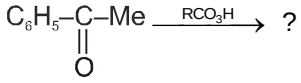
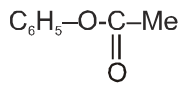
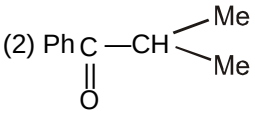
Self Practice Paper (SPP)

1. What will be the product of the following reaction



(1) 
(2) 
(3) PhCH(Me)OCOOMe (4) None of these

2. In which reaction acetaldehyde cannot be obtained ?

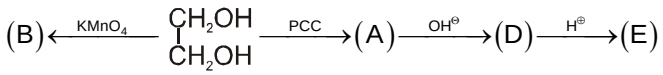
(1) CH_2= CH–CH_2–CH=CH_2 $\xrightarrow[H_2O]{O_3/Zn}$
(2) CH_3–CH  $\xrightarrow[H_2O]{O_3/Zn}$
(3) HC ≡CH + H_2O $\xrightarrow[H_2SO_4]{HgSO_4}$
(4) $CH_3COCl + H_2$ $\xrightarrow{Pd+BaSO_4}$

3. HCHO can be separated from the mixture of HCHO, CH_3COCH_3 & $PhCOCH_3$ by treating the mixture with :-

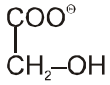
(1) $NaHSO_3$ (2) 2, 4 DNP
(3) Semi carbazide (4) Fehling solution

4. $CH_3CH = N NH_2$ is called acetaldehyde hydrazone. Which is false about it

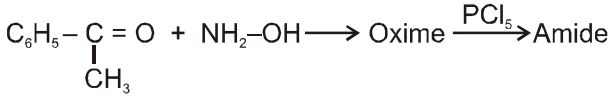
(1) It is formed by nucleophilic addition elimination reaction.
(2) It shows geometrical isomerism
(3) This compound shows geometrical isomerism after protonation.
(4) On heating with NaOH it will produce ethane

5. 

Select the incorrect statement.

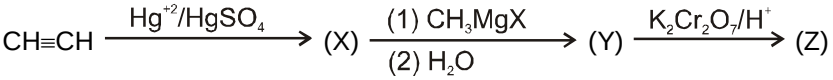
(1) (D) is 
(2) (B) & (E) are same compounds
(3) (A) is 
(4) (E) On oxidation gives (B)

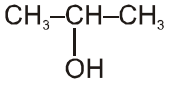
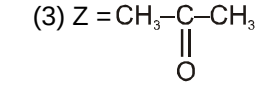
6. In the given reaction which of the following statements is/are correct –



(1) Oxime may be E/Z.
(2) Amides on hydrolysis gives a mixture of acetic acid, benzoic acid, aniline and methylamine.
(3) Preparation of oxime is nucleophilic addition followed by elimination reaction.
(4) All are correct

7. For the given reaction which option is wrong



(1) X = CH_3CHO (2) Y =  (3) Z =  (4) Z = CH_3COOH

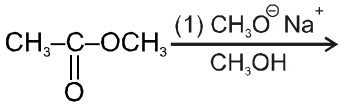
8. The reaction,

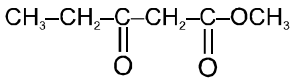
$C_6H_5CHO + CH_3COOC_2H_5 \longrightarrow C_6H_5CH= CHCOOC_2H_5$, is called

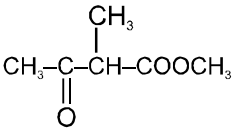
(1) Benzoin condensation (2) Claisen condensation

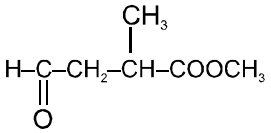
(3) Cannizaro's reaction (4) Perkin reaction

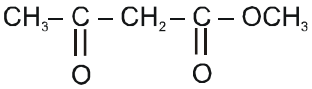
9. In the given reaction the product is :



(1) 

(2) 

(3) 

(4) 

10. A mixture of benzaldehyde and formaldehyde on heating with aqueous NaOH solution gives :

(1) Benzyl alcohol and sodium formate (2) Sodium benzoate and methyl alcohol

(3) Sodium benzoate and sodium formate (4) Benzyl alcohol and methyl alcohol

11. 1-Propanol and 2-Propanol can be best distinguished by

(1) oxidation with alkaline $KMnO_4$ followed by reaction with Fehling solution

(2) oxidation with acidic dichromate followed by reaction with Fehling solution

(3) oxidation by heating with copper followed by reaction with Fehling solution

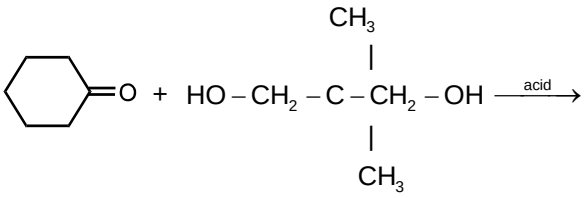
(4) oxidation with concentrated H_2SO_4 followed by reaction with Fehling solution

12. Compound 'A' (molecular formula C_3H_8O) is treated with acidified potassium dichromate to form a product 'B' (mol. Formula C_3H_6O). 'B' forms a shining silver mirror on warming with ammonical $AgNO_3$. 'B' when treated with an aqueous solution of $H_2NCONHNH_2$. HCl & sodium acetate gives a product 'C'. Identify the structure of 'C'.

