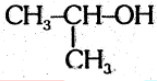
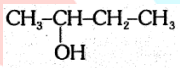
EXERCISE-I (Conceptual Questions) **Build Up Your Understanding**

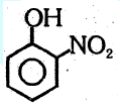
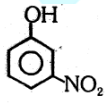
Alcohol

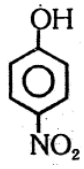
1. The compound A, B and C in the reaction sequence $CH_3CH_2OH \xrightarrow{PBr_3} A \xrightarrow{alc.KOH} B \xrightarrow{Br_2} C$ are given by the set
   (1) C_2H_5Br, CH_3CH_2OH, CH_3CHBr_2
   (2) C_2H_5Br, $CH{\equiv}CH$, $CH_2{=}CHBr$
   (3) C_2H_5Br, $CH_2{=}CH_2$, $CH_2Br{-}CH_2Br$
   (4) C_2H_5Br, CH_3CH_2OH, $BrCH_2{-}CH_2Br$
2. Primary amines can be converted into alkanols by reaction with
   (1) Aqueous HCl (2) Tilden's reagent (3) $NaNO_2$ and dil. HCl (4) Hypochlorous acid

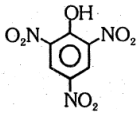
3. Which of the following alcohols gives a red colour in Victor Meyer test
   (1) $CH_3{-}CH_2{-}CH_2{-}OH$ (2) 
   (3) $(CH_3)_3C{-}OH$ (4) 

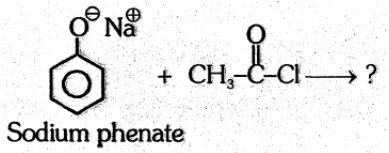
4. Methanol on heating with salicylic acid and a few drops of cone. H_2SO_4 gives the smell of
   (1) Bitter almonds (2) Oil of wintergreen (3) Rotten eggs (4) Mustard oil

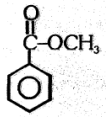
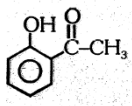
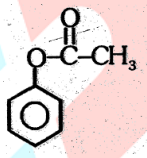
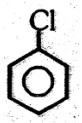
5. Which of the following does not turn orange colour of chromic acid to green
   (1) 1° alcohol (2) 2º alcohol (3) 3° alcohol (4) Allyl alcohol
6. p, s and t-alcohols can be distinguished by :
   (1) Reimer-Tiemann reaction
   (2) Tollen's reagent
   (3) Lucas test
   (4) Lassaigne's test
7. Consider the following reaction :
   $C_2H_5OH + H_2SO_4 \rightarrow$ Product
   Among the following, which one cannot be formed as a product under any conditions ?
   (1) $C_2H_5OSO_3H$ (2) $H_2C{=}CH_2$, (3) $HC{\equiv}CH$ (4) $CH_3{-}CH_2{-}O{-}CH_3$

8. Nitration of phenol with cone. nitric acid gives :-
   (1) 
   (2) 

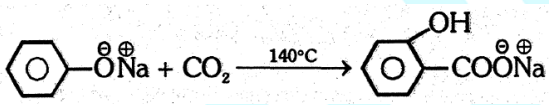
(3) 

(4) 

9. Oeoxygenation of phenol can be achieved by distillation with :-
   (1) Raney nickel
   (2) Lithium aluminium hydride
   (3) Sodium borohydride
   (4) Zinc dust
10. Which of the following compounds shows intramolecular hydrogen bonding :-
   (1) p-Nitrophenol (2) Ethanol (3) o-Nitrophenot (4) Methanamine
11. 

