D) 

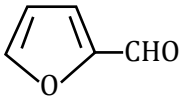
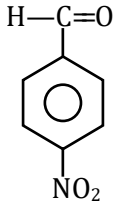
CCL184

126. Which can show Cannizzaro reaction:

(A)  (B)  (C) CCl_3CHO (D) 

CCL185

127. Which of the following can show Cannizzaro reaction :

(A)  (B)  (C)  (D) CD_3CHO

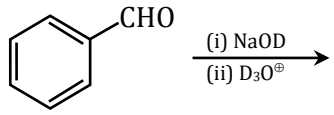
CCL186

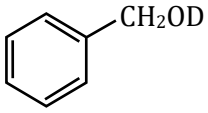
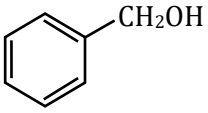
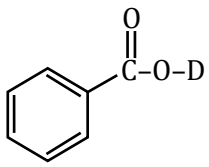
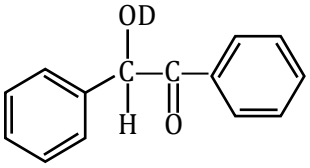
128. Which of the following products is/are correctly mentioned in the following reactions :

(A) $HCHO \xrightarrow{NaOD} HCOONa + CH_3OD$ (B) $HCDO \xrightarrow{NaOH} DCOONa + CH_2DOH$

(C) $HCDO \xrightarrow{NaOEt} DCOOEt + DCH_2ONa$ (D) $D_2CO \xrightarrow{NaOD} DCOONa + CD_3OD$

CCL187

129. 

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

CCL188

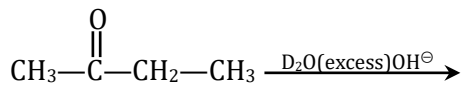
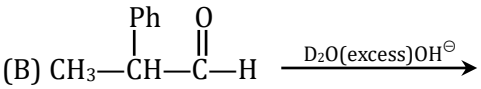
130. Which of the following compounds will not give aldol condensation :

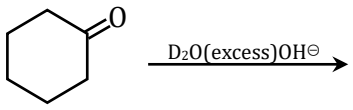
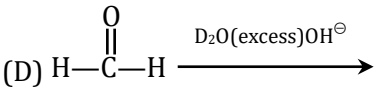
(A) Acetaldehyde (B) Formaldehyde (C) Pivaldehyde (D) Crotonaldehyde

CCL189

Name reaction

131. In which of the following reaction deuterium exchange is observed?

(A)  (B) 

(C)  (D) 

CCL147

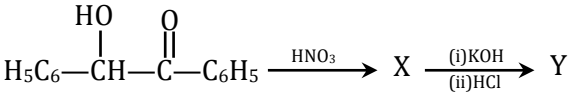
132. Which of the reaction is/are correct to get cinnamic acid ?

(A) $C_6H_5—CH=O \xrightarrow{(CH_3CO)_2O/CH_3COONa}$ (B) $C_6H_5—CH=O \xrightarrow[Pridine]{CH_2(COOC_2H_5)_2}$

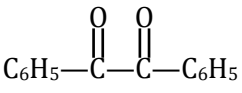
(C) $C_6H_5—CH=O \xrightarrow{CH_3COOC_2H_5/OH^{\ominus}}$ (D) $C_6H_5—CH=O \xrightarrow[(ii)\ H_2O/H^{\oplus}/\Delta]{(i)\ BrCH_2–COOC_2H_5/Zn}$

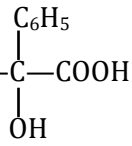
CCL215

133. Consider the following sequence of reaction,

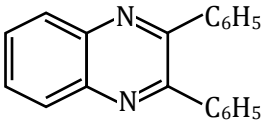


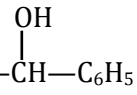
The correct statement(s) regarding the above reaction is/are

(A) X is benzil 

(B) Y is 

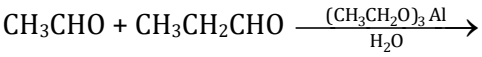
(C) If X is treated with 1, 2-diamino benzene, following compound is formed



(D) Y is 

CCL234

134. Consider the following reaction,



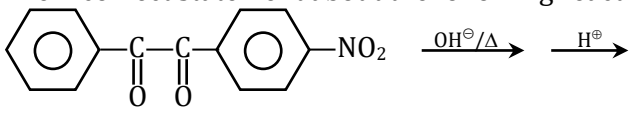
The expected organic product(s) is/are

(A) $CH_3COOCH_2CH_2CH_3$ (B) $CH_3CH_2COOCH_2CH_3$

(C) $CH_3COOCH_2CH_3$ (D) $CH_3CH_2COOCH_2CH_2CH_3$

CCL235

135. The incorrect statement about the following reaction is :



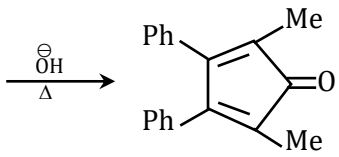
(A) The product is a dicarboxylic acid.

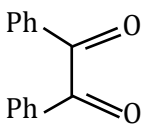
(B) The product is an α-keto acid

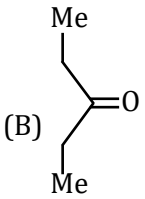
(C) The product is a racemic mixture of α-hydroxy acid.

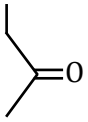
(D) The product is a mixture of two aromatic acids.

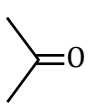
CCL236

136. (A) + (B) 

(A) 

(B) 

(C) 

(D) 

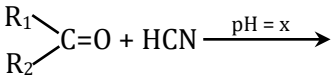
CCL237

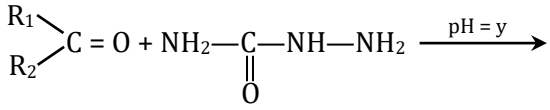
COMPREHENSION TYPE QUESTIONS

Nucleophilic addition of Carbonyl Compound

Paragraph for Question No. 137 to 138

Two reaction which are example of nucleophilic attack are given as below.

Reaction – I : 

Reaction - II : - 

137. Value of x is :

(A) $x \leq 4.5$ (B) $x = 6$ (C) $x > 7$ (D) Can't decide

CCL142

138. Value of y is

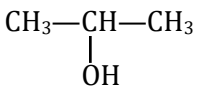
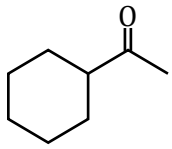
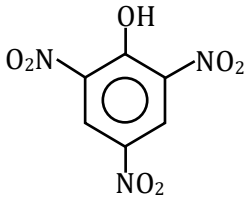
(A) $y = 4.5$ (B) $y = 1.5$ (C) $y = 7$ (D) $y = 9$

CCL143

MATRIX MATCH TYPE QUESTION

Oxidation of carbonyl compound

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

Column – I	**Column-II**
(A) 	(p) it evolve CO_2 gas with $NaHCO_3$
(B) 	(q) it gives iodoform test
(C) 	(r) it gives Lucas reagent test
(D) Reductive ozonolysis products of Benzene	(s) it gives Tollen's test (t) it gives 2, 4, DNP test

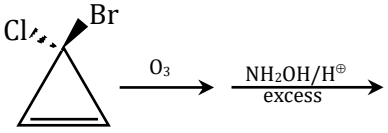
(A) A–q,r B–q,t C–p D–s,t (B) A–q,r B–t C–p,q D–s,t,q

(C) A–q,r B–p,q,t C–p,r D–s,t (D) A–q,r B–t C–p,r D–s,t

CCL160

EXERCISE - S

Nucleophilic addition of Carbonyl Compound

1. 

The total number isomeric products (including stereomers) formed at the end of the reaction is :

CCL149

Oxidation of carbonyl compound

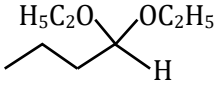
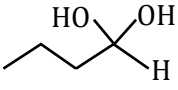
2. How many of the following molecules can give the positive Tollens test

PhCHO, CH_3COCH_2OH, $CH_3COCH(OH)CH_3$, $PhCOCH_3$, PhCOPh

CCL168

3. How many of the following compounds would give silver mirror test with Tollen's reagent.

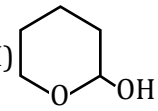
1. Acetaldehyde 2. Benzaldehyde 3. Formaldehyde 4. Acetophenone

5. Acetone 6.  7.  8. Crotonaldehyde

9. 3–hydroxy–2–butanone

CCL169

4. How many of the following compounds would give a positive Tollen's test ?

(I) $CH_3—CHO$ (II) 

(III) $CH_3—CH_2—CH_2—CH_2—CH(OH)OCH_3$ (IV) $CH_3—CH(OCH_3)_2$

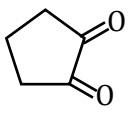
(V) CH_3COOH (VI) HCOOH

(VII) CHOCOOH (VIII) Ph—C(=O)–Ph

(IX) CH_3COCH_2OH (X) $CH_3COCH(OH)CH_3$

CCL170

5. How many of the following can undergo haloform reaction

(A) $C_2H_5COCOOH$ (B)  (C) CH_3COCH_3 (D) CCl_3CHO

(E) C_6H_5CHO (F) $C_6H_5COC_6H_5$ (G) $C_6H_5COCH_2CH_2COCH_3$

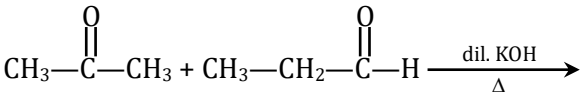
CCL171

Aldol condensation and connizaro reaction

6. $CH_3—CH=O + CH_3CH_2—CH=O \xrightarrow{HO^{\ominus}, \Delta}$ Mixture of aldols

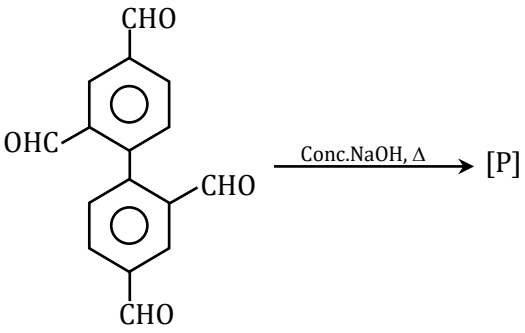
Total number of aldols including stereoisomer are :

CCL190

7. 

Number of possible products (including stereoisomers)

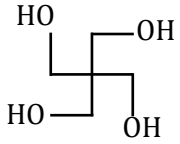
CCL191

8. 

Find the total number of possible products formed in the above reaction.