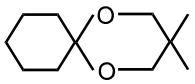
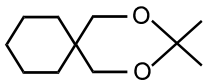
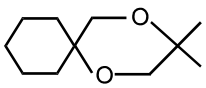
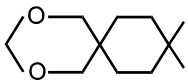
(1) $CH_3CH_2CH = NNHCONH_2$ (2) 

(3) $CH_3 – CH = N.NH – CONH_2$ (4) $CH_3CH_2CH = NCONHNH_2$

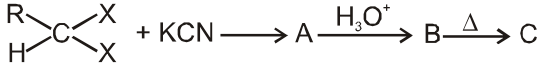
13. Which of the following will be product of following reactions ?

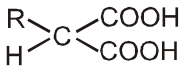
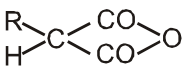


(excess)

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

14. The final product in the following reaction is :



(1)  (2) $R–CH_2–COOH$ (3)  (4) 1 and 2 both

15. $\underset{(1)}{CH_3CHO} + \underset{:}{} \underset{(4)}{HCHO} \xrightarrow[\Delta]{Ca(OH)_2}$ Products of this reactions will be :

(1) $(CH_2OH)_3C–COO^- + (CH_2OH)_3C–CH_2OH$ (2) $(CH_2OH)_4C + HCOO^-$

(3) $CH_3COO^- + CH_3OH$ (4) $(CH_2OH)_3C–CHO$

16. Under Wolf Kishner reduction conditions, the conversions which may be brought about is ?

(1) Benzaldehyde into Benzyl alcohol (2) Cyclohexanol into Cyclohexane

(3) Cyclohexanone into Cyclohexanol (4) Benzophenone into Diphenylmethane

17. Among the given compounds, the most susceptible to nucleophilic attack at the carbonyl group is :

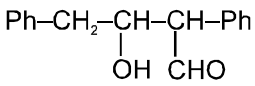
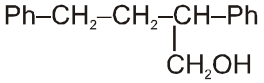
(1) MeCOCl (2) MeCHO (3) MeCOOMe (4) MeCOOCOMe

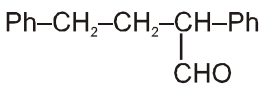
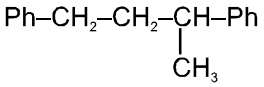
18. An organic compound C_3H_6O does not give a precipitate with 2, 4-dinitrophenyl hydrazine reagent also does not react with metallic sodium it could be :

(1) $CH_3–CH_2–CHO$ (2) $CH_3–COCH_3$ (3) $CH_2=CH–CH_2–OH$ (4) $CH_2=CH–OCH_3$

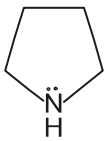
19. In the given reaction sequence $Ph–CH_2–CHO \xrightarrow{NaOH} \xrightarrow{\Delta} \xrightarrow{H_2/Ni}$ (X)

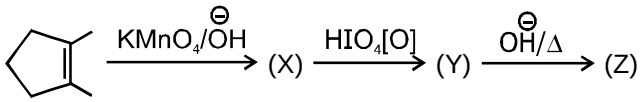
Product (X) will be :

(1)  (2) 

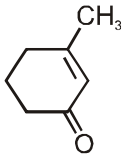
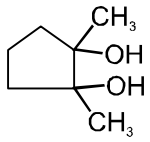
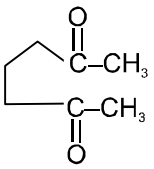
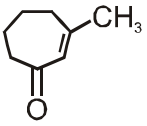
(3)  (4) 

20. Among the following compounds which one will react with acetone to give a product that contains carbon-nitrogen double bond ?

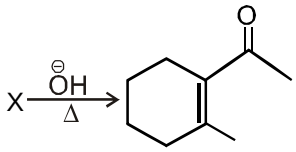
(1) $C_6H_5\ddot{N}HC_6H_5$ (2) $(CH_3)_3\ddot{N}$ (3)  (4) $C_6H_5\ddot{N}H\ddot{N}H_2$.

21. 

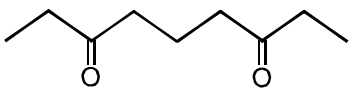
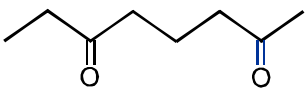
The product (Z) of the above reaction is :

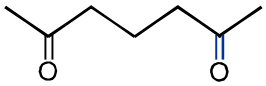
(1)  (2)  (3)  (4) 

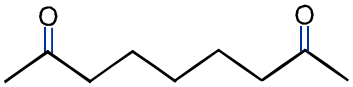
22. Consider following intramolecular aldol condensation reaction.