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

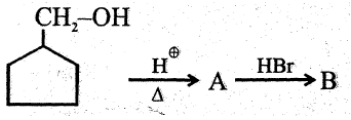
12. The reaction



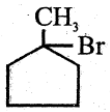
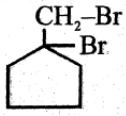
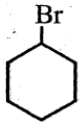
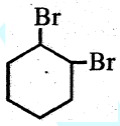
   is called:·
   (1) Schotten Bauman reaction
   (2) Kolbe Schmidt reaction
   (3) Reimer- Tiemann reaction
   (4) Lederer-Manasse reaction
13. Phenol can be distinguished from. ethanol by reactjons with the following except :-
   (1) Iodine and alkali (2) Ferric chloride (3) Acetyl chloride (4) Bromine water
14. Phenol on treatment with methyl chloride in the presence of anhydrous $AlC1_3$ gives chiefly:-
   (1) o-cresol (2) m-cresol (3) anisole (4) p-cresol
15. Phenol on heating with $NaNO_2$ and a few drops of cone. H_2SO_4 mainly gives:-
   (1) p-nitrophenol (2) p-nitrosophenol (3) o-nitrophenol (4) m-nitrosophenol
16. Phenol and benzoic acid are distinguished by:-
   (1) Lucas reagent (2) Victor Meyer test (3) Caustic soda (4) Sodium bicarbonate
17. Phenol can be distinguished from ethanol by the reaction with

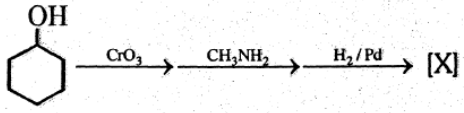
(1) Na (2) Br_2/Water (3) Neutral $AlCl_3$ (4) 1 and 2 Both

Ether

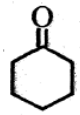
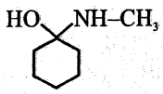
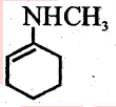
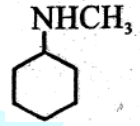
18. 

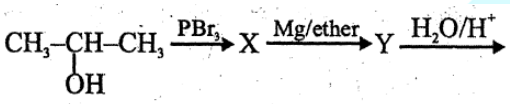
What is the structure of B :-

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

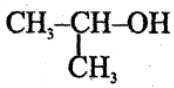
19. 

Product [X] of given reaction is :-

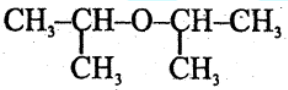
(1)  (2)  (3)  (4) 

20. 

The final product is:

(1) 

(2) $CH_3–CH_2–CH_2–OH$

(3) 

(4) $CH_3–CH_2–CH_3$

21. In the reaction sequence

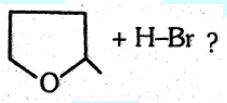
$A \xrightarrow{HBr} B \xrightarrow{C_2H_5ONa}$ Ethoxyethane, A and B are L :-

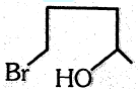
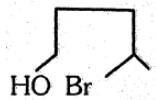
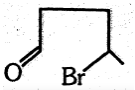
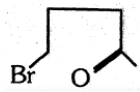
(1) C_2H_6, C_2H_5Br

(2) CH_4, CH_3Br

(3) $CH_2=CH_2$, C_2H_5Br

(4) CH=CH,CH_2=CHBr

22. 

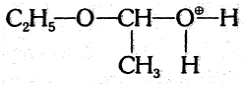
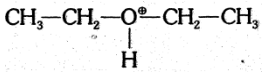
(1)  (2)  (3)  (4) 

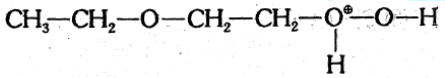
23. $CH_3–CH_2–OH + Ph–CH_2–OH \xrightarrow[140°C]{H^{\oplus}}$ of which is not obtained ?