CCL192

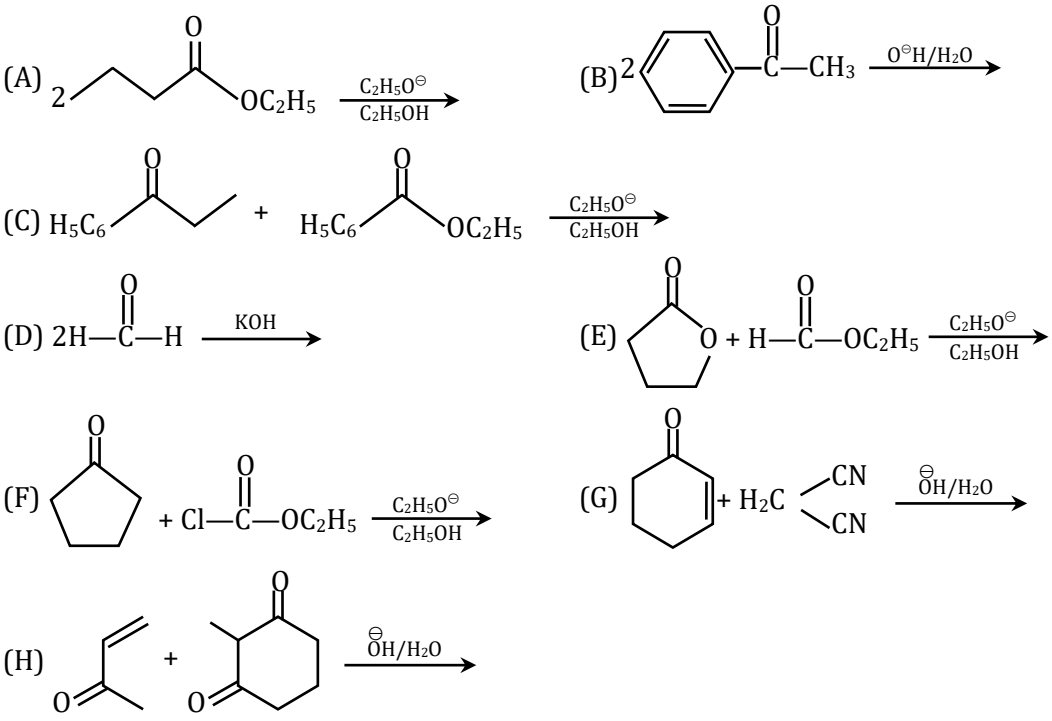
9. Mention the number of Cannizzaro reactions employing in the preparation of following molecule from CH_3CHO and HCHO.



CCL193

Name reaction

10. Consider the following reactions and find out the numbers of reactions which are Claisen condensation in nature.
'A' and 'B' are



CCL228

EXERCISE - JEE (Main) PYQ

1. Glucose on prolonged heating with HI gives: **[JEE (Main) 2018]**

(1) 1–Hexene (2) Hexanoic acid

(3) 6-iodohexanal (4) n-Hexane

CCL031

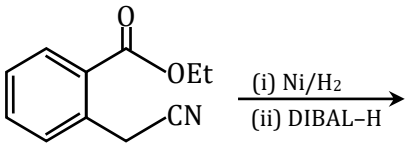
2. Which of the following compounds will most readily be dehydrated to give alkene under acidic condition? **[JEE (Main) 2018]**

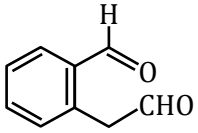
(1) 4-Hydroxypentan-2-one (2) 2-Hydroxycyclopentanone

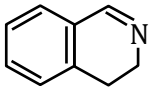
(3) 3-Hydroxypentan-2-one (4) 1-Pentanol

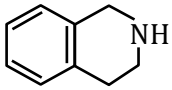
CCL032

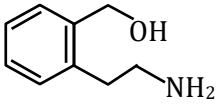
3. The major product of the following reaction is: **[JEE (Main) 2019]**



(1) 

(2) 

(3) 

(4) 

CCL033

4. In the following reaction

Aldehyde + Alcohol $\xrightarrow{HCl}$ Acetal Alcohol

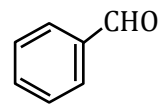
The best combinations is : **[JEE (Main) 2019]**

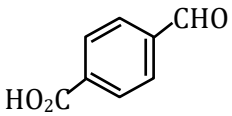
(1) HCHO and MeOH (2) HCHO and t-BuOH

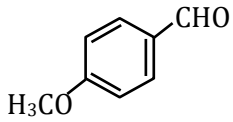
(3) CH_3CHO and MeOH (4) CH_3CHO and t-BuOH

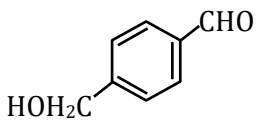
CCL034

5. The aldehydes which will not form Grignard product with one equivalent Grignard reagents are :

(A) 

(B) 

(C) 

(D) 

[JEE (Main) 2019]

(1) (B), (C), (D) (2) (B), (D)

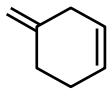
(3) (B), (C) (4) (C), (D)

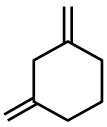
CCL035

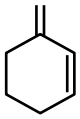
6. An unsaturated hydrocarbon X absorbs two hydrogen molecules on catalytic hydrogenation and also gives following reaction:

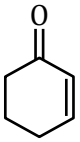
$$X \xrightarrow[Zn/H_2O]{O_3} A \xrightarrow{[Ag(NH_3)_2]^{\oplus}} B(3\text{-oxo-hexanedicarboxylic acid})$$

X will be:- **[JEE (Main) 2020]**

(1) 

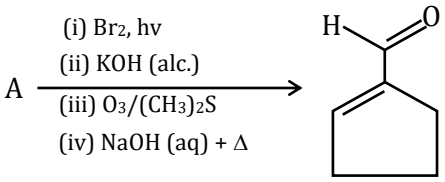
(2) 

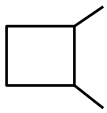
(3) 

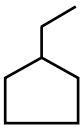
(4) 

CCL036

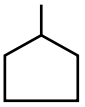
7. In the following reaction A is : **[JEE (Main) 2020]**



(1) 

(2) 

(3) 

(4) 

CCL037

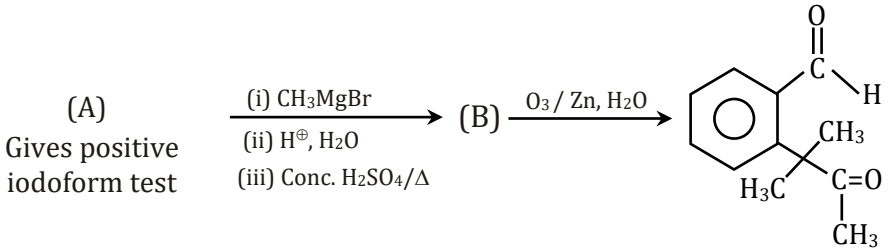
8. Consider the following reactions

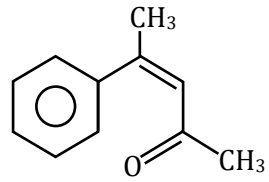
$$A \xrightarrow[(ii)H_3O^+]{(i)CH_3MgBr} B \xrightarrow[573K]{Cu} \text{2-methyl-2-butene}$$

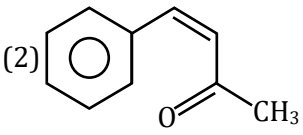
The mass percentage of carbon in A is _____. **[JEE (Main) 2020]**

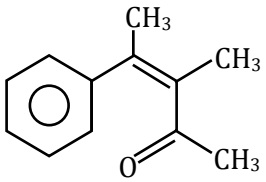
CCL038

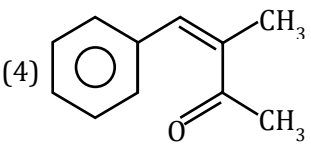
9. Identify (A) in the following reaction sequence : **[JEE (Main) 2020]**



(1) 

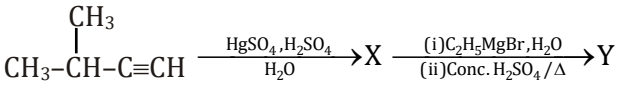
(2) 

(3) 

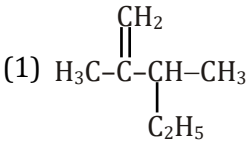
(4) 

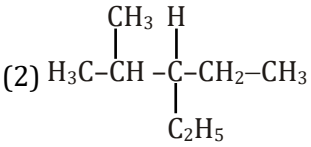
CCL039

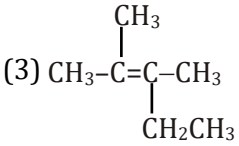
10. The major product (Y) in the following reactions is :

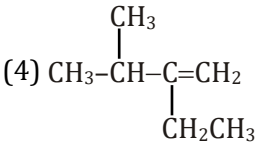


[JEE (Main) 2020]

(1) 

(2) 

(3) 

(4) 

CCL040

11. The number of stereoisomers formed in a reaction of (±) Ph(C=O) C(OH)(CN)Ph with HCN is____.

[JEE (Main) 2022]

CCL041

12. Given below are two statements : one is labelled as **Assertion A** and the other is labelled as **Reason R** :

Assertion A : Acetal/Ketal is stable in basic medium.

Reason R: The high leaving tendency of alkoxide ion gives the stability to acetal/ketal in basic medium.

In the light of the above statements, choose the correct answer from the options given below:

[JEE (Main) 2023]

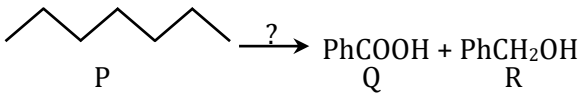
(1) A is true but R is false

(2) A is false but R is true

(3) Both A and R are true and R is the correct explanation of A

(4) Both A and R are true but R is NOT the correct explanation of A

CCL042

13. 

The correct sequence of reagents for the preparation of Q and R is : **[JEE (Main) 2023]**

(1) (i) Cr_2O_3, 770 K, 20 atm ; (ii) CrO_2Cl_2, $H_3O^{\oplus}$; (iii) NaOH ; (iv) $H_3O^{\oplus}$

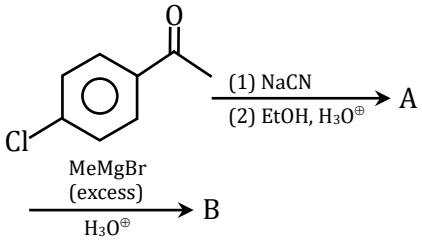
(2) (i) CrO_2Cl_2, $H_3O^{\oplus}$; (ii) Cr_2O_3, 770 K, 20 atm; (iii) NaOH ; (iv) $H_3O^{\oplus}$

(3) (i) $KMnO_4$, $OH^{\ominus}$; (ii) Mo_2O_3, A; (iii) NaOH ; (iv) $H_3O^{\oplus}$

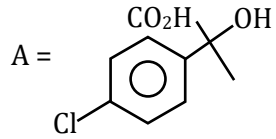
(4) (i) Mo_2O_3, Δ ; (ii) CrO_2Cl_2, $H_3O^{\oplus}$; (iii) NaOH ; (iv) $H_3O^{\oplus}$

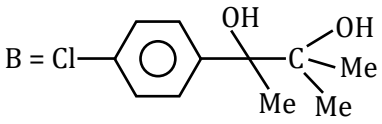
CCL043

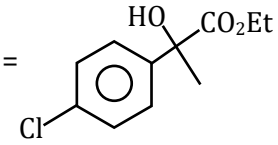
14. Find out the major products from the following reaction sequence.