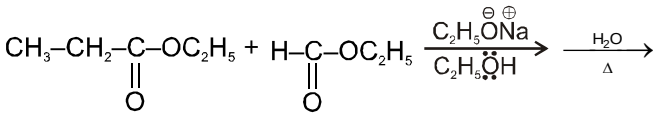
X can be :

(1)  (2) 

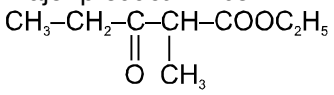
(3) 

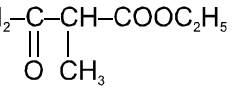
(4) 

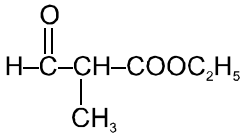
23. In the given reaction



the major product will be

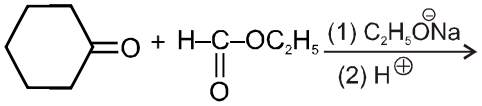
(1) 

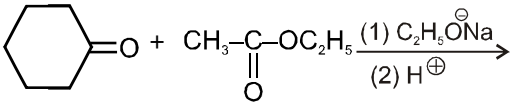
(2) 

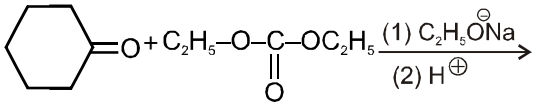
(3) 

(4) $CH_3 - CH_2 - CHO$

24. Which of the following reaction will give β-keto aldehyde as the final product ?

(1) 

(2) 

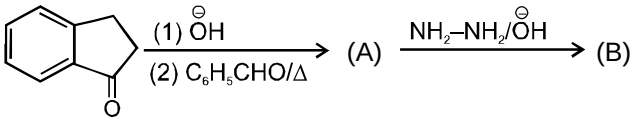
(3) 

(4) All of these

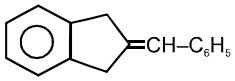
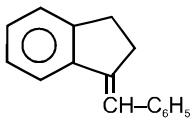
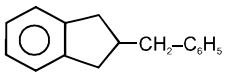
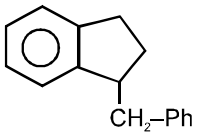
25. An organic compound X on treatment with acidified $K_2Cr_2O_7$ gives compound Y which reacts with I_2 and sodium carbonate to form Triiodomethane. The compound X can be :

(1) CH_3OH (2)  (3) CH_3CHO (4) $CH_3CH(OH)CH_3$.

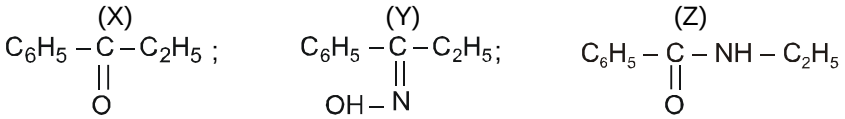
26. In the given reaction sequence

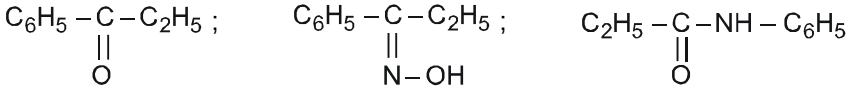


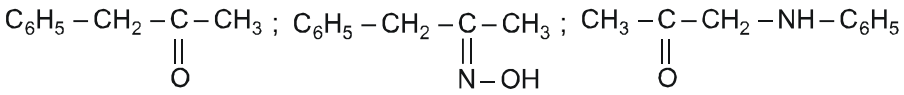
Compound (B) is :

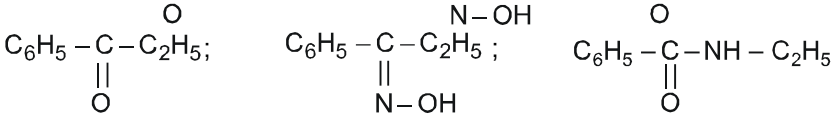
(1)  (2)  (3)  (4) 

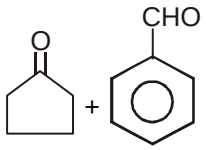
27. Compound (X) $C_9H_{10}O$ gives yellow coloured ppt with 2,4 DNP but does not give red coloured ppt with Fehling's solution. (X) on treatment with NH_2OH/H^+ gives compound (Y) $C_9H_{11}NO$. (Y) when treated with PCl_5 gives isomeric compound (Z). (Z) on hydrolysis gives propanoic acid and aniline. What will be the correct structure of (X), (Y) and (Z) ?

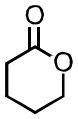
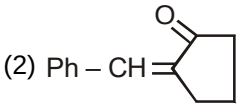
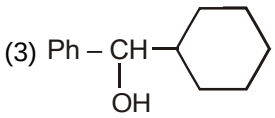
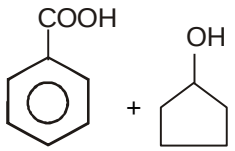
(1) 

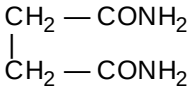
(2) 

(3) 

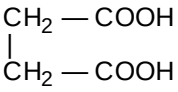
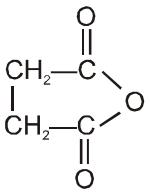
(4) 

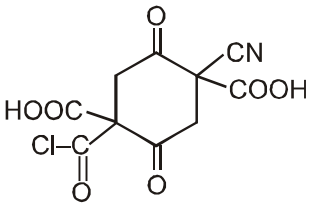
28.  $\xrightarrow{\overset{\ominus}{O}H/\Delta}$ Product is .