(1) $CH_3–CH_2–OCH_2–CH_3$ (2) $Ph–CH_2–OCH_2–Ph$

(3) $Ph–CH_2–O–CH_2–CH_3$ (4) $Ph–CH_2–O–CH_2–O–CH_3$

24. Oxonium ion of ether has the structure·:-

(1)  (2) 



(3) $(C_2H_5)_2O \rightarrow O$ (4)

25. What will happen when 9iethyl ether treated with hot and cone. HI:-

(1) Ethyl alcohol (2) Ethyl iodide (3) Methyl iodide (4) Methanol

26. Which of the following does not react with aq. NaOH::-

(l) Phenol (2) Benzoic acid (3) CH_3COOH (4) $CH_3–O–C_6H_5$

Carbonyl Compounds

27. Acetaldehyde on warming with Fehling's solution gives a red precipitate of :-· .

(1) Elemental copper (2) Cuprous oxide

(3) Cupric oxide (4) Mixture of all of the above

28. Acetone does not form :-

(1) A phenylhydrazone with phenylhydrazine

(2) A sodium bisulphite adduct with sodium bisulphite .

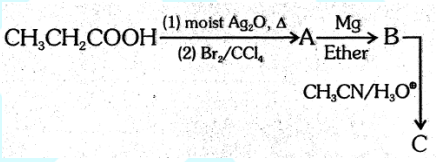
(3) A silver mirror with Tollen's reagent

(4) An oxime with hydroxylamine

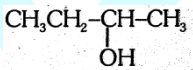
29. CH_3CHO and CH_3COCH_3 cannot be distinguished by:-

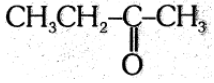
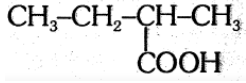
(1) Fehling solution (2) Grignard reagent (3) Schiff 's reagent (4) Tollen's reagent

30. In the reaction



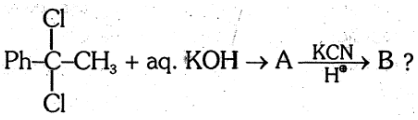
The product C is:-

(1)  (2) $CH_3CH_2–CN$

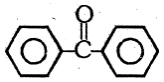
(3)  (4) 

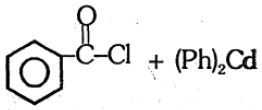
31. Acetone is obtained by the hydrolysis of the addition product of methyl magnesium iodide and:-

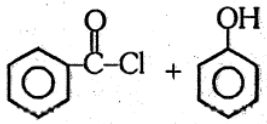
(1) HCHO (2) CH_3CHO (3) CH_3COCH_3 (4) $CH_3–C=N$

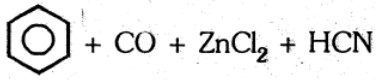
32. 

(1) 50% d + 50% *l* (2) 80% d + 200 *l* (3) Meso compound (4) optically active

33.  can be obtained by -

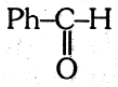
(1) 

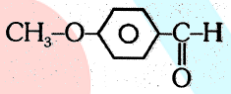
(2) 

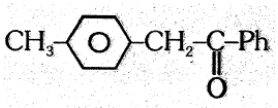
(3) 

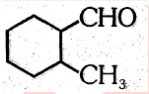
(4) None of the above

34. Which does not react with $NaHSO_3$

(1) 

(2) 

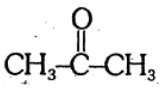
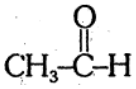
(3) 

(4) 

35. Ketones can be prepared by :-
(1) Rosenmund reduction
(2) Etard reaction
(3) Cannizzaro reaction
(4) Fridel-Craft reaction

36. Carbonyl compounds are best purified by:-
(1) Steam distillation
(2) Hydrolysis of sodium bisulphite adducts
(3) fractional crytallisation
(4) Sublimation

37. Carbonyl compounds readily undergo :-
(1) Nucleophilic substitutions
(2) Electrophilic addition reactions
(3) Nucleophilic addition reactions
(4) Free radical substitution reactions