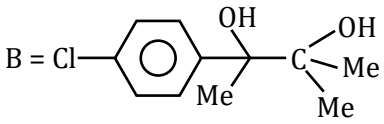


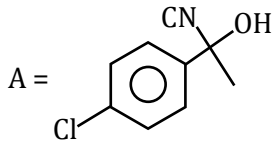
[JEE (Main) 2023]

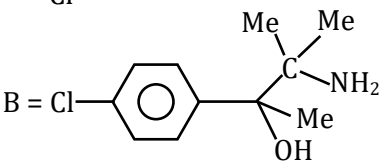
(1) A = 

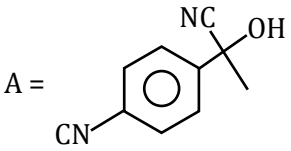
B = 

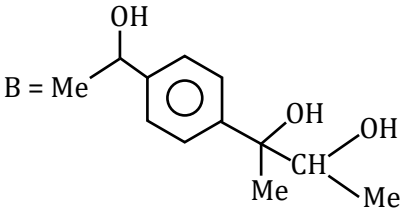
(2) A = 

B = 

(3) A = 

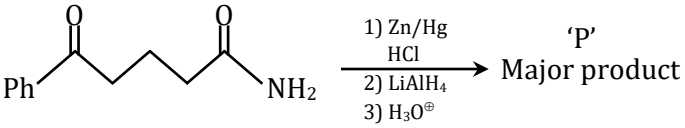
B = 

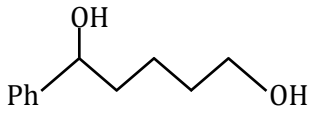
(4) A = 

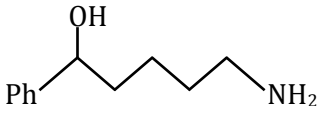
B = 

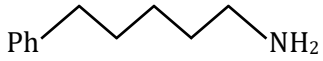
CCL044

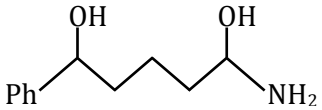
15. The major product 'P' for the following sequence of reactions is: **[JEE (Main) 2023]**



(1) 

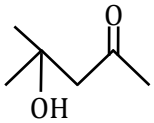
(2) 

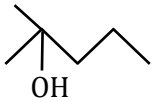
(3) 

(4) 

CCL045

16. Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R.

Assertion A : 

can be easily reduced using Zn-Hg/ HCl to 

Reason R : Zn-Hg/HCl is used to reduce carbonyl group to $-CH_2-$ group.

In the light of the above statements, choose the **correct** answer from the options given below:

[JEE (Main) 2023]

(1) A is false but R is true

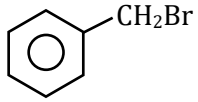
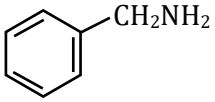
(2) A is true but R is false

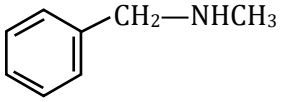
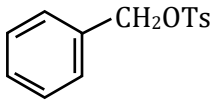
(3) Both A and R are true but R is not the correct explanation of A

(4) Both A and R are true and R is the correct explanation of A

CCL046

17. Benzyl isocyanide can be obtained by : **[JEE (Main) 2023]**

(A)  (B) 

(C)  (D) 

Choose the correct answer from the options given below :

(1) A and D (2) Only B (3) A and B (4) B and C

CCL047

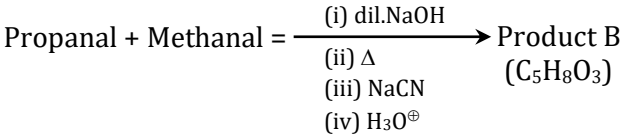
18. A hydrocarbon 'X' with formula C_6H_8 uses two moles of H_2 on catalytic hydrogenation of its one mole. On ozonolysis, 'X' yields two moles of methane dicarbaldehyde. The hydrocarbon 'X' is : **[JEE (Main) 2023]**

(1) hexa-1, 3, 5-triene (2) 1-methylcyclopenta-1, 4-diene

(3) cyclohexa-1, 3-diene (4) cyclohexa-1, 4-diene

CCL048

19. Consider the following reaction



The correct statement for product B is. It is **[JEE (Main) 2023]**

(1) optically active and adds one mole of bromine

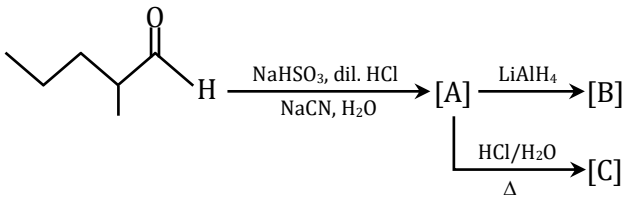
(2) racemic mixture and is neutral

(3) racemic mixture and gives a gas with saturated $NaHCO_3$ solution

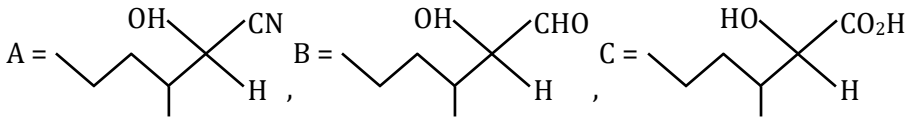
(4) optically active alcohol and is neutrall

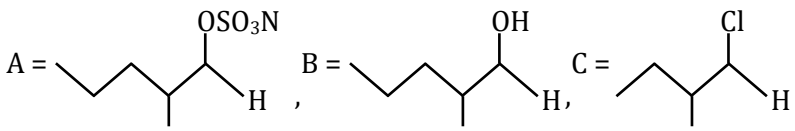
CCL049

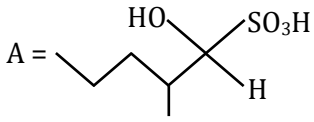
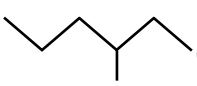
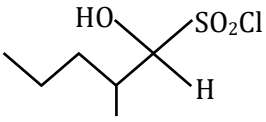
20. The structures of major products A, B and C in the following reaction are sequence.

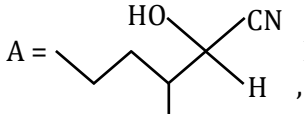
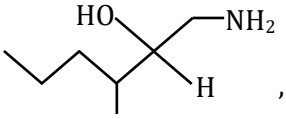
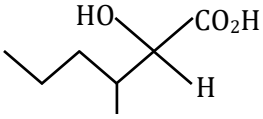


[JEE (Main) 2023]

(1) 

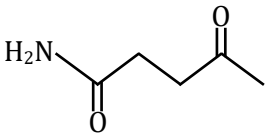
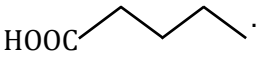
(2) 

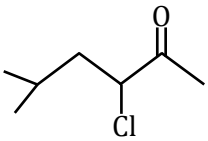
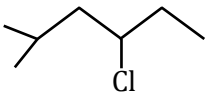
(3) A =  , B =  , C = 

(4) A =  , B =  , C = 

CCL050

21. Given below are two statements : **[JEE (Main) 2023]**

Statement I :  under Clemmensen reduction conditions will give  .

Statement II :  under Wolff-Kishner reduction condition will give 

In the light of the above statements, choose the correct answer from the options given below :

(1) Statement I is false but Statement II is true

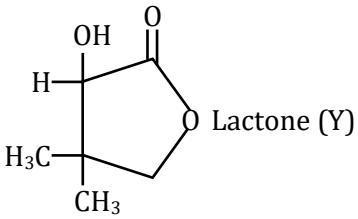
(2) Both Statement I and Statement II are false

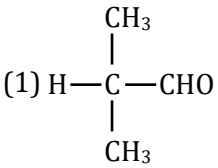
(3) Statement I is true but Statement II is false

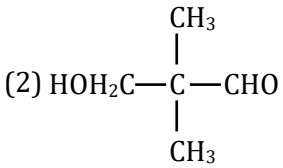
(4) Both Statement I and Statement II are true

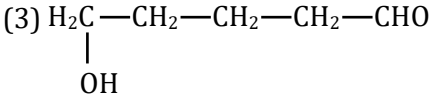
CCL051

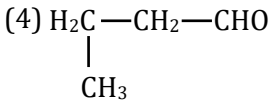
22. Compound (X) undergoes following sequence of reactions to give the Lactone (Y). **[JEE (Main) 2023]**

Compound (X) $\xrightarrow[\text{(iii) } H_3O^{\oplus}]{\text{(i) HCHO, KOH (ii) KCN(alc)}}$  Lactone (Y)

(1) 

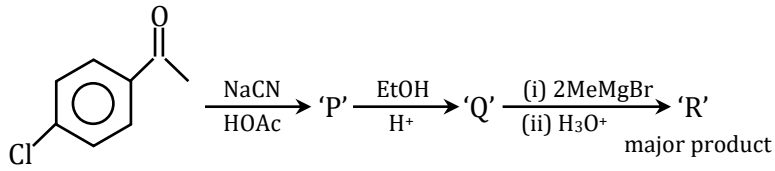
(2) 

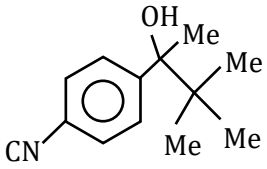
(3) 

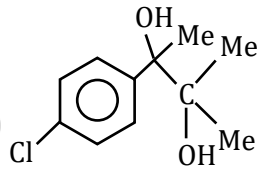
(4) 

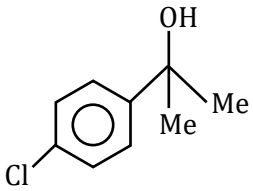
CCL052

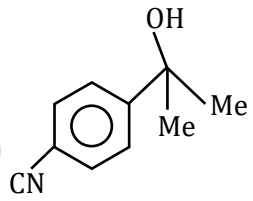
23. 'R' formed in the following sequence of reaction is: **[JEE (Main) 2023]**



(1) 