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

29.  $\xrightarrow[\Delta]{P_2O_5}$ (P) $\xrightarrow[\Delta]{H_3O^{\oplus}}$ (Q)

The product (Q) is

(1) $CH_3–CH_2–COOH$ (2)  (3)  (4) $CH_3–COOH$

30.  $\xrightarrow[\Delta]{H_3O^{\oplus}}$ [X]

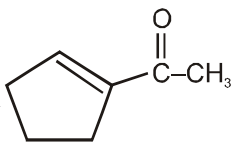
Select the correct statement.

(1) X gives effervescence of CO_2 with $NaHCO_3$

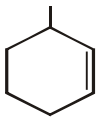
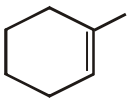
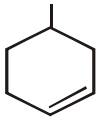
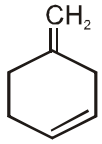
(2) X will produce alkane when treated with Zn-Hg/HCl

(3) X will produce symmetrical diketone when treated with sodalime

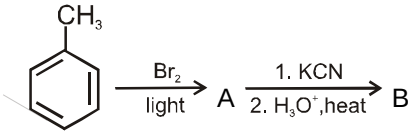
(4) All of these

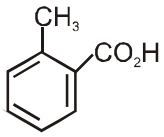
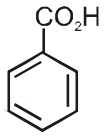
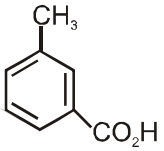
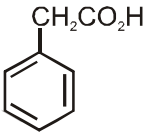
31. (A) $\xrightarrow[(2)\ Zn,H_2O]{(1)\ O_3}$ (B) $\xrightarrow[\Delta]{NaOH}$ 

The reactant (A) will be :

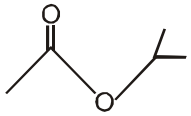
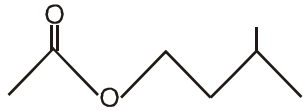
(1)  (2)  (3)  (4) 

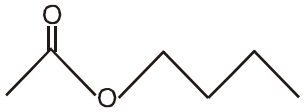
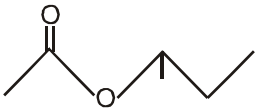
32. What is the final product (B) of this sequence ?



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

33. Ethanoic acid + 3 -methyl-1-butanol $\underset{\text{Traces } H_2SO_4}{\rightleftharpoons}$ (A) ; Compound (A) is :

(1)  (2) 

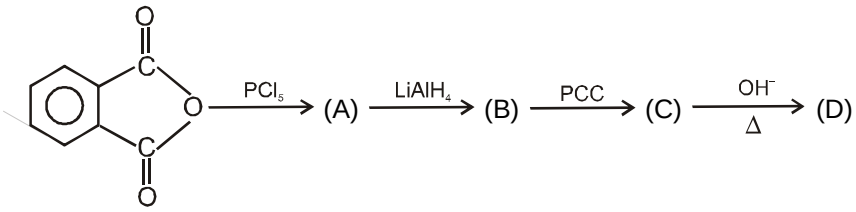
(3)  (4) 

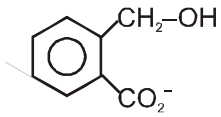
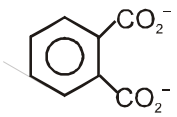
34. Identify the compound C in the following sequence :

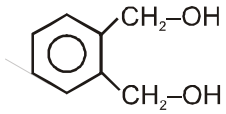
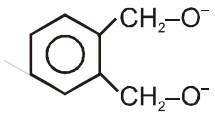
$(CH_3)_2CHCH_2C \equiv N \xrightarrow{HCl,\ H_2O}$ compound A $\xrightarrow[2.\ H_2O]{1.\ LiAlH_4}$ compound B $\xrightarrow[CH_2Cl_2]{PCC}$ compound C

(1) $(CH_3)_2CHC(=O)CH_3$ (2) $(CH_3)_2CHCH_2C(=O)OH$

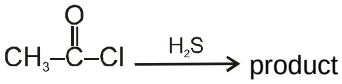
(3) $(CH_3)_2CHCH_2C(=O)H$ (4) $(CH_3)_2CHC(=O)CH_2OH$

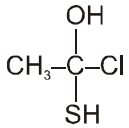
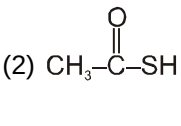
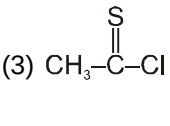
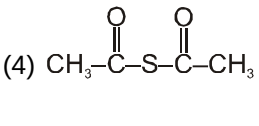
35. 