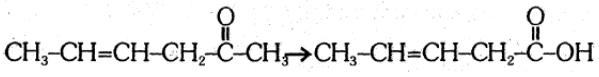
37.  and  are readily distinguished by their reaction with :-

(1) Iodine and alkali (2) 2,4-dinitrophenylhydrazine

(3) Tollen's reagent (4) All the above

39. Formaldehyde and acetaldehyde are readily distinguished by reaction with :-
(1) A solution of 2,4-dinitrophenylhydrazine
(2) Fehling's solution
(3) Tollen's reagent
(4) Iodine and alkali

40. Which is the most suitable reagent for the following conversion



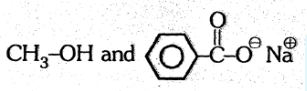
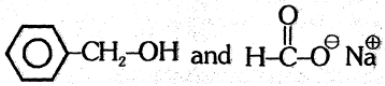
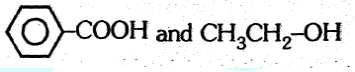
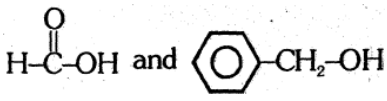
(1) $\xrightarrow[(ii)\,H^{\oplus}]{(i)\,\text{Tollen's reagent}}$ (2) $\xrightarrow[(ii)\,H^{\oplus}]{(i)\,\text{Benzoyal peroxide}}$ (3) $\xrightarrow[(ii)\,H^{\oplus}]{(i)\,I_2 \text{ and NaOH}}$ (4) $\xrightarrow{KMnO_4/H^{\oplus},\Delta}$

41. Formaldehyde reacts with cone. alkali to form :
(1) A resinous mass
(2) Formic acid
(3) A mixture of methanol and sodium formate
(4) Methanol

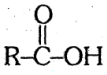
42. Which of the following compounds does not give aldol condensation :-
(1) CH_3CHO (2) CH_3CH_2CHO (3) HCHO (4) $CH_3CH_2CH_2CHO$

43. Cannizzaro reaction is given by:-
(1) Aldehydes containing α-hydrogen atoms
(2) Aldehydes as well as ketones containing α-hydrogen atoms
(3) Aldehydes not containing α-hydrogen atoms
(4) Aldehydes containing β-hydrogen atoms

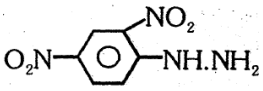
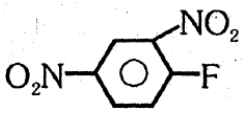
44. Benzaldehyde react with formaldehyde in the presence of alkali to form:-

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

45. Which of the following can be converted to $CH_3–CH=CH–CHO$:-
(1) Acetone (2) Acetaldehyde (3) Propanaldehyde (4) Formaldehyde

46. The product of reaction with primary amine and aldehyde is:-
(1)  (2) R-ONO (3) R'–CH=N–R (4) $R–NO_2$

47. Brady's reagent is
(1) $[Cu(NH_3)_4]SO_4$ (2) $KMnO_4/NaIO_4$

(3)  (4) 

48. A compound with molecular formula C_3H_6O, not gives silver mirror with Tollen's reagent but forms oxime with hydroxyl amine. Compound will be -
(1) $CH_2=CH–CH_2–OH$ (2) CH_3CH_2CHO
(3) $CH_2=CH–O–CH_3$ (4) CH_3COCH_3

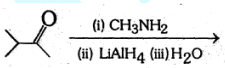
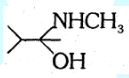
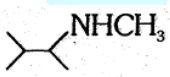
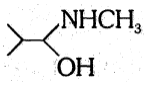
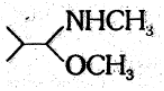
49. Aldehyde and ketone are distinguished by reagent
(1) Fehling solution (2) H_2SO_4 (3) $NaHSO_3$ (4) NH_3