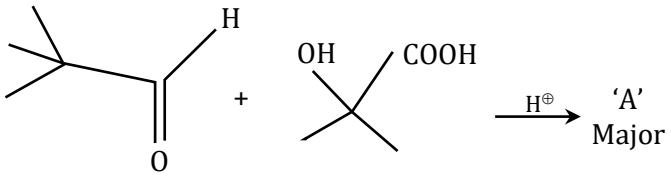
(2) 

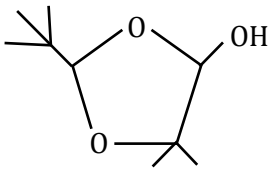
(3) 

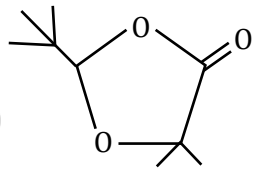
(4) 

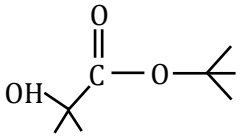
CCL053

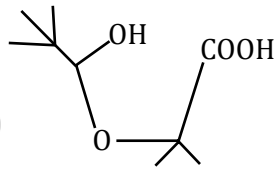
24. 'A' in the given reaction is **[JEE (Main) 2023]**



(1) 

(2) 

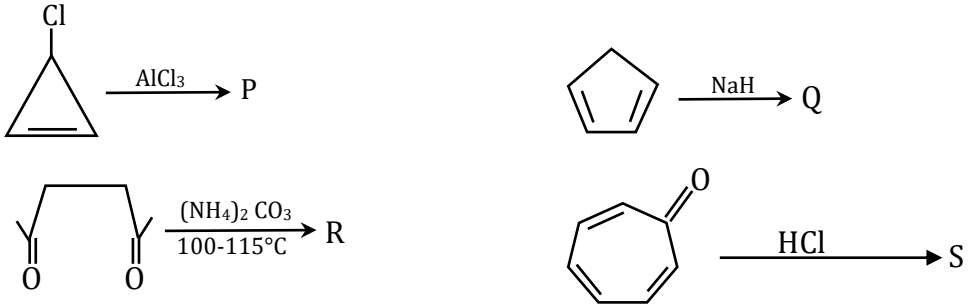
(3) 

(4) 

CCL054

EXERCISE - JEE (Advanced) PYQ

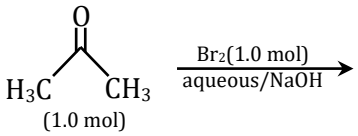
1. Among P, Q, R and S, the aromatic compound(s) is / are : **[JEE (Advanced) 2013]**



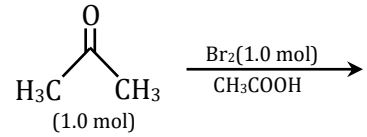
(A) P (B) Q (C) R (D) S

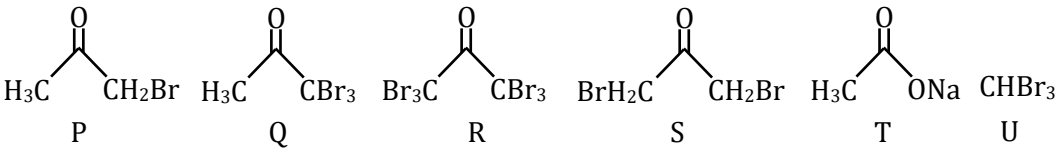
CCL075

2. After completion of the reactions (I and II), the organic compound(s) in the reaction mixtures is(are)

Reaction I : 

[JEE (Advanced) 2013]

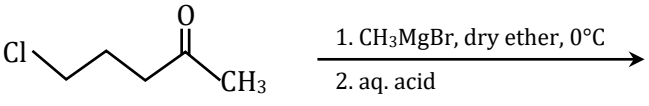
Reaction II : 

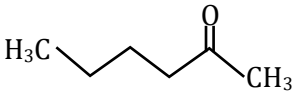


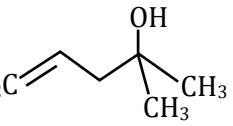
(A) Reaction I : P and Reaction II : P
(B) Reaction I : U, acetone and Reaction II : Q acetone
(C) Reaction I : T, U and Reaction II : P
(D) Reaction I : R, acetone and Reaction II : S acetone

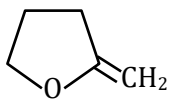
CCL076

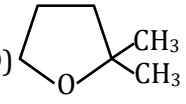
3. The major product in the following reaction is **[JEE (Advanced) 2014]**



(A) 

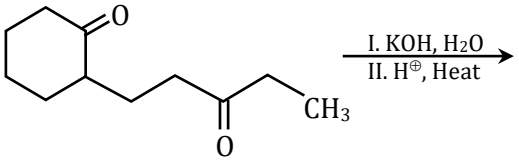
(B) 

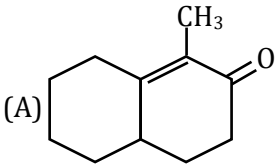
(C) 

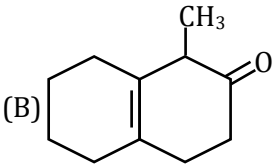
(D) 

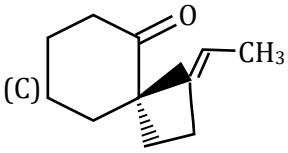
CCL077

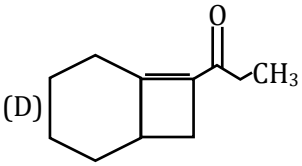
4. The major product of the following reaction is- **[JEE (Advanced) 2015]**



(A) 

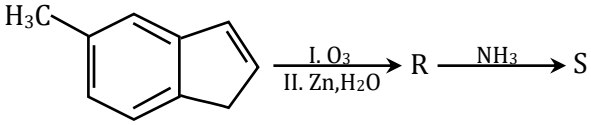
(B) 

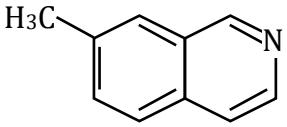
(C) 

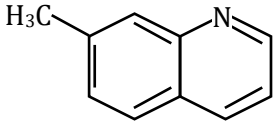
(D) 

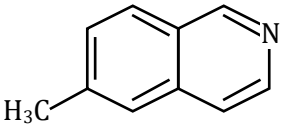
CCL078

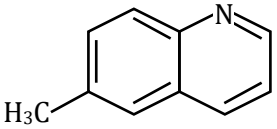
5. In the following reactions, the product S is – **[JEE (Advanced) 2015]**



(A) 

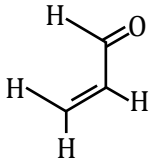
(B) 

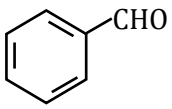
(C) 

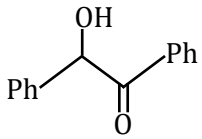
(D) 

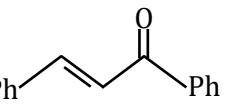
CCL079

6. Positive Tollen's test is observed for : **[JEE (Advanced) 2016]**

(A) 

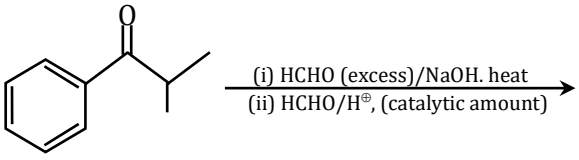
(B) 

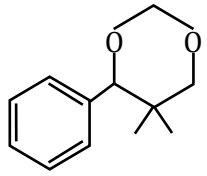
(C) 

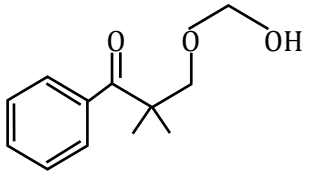
(D) 

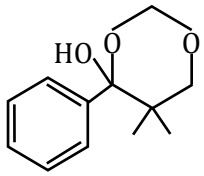
CCL080

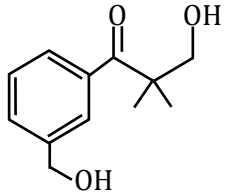
7. The major product of the following reaction sequence is : **[JEE (Advanced) 2016]**



(A) 

(B) 

(C) 

(D) 

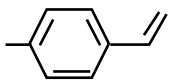
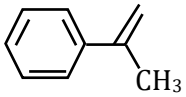
CCL081

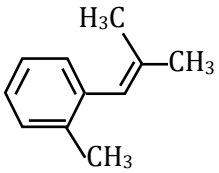
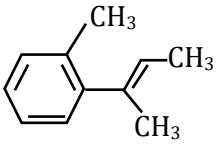
8. Compound **P** and **R** upon ozonolysis produce **Q** and **S**, respectively. The molecular formula of **Q** and **S** is C_8H_8O. **Q** undergoes Cannizzaro reaction but not haloform reaction, whereas **S** undergoes haloform reaction but not Cannizzaro reaction : **[JEE (Advanced) 2017]**

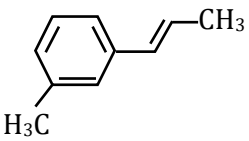
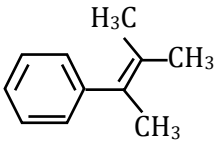
(i) P $\xrightarrow[\text{(ii) } Zn/H_20]{\text{(i) } O_3/CH_2Cl_2}$ Q (C_8H_8O)

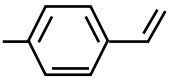
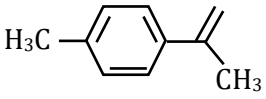
(ii) R $\xrightarrow[\text{(ii) } Zn/H_20]{\text{(i) } O_3/CH_2Cl_2}$ S (C_8H_8O)

The option(s) with suitable combination of P and R, respectively, is(are)

(A)  and 

(B)  and 

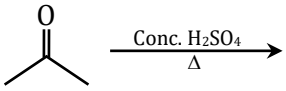
(C)  and 

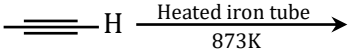
(D)  and 

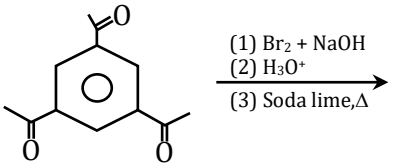
CCL082

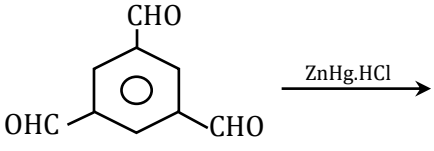
9. The reaction(s) leading to the formation of 1,3,5-trimethylbenzene is (are)

[JEE (Advanced) 2018]

(A) 

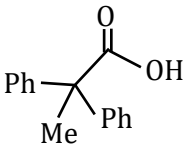
(B) 

(C) 