(1)  (2) 

(3)  (4) 

36. Which is the major product of the following reaction ?



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

37. An aqueous solution of urea

(1) Is neutral (2) Is acidic

(3) Is basic (4) Can act as an acid and a base

38. Nitration of benzoic acid gives

(1) 3-nitrobenzoic acid (2) 2-nitrobenzoic acid

(3) 2, 3-dinitrobenzoic acid (4) 2, 4-dinitrobenzoic acid

39. When benzoic acid is treated with PCl_5 at 100°C, it gives

(1) Benzoyl chloride (2) o-chlorobenzoic acid

(3) p-chlorobenzoic acid (4) Benzyl chloride

40. Benzoic acid is less acidic than salicylic acid because of

(1) Hydrogen bond (2) Inductive effect (3) Resonance (4) All of these

41. Lactic acid on heating with conc. H_2SO_4 gives

(1) Acetic acid (2) Propionic acid (3) Acrylic acid (4) Formic acid

42. Which of the following is used in the manufacture of thermosetting plastics

(1) Formaldehyde (2) Acetaldehyde (3) Acetone (4) Benzaldehyde

43. Which of the following compound will react with ethanolic KCN

(1) Ethane (2) Acetyl chloride (3) Chlorobenzene (4) Benzaldehyde

44. Acetaldehyde reacts with Cl_2(in excess) to give

(1) Chloral (2) Chloroform (3) Acetic acid (4) Trichloroacetic acid

45. The compound which reacts with Fehling solution is

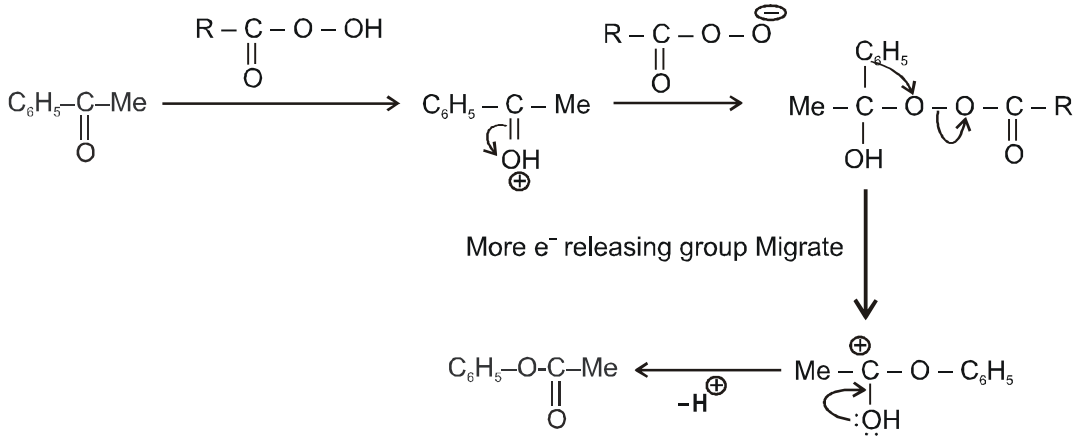
(1) C_6H_5COOH (2) HCOOH (3) C_6H_5CHO (4) CH_2ClCH_3

SPP Answers

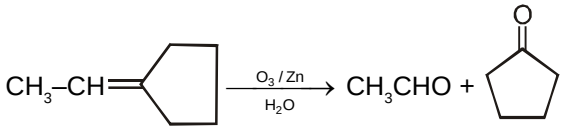
1.	(1)	**2.**	(1)	**3.**	(1)	**4.**	(4)	**5.**	(2)	**6.**	(4)	**7.**	(4)
8.	(2)	**9.**	(4)	**10.**	(1)	**11.**	(3)	**12.**	(1)	**13.**	(1)	**14.**	(2)
15.	(2)	**16.**	(4)	**17.**	(1)	**18.**	(4)	**19.**	(2)	**20.**	(4)	**21.**	(1)
22.	(4)	**23.**	(4)	**24.**	(1)	**25.**	(4)	**26.**	(1)	**27.**	(2)	**28.**	(2)
29.	(3)	**30.**	(2)	**31.**	(2)	**32.**	(4)	**33.**	(2)	**34.**	(3)	**35.**	(1)
36.	(2)	**37.**	(1)	**38.**	(1)	**39.**	(1)	**40.**	(1)	**41.**	(3)	**42.**	(1)
43.	(4)	**44.**	(1)	**45.**	(2)								

SPP Solutions

1.



2.



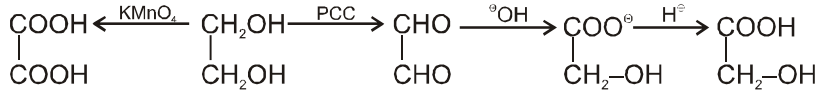
$HC \equiv CH + H_2O \xrightarrow[H_2SO_4]{HgSO_4} CH_3CHO$

$CH_3COCl + H_2 \xrightarrow{Pd+BaSO_4} CH_3CHO$

3. HCHO on reaction with $NaHSO_3$ produces white precipitates of formaldehyde sodium bisulphite.

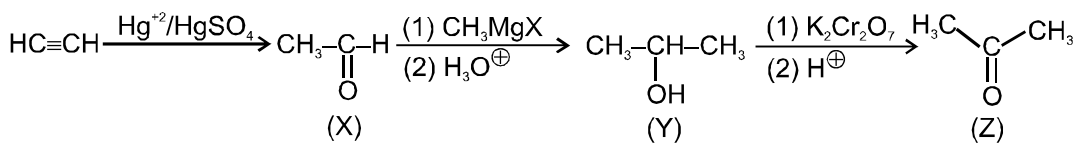
4. $CH_3–CHO + H_2N–NH_2 \xrightarrow{-H_2O} CH_3CH = \underset{\text{(Syn/anti)}}{N–NH_2}$

5.

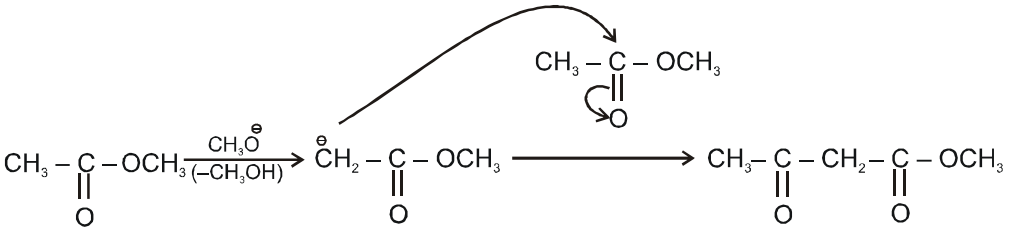


6. Beckmanns rearrangement

7.



9. It is the claisen condensation reaction.



10. $C_6H_5CHO + HCHO + \underset{\text{(conc.)}}{NaOH} \longrightarrow C_6H_5CH_2OH + HCOONa$

It is crossed Cannizzaro's reaction.

11. $CH_3-CH_2-CH_2OH \xrightarrow[\text{heat, } 300^\circ C]{Cu} CH_3-CH_2-CHO \xrightarrow[\text{Fehling Solution}]{2CuO} Cu_2O\downarrow$

1 – propanol — red ppt

$CH_3-CHOH-CH_3 \xrightarrow[\text{heat, } 300^\circ C]{Cu} CH_3-CO-CH_3 \xrightarrow[\text{Fehling Solution}]{2CuO + CH_3CH_2COOH}$ No reaction

2 – propanol

12. $CH_3-CH_2-CH_2-OH + [O] \xrightarrow{K_2Cr_2O_7} CH_3CH_2-\underset{H}{\overset{}{C}}=O + H_2NNHCONH_2.HCl$

(A)

$\downarrow$

$CH_3CH_2CH = N.NHCONH_2$

13. It is a protection of carbonyl group.

14. $R-\underset{H}{\overset{X}{\overset{|}{C}}}-X + KCN \longrightarrow R-\underset{H}{\overset{CN}{\overset{|}{C}}}-CN \xrightarrow{H_3O^+} R-\underset{H}{\overset{COOH}{\overset{|}{C}}}-COOH \xrightarrow{\Delta} R-CH_2-COOH$

15. $CH_3CHO \xrightarrow[-H_2O]{OH^\ominus} \overset{\ominus}{C}H_2CHO \xrightarrow{HCHO} H-\underset{O^\ominus}{\overset{}{C}}H-CH_2-CHO \xrightarrow{H_2O} HOCH_2-CH_2CHO$

$\xrightarrow[(2)HCHO]{(1)\ ^\ominus OH}$ $HOH_2C-\underset{CH_2OH}{\overset{CH_2OH}{\overset{|}{C}}}-CHO$

(P)

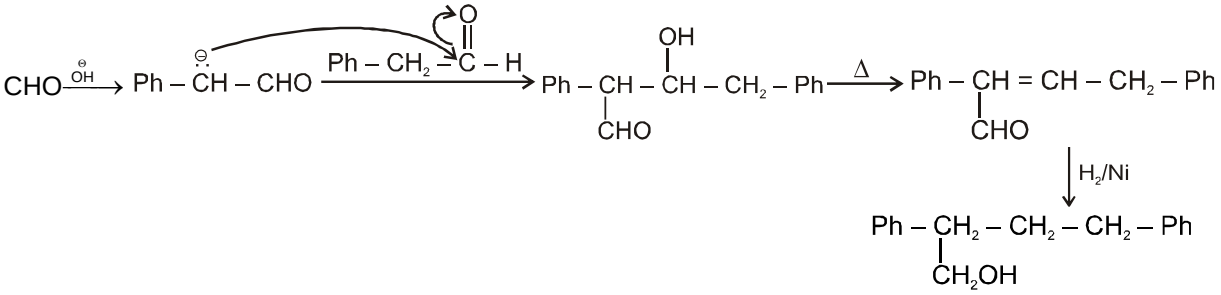
This is cross aldol condensation. Now (P) does not contain α - H atom so further addition of HCHO will lead to cross Cannizaro reaction.