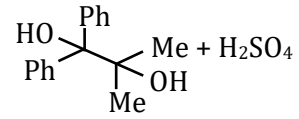
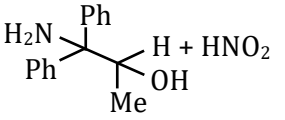
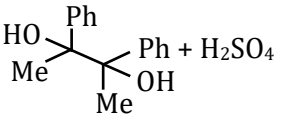
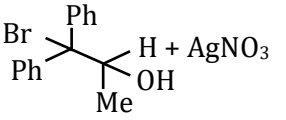
(D) 

CCL083

10. The desired product X can be prepared by reacting the major product of the reactions in LIST-I with one or more appropriate reagents in LIST-II. **[JEE (Advanced) 2018]**
(given, order of migratory aptitude: aryl > alkyl > hydrogen)



X

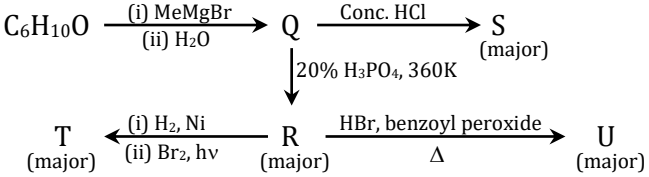
List-I		List-II	
P		1	I_2, NaOH
Q		2	$[Ag(NH_3)_2]OH$
R		3	Fehling solution
S		4	HCHO, NaOH
		5	NaOBr

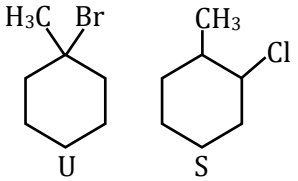
The correct option is

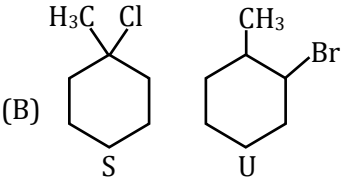
(A) P → 1; Q → 2,3; R → 1,4; S → 2,4
(B) P → 1,5; Q → 3,4; R → 4,5; S → 3
(C) P → 1,5; Q → 3,4; R → 5; S → 2,4
(D) P → 1,5; Q → 2,3; R → 1,5; S → 2,3

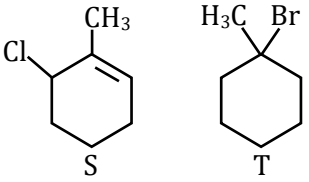
CCL084

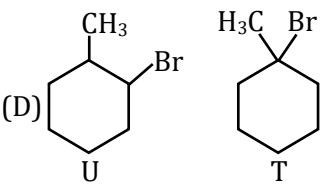
11. Choose the correct option(s) for the following set of reactions **[JEE (Advanced) 2019]**



(A) 

(B) 

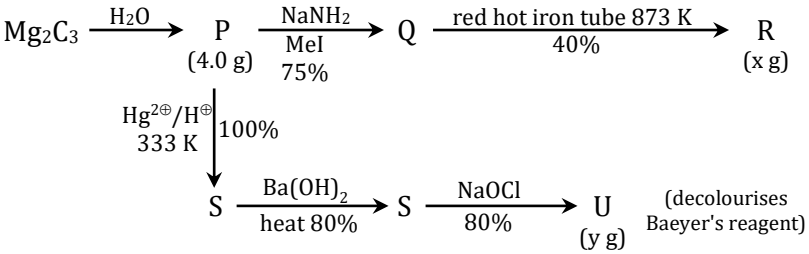
(C) 

(D) 

CCL085

Question stem

For the following reaction scheme, percentage yields are given along the arrow :



x g and **y** g are mass of **R** and **U**, respectively.

(Use : Molar mass (in g mol^{-1}) of H, C and O as 1, 12 and 16, respectively)

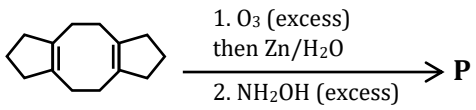
12. The value of **x** is____.: **[JEE (Advanced) 2021]**

CCL086

13. The value of **y** is_____. : **[JEE (Advanced) 2021]**

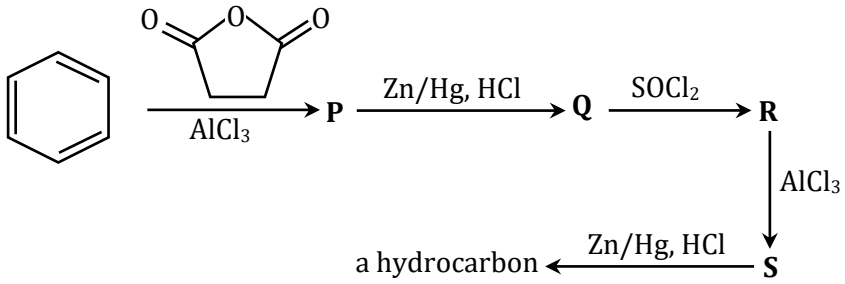
CCL087

14. In the reaction given below, the total number of atoms having sp^2 hybridization in the major product **P** is ___ : **[JEE (Advanced) 2021]**



CCL088

15. Considering the following reaction sequence, the correct statement(s) is(are) **[JEE (Advanced) 2022]**



(A) Compounds **P** and **Q** are carboxylic acids.

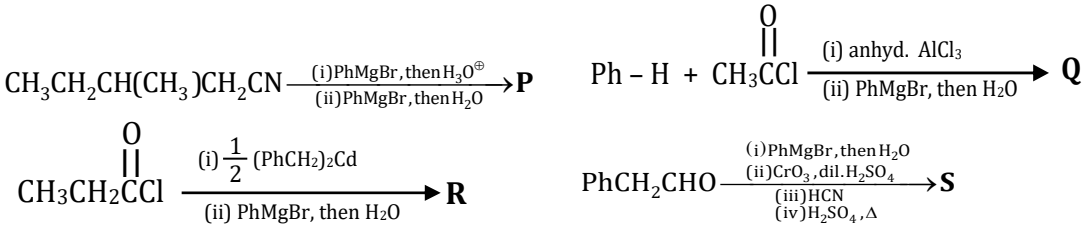
(B) Compound **S** decolorizes bromine water.

(C) Compounds **P** and **S** react with hydroxylamine to give the corresponding oximes.

(D) Compound **R** reacts with dialkylcadmium to give the corresponding tertiary alcohol.

CCL238

16. In the following reactions, **P**, **Q**, **R**, and **S** are the major products.

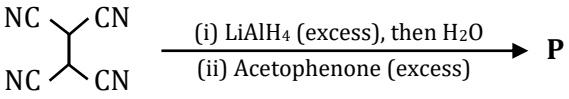


The correct statement(s) about **P**, **Q**, **R**, and **S** is(are) **[JEE (Advanced) 2023]**

(A) Both **P** and **Q** have asymmetric carbon(s).
(B) Both **Q** and **R** have asymmetric carbon(s).
(C) Both **P** and **R** have asymmetric carbon(s).
(D) **P** has asymmetric carbon(s), **S** does **not** have any asymmetric carbon.

CCL239

17. The total number of sp^2 hybridised carbon atoms in the major product **P** (a non-heterocyclic compound) of the following reaction is _____. **[JEE (Advanced) 2023]**



CCL240

18. The major products obtained from the reactions in **List-II** are the reactants for the named reactions mentioned in **List-I**. Match **List-I** with **List-II** and choose the correct option.

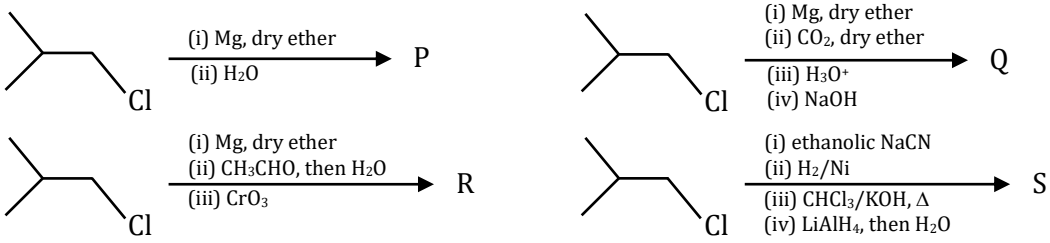
[JEE (Advanced) 2023]

List-I		List-II	
(P)	Etard reaction	(1)	Acetophenone $\xrightarrow{Zn-Hg,\ HCl}$
(Q)	Gattermann reaction	(2)	Toluene $\xrightarrow[(ii)\ SOCl_2]{(i)\ KMnO_4, KOH, \Delta}$
(R)	Gattermann-Koch reaction	(3)	Benzene $\xrightarrow[anhyd.\ AlCl_3]{CH_3Cl}$
(S)	Rosenmund reduction	(4)	Aniline $\xrightarrow[273–278\ K]{NaNO_2/HCl}$
		(5)	Phenol $\xrightarrow{Zn,\ \Delta}$

(A) P → 2; Q → 4; R → 1; S → 3
(B) P → 1; Q → 3; R → 5; S → 2
(C) P → 3; Q → 2; R → 1; S → 4
(D) P → 3; Q → 4; R → 5; S → 2

CCL241

19. In the following reactions, **P**, **Q**, **R**, and **S** are the major products. **[JEE (Advanced) 2023]**



The correct statement about **P**, **Q**, **R**, and **S** is

(A) **P** is a primary alcohol with four carbons.
(B) **Q** undergoes Kolbe's electrolysis to give an eight-carbon product.
(C) **R** has six carbons and it undergoes Cannizzaro reaction.
(D) **S** is a primary amine with six carbons.

CCL242

JEE (Main) Practice Paper

This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

SECTION–A

- This section contains **TWENTY** questions.
- Each question has **FOUR** options (1), (2), (3) and (4). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :

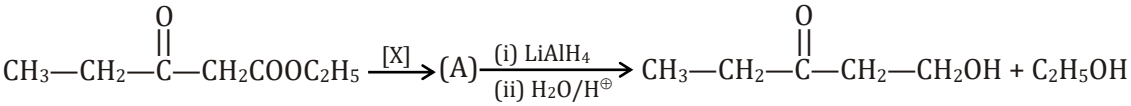
Full Marks : +4, if only the bubble corresponding to the correct option is darkened.
Zero Marks : 0, if none of the bubbles is darkened.
Negative Marks : –1 in all other cases

---

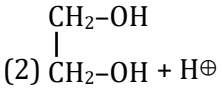
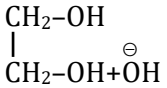
1. Arrange these compounds in decreasing order of reactivity for the nucleophilic attack :
(I) Acid chloride (II) Aldehyde (III) Ketone (IV) Ester
Select the correct answer from the codes given below :
(1) I > II > III > IV (2) IV > III > II > I (3) III > II > I > IV (4) I > IV > II > III

CCL001

2. In the given reaction

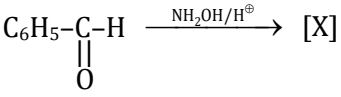


[X] will be :

(1) HCHO (2)  (3)  (4) HCN

CCL002

3. In the given reaction:



[X] will be:
(1) Only syn oxime (2) Only anti oxime
(3) Mixture of syn and anti oxime (4) Secondary amide

CCL003

4. Acetophenone can be obtained by the distillation of :
(1) $(C_6H_5COO)_2Ca$ (2) $(CH_3COO)_2Ca$
(3) $(C_6H_5COO)_2Ca$ and $(CH_3COO)_2Ca$ (4) $(C_6H_5COO)_2Ca$ and $(HCOO)_2Ca$

CCL004

5. Gem dihalide on hydrolysis gives :
(1) Vic diol (2) Gem diol
(3) Carbonyl compound (4) Carboxylic acid

CCL005

6. Acetal or ketal is:

(1) Vic dialkoxy compound (2) α, ω-dialkoxy compound

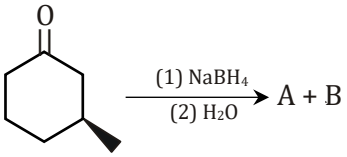
(3) α-alkoxy alcohol (4) Gem dialkoxy compound

CCL006

7. Cyanohydrin of which compound on hydrolysis will give lactic acid ?

(1) C_6H_5CHO (2) HCHO (3) CH_3CHO (4) $CH_3–CH_2–CHO$

CCL007

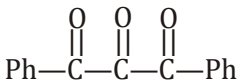
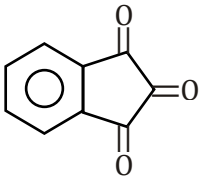
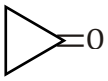
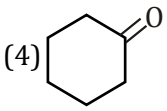
8. 

Identify relationship between A & B products ?

(1) Diastereoisomers (2) Enantiomers (3) Positional isomer (4) Identical

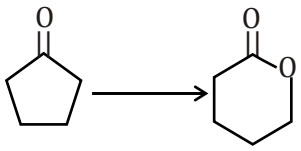
CCL008

9. Which of the following does not form a stable hydrate by the addition of H_2O?

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

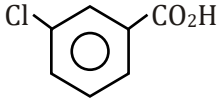
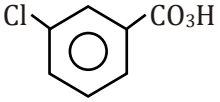
CCL009

10. The conversion

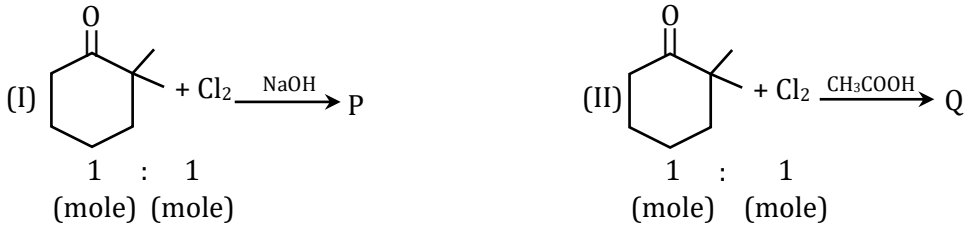


can be effected by using the reagent

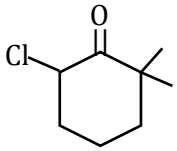
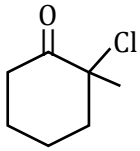
(1) Tollen's reagent (2) O_3

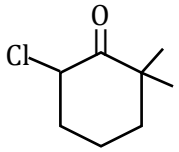
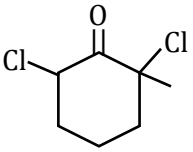
(3)  (4) 

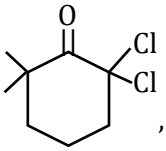
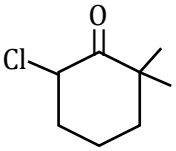
CCL010

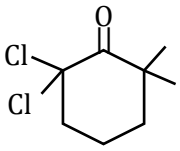
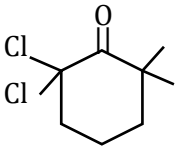
11. 

Organic product P & Q are respectively -

(1)  , 

(2)  , 

(3)  , 

(4)  , 

CCL011

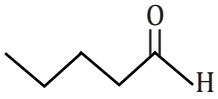
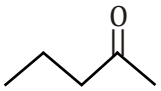
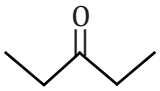
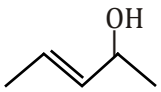
12. Total number of stereoisomers of major product (Q) are :

$$CH_3-CHO+4HCHO \xrightarrow[-HCOONa]{NaOH} (P) \xrightarrow[H^{\oplus}]{2CH_3-CHO} (Q)$$

(1) 0 (2) 4 (3) 8 (4) 2

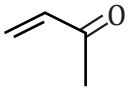
CCL012

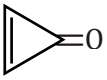
13. An organic compound (A), $C_5H_{10}O$, reacts with hydrazine to form a hydrazone derivative (B). The hydrazone (B) on being heated with KOH at about 180°C, gives n-pentane. The compound (A) does not respond positively to Tollen's reagent and to the iodoform test. The compound (A) is

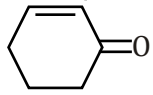
(1)  (2)  (3)  (4) 

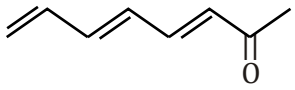
CCL013

14. The compound having the highest dipole moment is :

(1) 

(2) 

(3) 

(4) 

CCL014

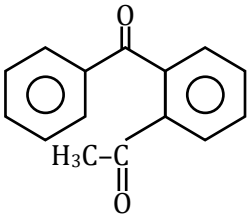
15. Arrange the following compounds in decreasing orders of rate of hydration.

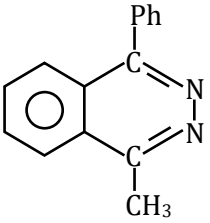
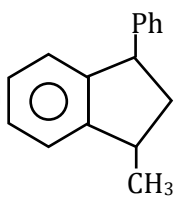
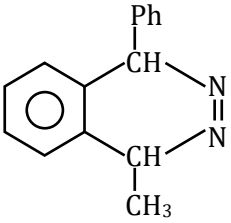
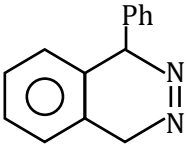
(X) CCl_3CHO (Y) CH_3CHO (Z) CH_3COCH_3 (W) CF_3CHO

(1) W > Z > X > Y (2) W > X > Y > Z (3) W > Y > Z > X (4) W > Z > Y > X

CCL015

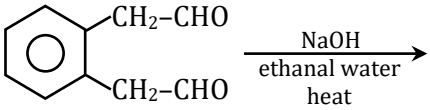
16. Write the product of following reaction :

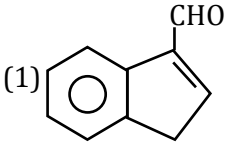


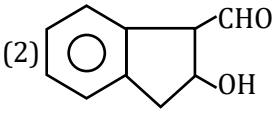
(1)  (2)  (3)  (4) 

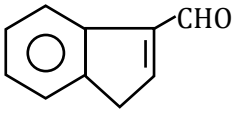
CCL016

17. What is the principal product of the following reaction ?



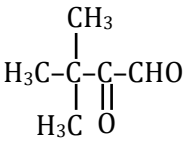
(1) 

(2) 

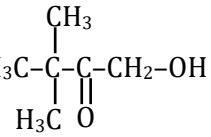
(3) 

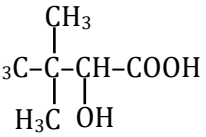
(4) None of these

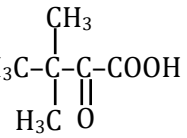
CCL017

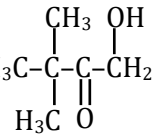
18. In the given reaction 

Product is

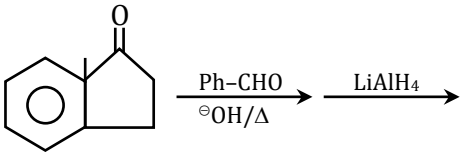
(1) 

(2) 

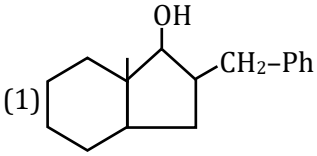
(3) 

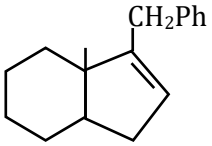
(4) 

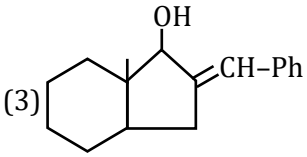
CCL018

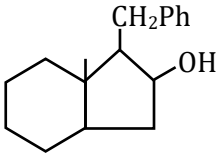
19. 

[X], Product (X) in this reaction is :

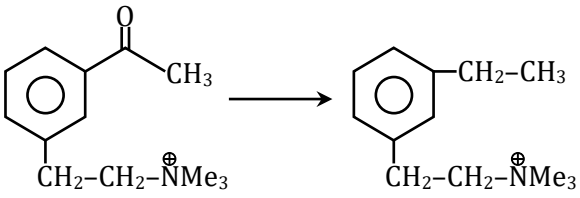
(1) 

(2) 

(3) 

(4) 

CCL019

20. 

Above conversion can be achieved by

(1) $NH_2–NH_2$/ NaOH (2) Zn–Hg/HCl (3) $LiAlH_4$ (4) $NaBH_4$.

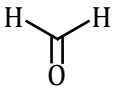
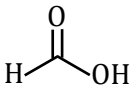
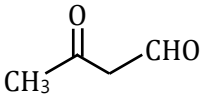
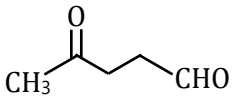
CCL020

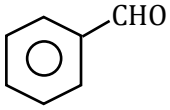
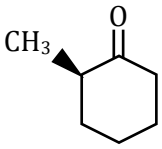
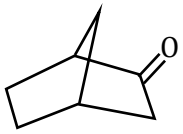
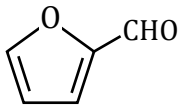
SECTION-B

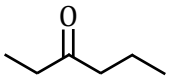
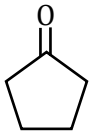
- This section will have **TEN questions**. Candidate can choose to attempt any 5 questions out of these 10 questions. In case if candidate attempts more than 5 questions, first 5 attempted questions will be considered for marking.
- The answer to each question is a **NUMERICAL VALUE.**
- For each question, enter the correct numerical value (Answer should be rounded off to the nearest integer).
- Answer to each question will be evaluated according to the following marking scheme:
  Full Marks : +4, if only correct answer is given.
  Zero Marks : 0, if no answer is given.
  Negative Marks : -1 for incorrect answer

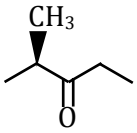
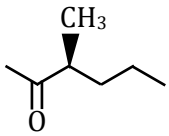
---

1. Identify that compounds that give Cannizzaro reaction.

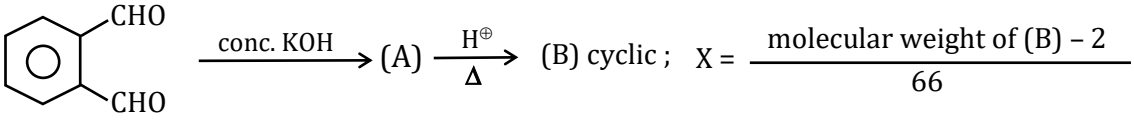
(a) 
(b) 
(c) 
(d) 

(e) 
(f) 
(g) 
(h) 

(i) CHO—CHO
(j) 
(k) 
(l) 

(m) 
(n) 

CCL021

2. 