$(HOH_2C)_3C-CHO + HCHO \xrightarrow{OH^\ominus} (HOCH_2)_4C + HCOO^\ominus$

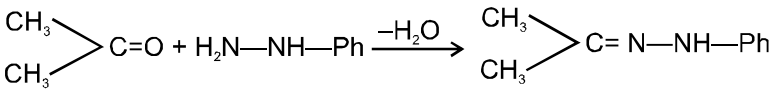
16. In Wolf-Kishner reduction carbonyl compound is converted to hydrocarbon.

17. Rate of nucleophilic attack $\propto$ amount of +ve charge at carbonyl carbon.

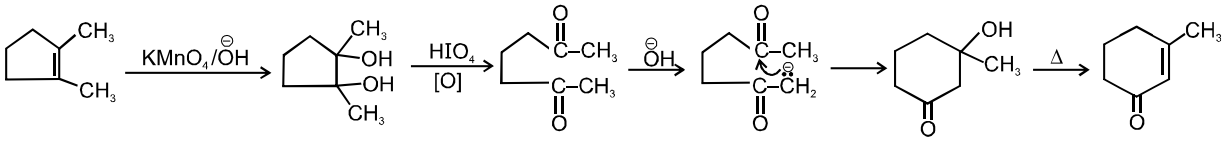
19. $Ph-CH_2-$



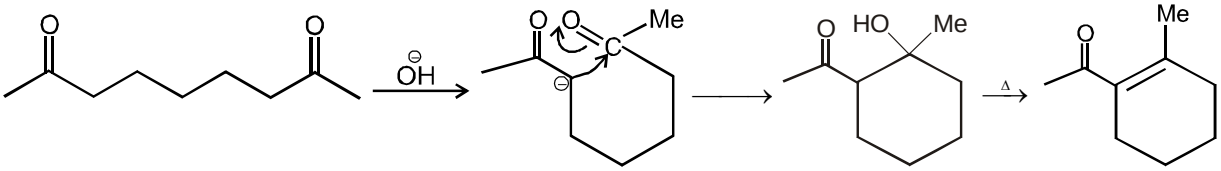
20.



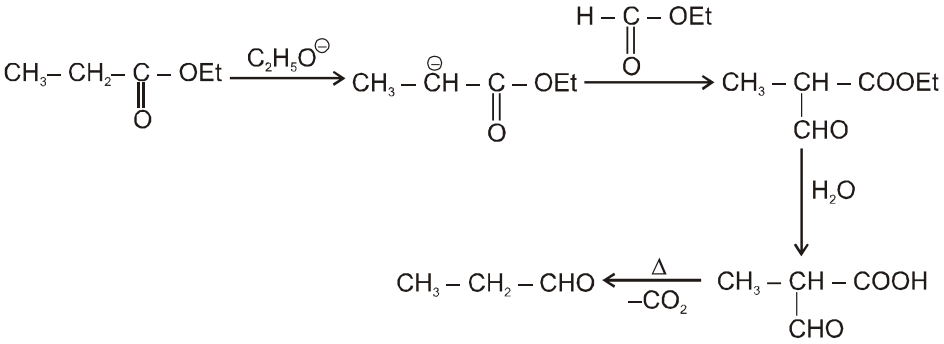
21.



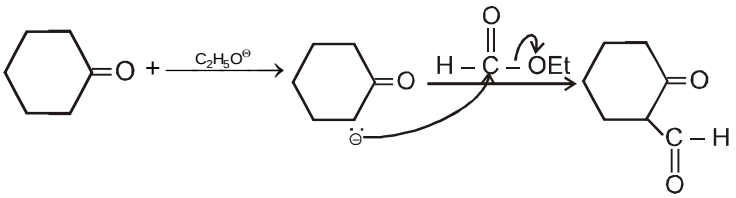
22.



23.

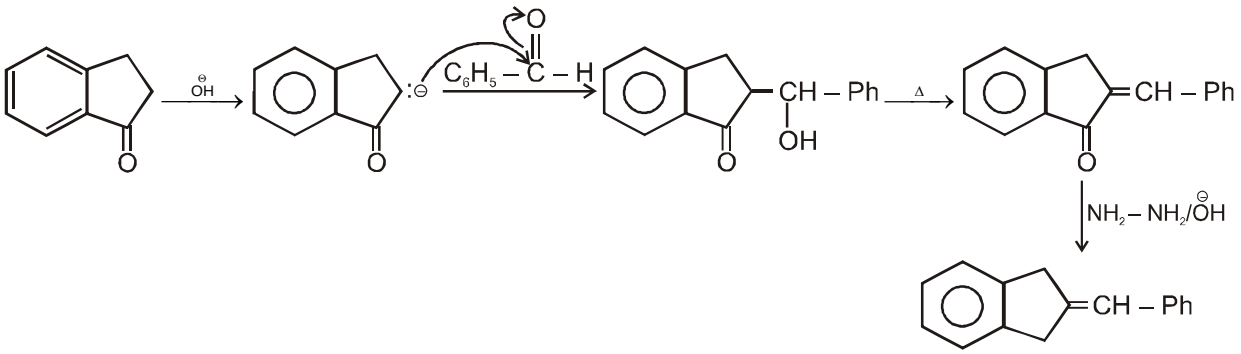


24.