Then Find 'X'.

CCL022

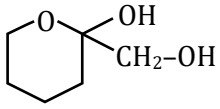
3. How many condensation products are possible when ethanal and phenyl ethanal (mixture) is treated with dil. NaOH?

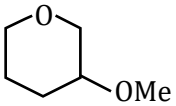
CCL023

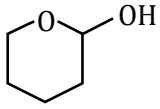
4. What is the molecular weight of a compound that undergoes an aldol self-condensation reaction and whose dehydrated product has a molecular weight of 70?

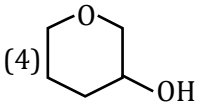
CCL024

5. How many of the following compounds will give positive Tollen's test?

(1) 

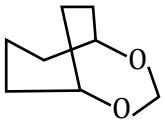
(2) 

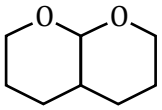
(3) 

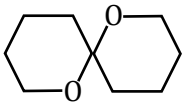
(4) 

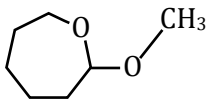
CCL025

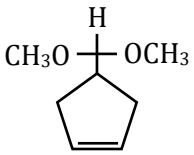
6. How many of following compound classified as an acetal?

(i) 

(ii) 

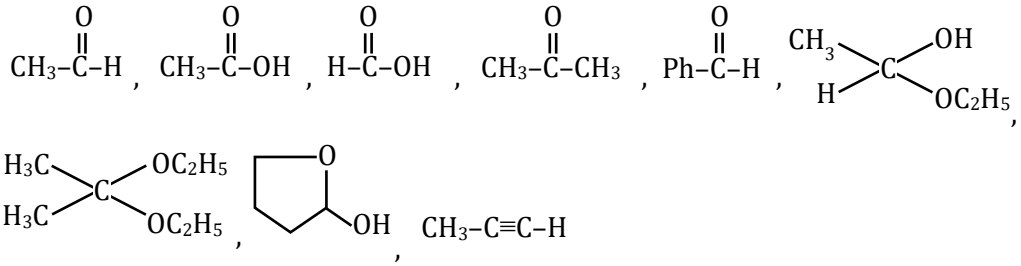
(iii) 

(iv) 

(v) 

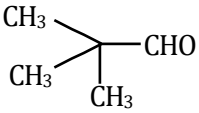
CCL026

7. From the following compounds, how many would give positive test with Tollen's reagent?



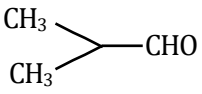
CCL027

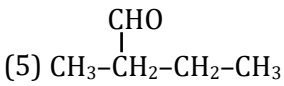
8. How many compounds would give Benedict's test?

(1) 

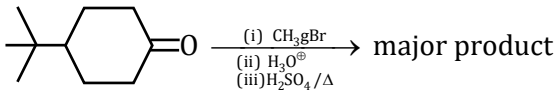
(2) C_6H_5-CHO

(3) CH_3CHO

(4) 

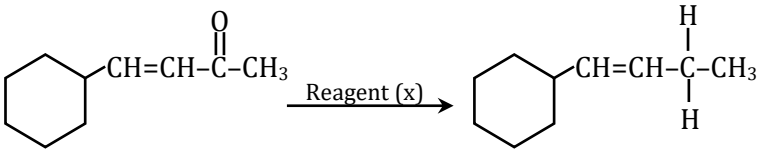
(5) 

CCL028

9. 

major product contains number of 'αH' are-

CCL029

10. 

(1) $LiAlH_4$ (2) $H_2/Ni/\Delta$ (3) Zn-Hg/conc. HCl

(4) $NaBH_4$ (5) $NH_2NH_2/\overset{\ominus}{O}H$ (6) $Na/liqNH_3$

How many of the above reagents(X) can lead above conversion.

CCL030

JEE (Advanced) Practice Paper

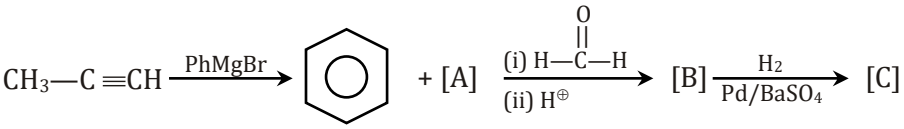
This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

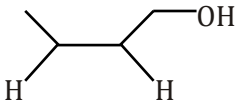
SECTION–I

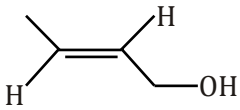
- This section contains **FOUR** questions.
- Each question has FOUR options (A), (B), (C) and (D). ONLY ONE of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories:

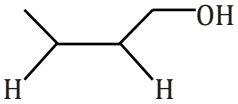
Full Marks : +3, if only the bubble corresponding to the correct option is darkened.
Zero Marks : 0, if none of the bubbles is darkened.
Negative Marks : –1 in all other cases

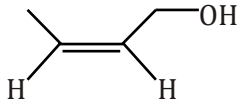
1. Final product in the given reaction sequence is :



(A) 

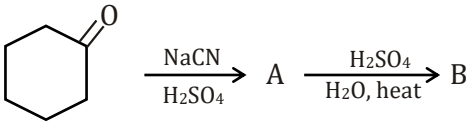
(B) 

(C) 

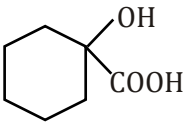
(D) 

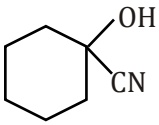
CCL055

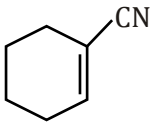
2. Consider the following sequence of reactions.

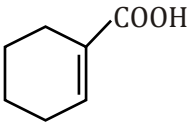


The major product (B) is :

(A) 

(B) 

(C) 

(D) 

CCL056

3. In the reaction

$(CH_3)_2CHNO_2 + HCHO \xrightarrow[H^+]{NaOH}$

the major product is

(A) $(CH_3)_2CHCH_2ONO_2$

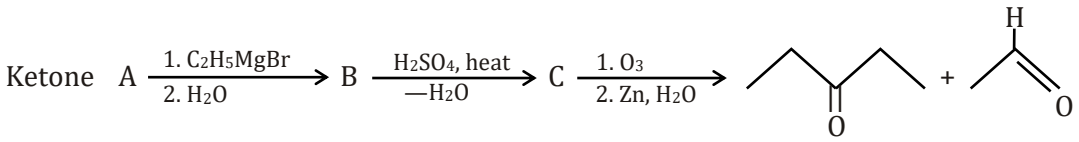
(B) $(CH_3)_2C(NO_2)(CH_2OH)$

(C) $(CH_3)_2CH-\underset{\diagdown\,O\,\diagup}{CH}-CHNO_2$

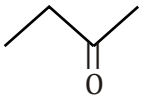
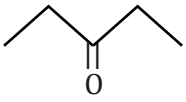
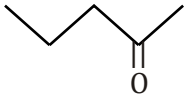
(D) $(CH_3)_2CH-\underset{\diagdown\,O\,\diagup}{CH}-CH_2NO_2$

CCL057

4. Consider the following sequence of reactions.



The ketone (A) is :

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

CCL058

SECTION-II

- This section contains **EIGHT** questions.
- Each question has **FOUR** options for correct answer(s). **ONE OR MORE THAN ONE** of these four option(s) is (are) correct option(s).
- For each question, choose the correct option(s) to answer the question.
- Answer to each question will be evaluated according to the following marking scheme:

Full Marks	: +4,	if only (all) the correct option(s) is (are) chosen.
Partial Marks	: +3,	if all the four options are correct but ONLY three options are chosen.
Partial Marks	: +2,	if three or more options are correct but ONLY two options are chosen, both of which are correct options.
Partial Marks	: +1,	if two or more options are correct but ONLY one option is chosen and it is a correct option.
Zero Marks	: 0,	if none of the options is chosen (i.e. the question is unanswered).
Negative Marks	: –2,	in all other cases.

5. Two isomeric ketones, 3-pentanone and 2-pentanone can be distinguished by :

(A) I_2 / NaOH (B) $NaSO_3H$ (C) NaCN / HCl (D) 2,4-DNP

CCL059

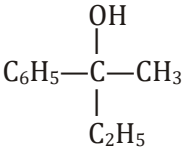
6. An optically inactive alcohol (A) $C_6H_{12}O$ is oxidized by MnO_2 to produce optically inactive carbonyl compound while reduction of (A) by H_2/Ni produces optically active compound. Possible structure(s) of alcohol is/are

(A) Hex-2-en–1–ol (B) 2-Methyl pent-2 - en-1-ol

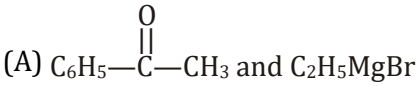
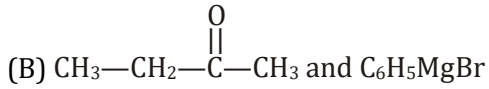
(C) 3-Methyl pent-2 - en-1-ol (D) None of these

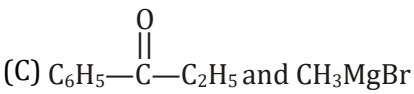
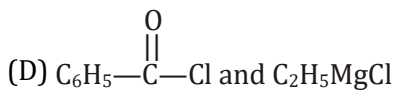
CCL060

7. Consider the structure of given alcohol:



This alcohol can be prepared from:

(A)  (B) 

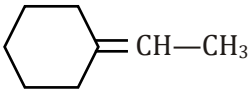
(C)  (D) 

CCL061

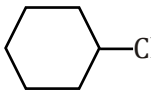
8. Which of the following compounds will not give aldol condensation :

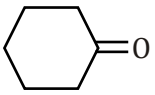
(A) Acetaldehyde (B) Formaldehyde (C) Pivaldehyde (D) Crotonaldehyde

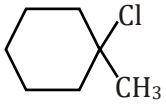
CCL062

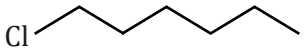
9. (A) $\xrightarrow[\text{(iii) (B)}]{\text{(i) } Ph_3P \text{ (ii) BuLi}}$  $CH—CH_3$

In above reaction (A) and (B) will respectively be

(A)  & CH_3CHO

(B) CH_3CH_2Cl & 

(C)  & HCHO

(D)  & CH_3CHO

CCL063

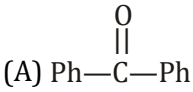
10. Stability of hydrates of carbonyl compounds depends on:

(A) Steric hindrance (B) Presence of –I group on gemdiol carbon

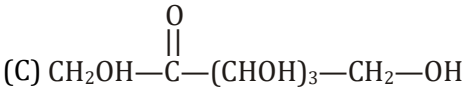
(C) Intramolecular hydrogen bonding (D) angle strain in carbonyl compound

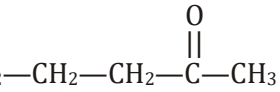
CCL064

11. Which of the following(s) will form stable hemiketal :

(A) 

(B) 

(C) 

(D) 

CCL065

12. Mixture of Ph–CHO & HCHO is treated with NaOH then Cannizzaro reaction involves:

(A) Oxidation of HCHO (B) Reduction of HCHO

(C) Oxidation of Ph–CHO (D) Reduction of Ph–CHO

CCL066

SECTION–III

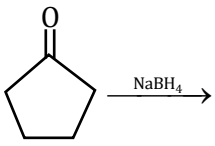
- This section contains **TWO** questions.
- **Each question has matching lists.** The codes for the lists have choices (A), (B), (C) and (D) out of which **ONLY ONE is correct**
- For each question, marks will be awarded in one of the following categories :

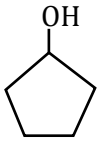
Full Marks : +3, if only the bubble corresponding to the correct option is darkened.

Zero Marks : 0, if none of the bubbles is darkened.

Negative Marks : –1, in all other cases

13. Match list-I with list-II :

List - I	**List – II**
(A) 	(P) Acetal
(B) $C_6H_5CHO + Ph–NH_2 \xrightarrow{H^\oplus}$	(Q) Schiff's base

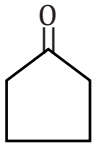
(C) $C_6H_5COCH_3+CH_3-CH_2-NH_2 \xrightarrow{H^{\oplus}}$ (R) 

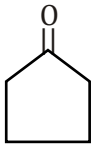
(D) $RCHO + 2RCH_2OH \xrightarrow{H^{\oplus}}$ (S) Imine

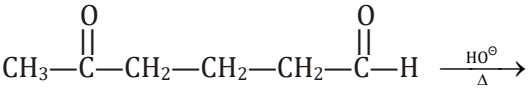
(A) (A) → R ; (B) → Q,S ; (C) → Q,S ; (D) → P
(B) (A) → S ; (B) → Q,R ; (C) → Q,P ; (D) → S
(C) (A) → R ; (B) → Q,P ; (C) → Q,R ; (D) → Q
(D) (A) → P ; (B) → R,S ; (C) → P,Q ; (D) → P

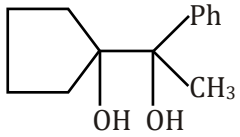
CCL067

14. **Column - I** **Column – II**

(A)  $\xrightarrow[\text{traces of KOH}]{HCN}$ (A) $\xrightarrow{LiAlH_4}$ (B) $\xrightarrow[HCl]{NaNO_2}$ (C) (P) Formation of six member ring takes place

(B)  $\xrightarrow[(2)H_2O]{(1)\ Mg-Hg}$ (A) $\xrightarrow{Conc.H_2SO_4}$ (B) (Q) Final product is Ketone

(C)  (R) Final product formed will give positive Idoform test

(D)  (A) (S) Final product formed will react with 2,4-DNP. (2,4-Di-nitrophenyl hydrazine)

(A) (A) → P,Q, ; (B) → P,S ; (C) → Q,S ; (D) → P,R
(B) (A) → P,Q, ; (B) → P,S,R ; (C) → P,Q,R ; (D) → P,Q
(C) (A) → P,Q,S ; (B) → P,Q,S ; (C) → Q,R,S ; (D) → Q,R,S
(D) (A) → P,Q,S ; (B) → P,Q,S ; (C) → P,Q,S ; (D) → P,Q,S

CCL068

SECTION–IV

- This section contains **TWO** paragraph.
- Based on paragraph, there are **TWO/THREE** questions.
- Each question has **FOUR** options (A), (B), (C) and (D) **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories:

Full Marks : +3, if only the bubble corresponding to the correct answer is darkened.
Zero Marks : 0, in all other cases.

Paragraph for Q. No. 15 to 17

An alkene (A) $C_{16}H_{16}$ on ozonolysis gives only product (B) C_8H_8O. (B) also can be obtained by hydrolysis of the product obtained by reaction between cyano benzene and CH_3MgBr. (A) can show geometrical isomerism and it can decolourise Br_2 water. (B) on treatment with SeO_2 produces (C)

15. Which is not correct about (A) ?

(A) A is optically inactive

(B) On catalytic hydrogenation 'trans' form of A produces racemic mixture

(C) A can be prepared by Witting reaction on acetophenone with $Ph_3P = C(CH_3)Ph$.

(D) On treatment with per acid followed by hydrolysis 'trans' form of A produces racemic mixture

CCL069

16. Which is not correct about B ?

(A) It gives iodoform test

(B) On treatment with $LiAlH_4$, H_2O it produces a compound which also responds to iodoform test.

(C) It gives Tollen's test

(D) On treatment with NH_2NH_2 followed by alc. KOH at high temperature, it produces ethyl benzene

CCL070

17. Which is not correct about C?

(A) On treatment with $NaBH_4$ it will produce a diol.

(B) On treatment with $OH^{\ominus}$ (conc.) followed by acidification racemic mixture of a carboxylic acid is obtained

(C) It gives Tollen's test

(D) It can take part in aldol condensation

CCL071

Paragraph for Q. No. 18 and 19

Questions given below consist of two statements each printed as Assertion (A) and Reason (R); while answering these questions you are required to choose any one of the following four responses:

(A) If both (A) and (R) are true and (R) is the correct explanation of (A)

(B) If both (A) and (R) are true but (R) is not correct explanation of (A)

(C) If (A) is true but (R) is false

(D) If (A) is false and (R) is true

18. **Assertion** : Benzaldehyde with HCN gives two isomeric compounds

Reason : Both nitrile and isonitrile compounds are possible when HCN reacts with carbonyl group.

CCL072

19. **Assertion :** $Cl_3C-\overset{\overset{O}{\|}}{C}-H \xrightarrow{NaOH} Cl_3C-CH_2OH + Cl_3C-COONa$

Reason : There are no α–H in this compound, so it can't give aldol.

CCL073

SECTION–V

- This section contains **ONE** questions.
- The answer to each question is a **SINGLE DIGIT INTEGER** ranging from 0 to 9, both inclusive.
- For each question, darken the bubble corresponding to the correct integer in the ORS.
- For each question, marks will be awarded in one of the following categories :

  Full Marks : +3, if only the bubble corresponding to the correct answer is darkened.

  Zero Marks : 0, in all other cases.

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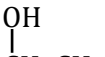
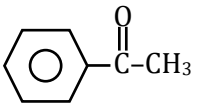
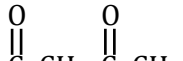
20. The total no. of compounds giving Haloform test

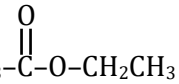
(a) 

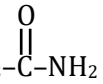
(b) 

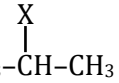
(c) CH_3CH_2CHO

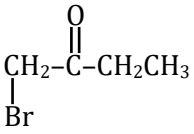
(d) 

(e) CCl_3CHO

(f) 

(g) 

(h) 

(i) 

(j)

CCL074

ANSWER KEY

EXERCISE - O

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	A	B	D	D	A	D	B	B	D	B
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	A	D	D	B	A	B	C	B	B	B
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	A	A	C	A	A	D	B	B	C	D
Que.	31	32	33	34	35	36	37	38	39	40
Ans.	B	B	A	B	D	B	D	D	D	A
Que.	41	42	43	44	45	46	47	48	49	50
Ans.	A	B	C	C	A	C	B	B	B	D
Que.	51	52	53	54	55	56	57	58	59	60
Ans.	B	C	C	C	D	D	C	A	C	B
Que.	61	62	63	64	65	66	67	68	69	70
Ans.	B	B	D	D	A	B	B	B	A	A
Que.	71	72	73	74	75	76	77	78	79	80
Ans.	D	B	B	A	C	B	B	A	C	C
Que.	81	82	83	84	85	86	87	88	89	90
Ans.	B	A	C	C	A	A	C	C	D	D
Que.	91	92	93	94	95	96	97	98	99	100
Ans.	A	C	B	D	D	B	D	A	A	A
Que.	101	102	103	104	105	106	107	108	109	110
Ans.	C	B	A	C	C	C	B	A	AD	ABC
Que.	111	112	113	114	115	116	117	118	119	120
Ans.	ABD	AD	ABC	ABCD	AB	ABC	AB	AC	AB	BC
Que.	121	122	123	124	125	126	127	128	129	130
Ans.	BC	ACD	BCD	AB	ABD	ABD	ABC	ABCD	AC	BC
Que.	131	132	133	134	135	136	137	138	139	
Ans.	ABC	ABD	ABC	ABCD	ABD	AB	C	A	A	

EXERCISE - S

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	3	6	7	4	12	6	4	1	4

EXERCISE - JEE (Main) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	1	2	1	2	1	3	66.65 to 66.70	4	3
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	3	1	1	2	3	1	3	4	3	4
Que.	21	22	23	24						
Ans.	3	1	2	2						

EXERCISE - JEE (Advanced) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	ABCD	C	D	A	A	ABC	A	AC	ABD	D
Que.	11	12	13	14	15	16	17	18	19	
Ans.	BD	1.62	(3.20 OR 3.90 TO 3.91)	(8 or 12)	AC	CD	28	D	B	

JEE (Main) Practice Paper

Section-A	Q.	1	2	3	4	5	6	7	8	9	10
	A.	1	2	3	3	3	4	3	1	4	4
	Q.	11	12	13	14	15	16	17	18	19	20
	A.	3	4	3	2	2	1	1	2	1	2
Section-B	Q.	1	2	3	4	5	6	7	8	9	10
	A.	4	2	8	44	2	4	4	4	7	2

JEE (Advanced) Practice Paper

Section-I	Q.	1	2	3	4				
	A.	D	D	B	B				
Section-II	Q.	5	6	7	8	9	10	11	12
	A.	AB	BC	ABC	BC	AB	ABCD	BC	AD
Section-III	Q.	13	14						
	A.	A	D						
Section-IV	Q.	15	16	17	18	19			
	A.	D	C	D	C	D			
Section-V	Q.	20							
	A.	6							

Important Notes