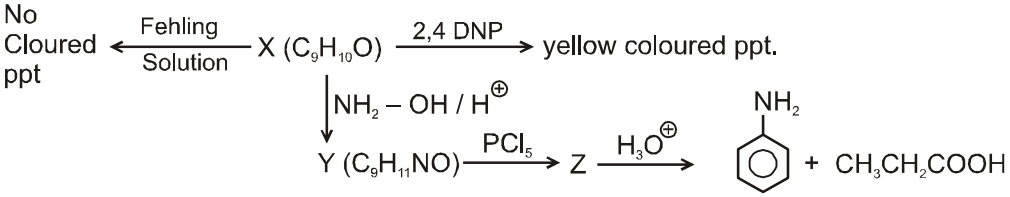


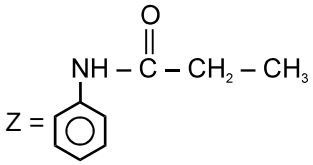
25. $K_2Cr_2O_7$ oxidised secondary alcohol which gives iodoform test.

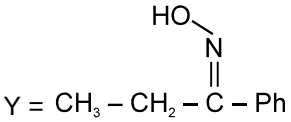
26.

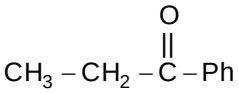


27.

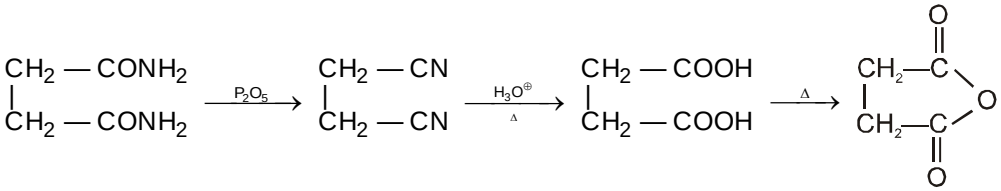


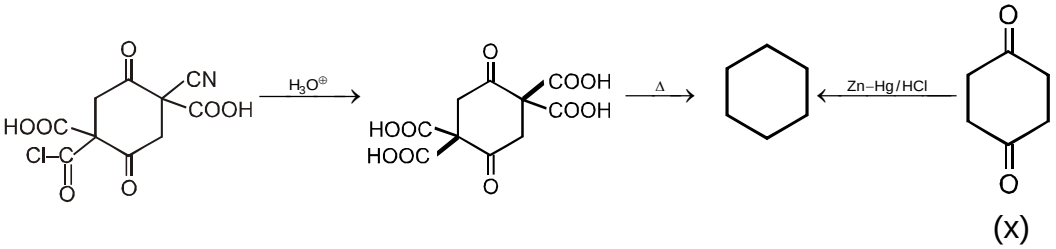
Z = 

Y = 

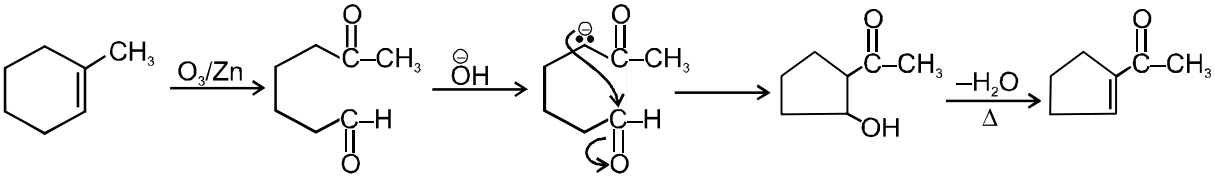
X = 

28. Aldol condensation reaction.

29. 

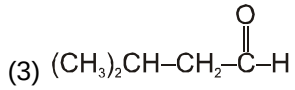
30. 

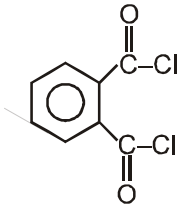
(x)

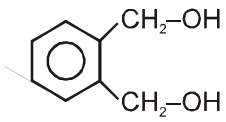
31. 

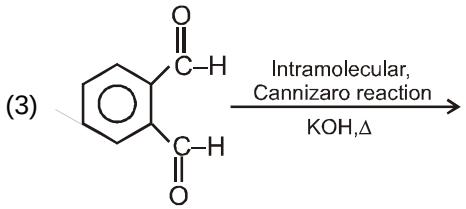
32. (A) $Ph–CH_2–Br \xrightarrow{KCN} Ph–CH_2–C \equiv N \xrightarrow{H_3O^{\oplus}} Ph–CH_2–CO_2H$ (B)

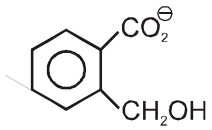
33. Esterification reaction.

34. (1) $(CH_3)_2CH–CH_2–CO_2H$ (2) $(CH_3)_2CH–CH_2–CH_2–OH$ (3) 

35. (1) 

(2) 

(3) 

(4) 

40. Due to intramolecular H-bonding.

41.