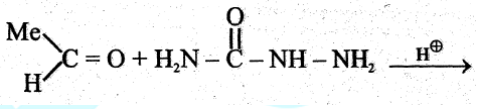
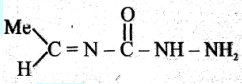
50. Carbonyl group is converted into methylene group by-
(l) Acidic reduction (2) Raney Ni
(3) Basic hydrolysis (4) Normal Hydrogenation

51. When acetaldol is treated with excess of acid then unsaturated product will be :-
(1) Alcohol (2) Aldehyde (3) Acid (4) Alkyl halide

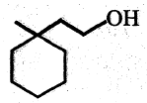
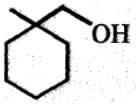
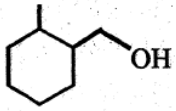
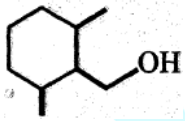
52. The reagent used for the separation of acetaldehyde from acetophenone is –
(1) $NaHSO_3$ (2) $C_6H_5NHNH_2$ (3) NH_2OH (4) NaOH + I_2

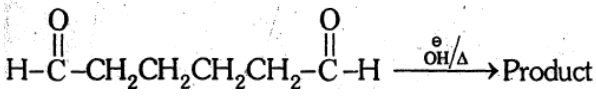
53. The most suitable reagent for the conversion of
$RCH_2OH \longrightarrow RCHO$
(1) KMnO4
(2) $K_2Cr_2O_7$
(3) CrO_3
(4) PCC (Pyridinium chloro chromate)

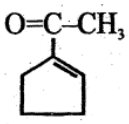
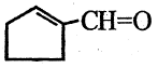
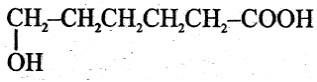
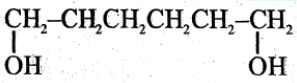
54. The major organic product formed from the following reaction is :-

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

55. 
which is incorrect :-
(1) The reaction completes through addition elimination mechanism.
(2)  is formed as product
(3) The reaction is an example of condensation reaction
(4) None

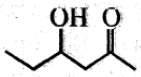
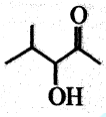
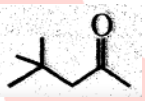
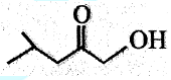
56.  + $CH_3MgBr \xrightarrow{H^{\oplus}/H_2O}$ P $\xrightarrow{HBr}$ Q $\xrightarrow[Ether]{Mg}$ R $\xrightarrow[H^{\oplus}/H_2O]{HCHO}$ S, S is:

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

57.  (A) is :-

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

58. Which of the following compounds is the product of an aldol reaction :-

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

59. Which product is obtained by aldol reaction :-

(1) α-Hydroxy aldehyde or ketone
(2) β-Hydroxy aldehyde or ketone
(3) α,β-unsaturated ester
(4) β-Hydroxy acid

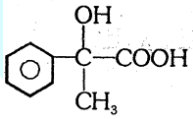
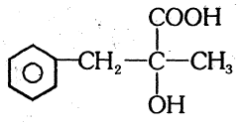
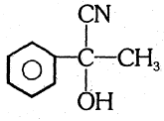
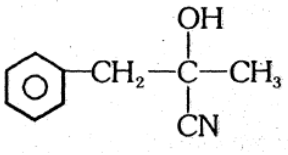
Carboxylic acid

60. When propanoic acid is treated with aqueous sodium bicarbonate, CO_2 is liberated. The C of CO_2 comes from :-

(1) methyl group
(2) carboxylic acid group
(3) methylene group
(4) bicarbonate

61. In a set of reactions acetic acid yielded a product $CH_3COOH \xrightarrow{SOCl_2}$ A $\xrightarrow[Anhy.AlCl_3]{Benzene}$ B $\xrightarrow{HCN}$ C $\xrightarrow{H_3O^{\oplus}}$ D

The structure of D would be-

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

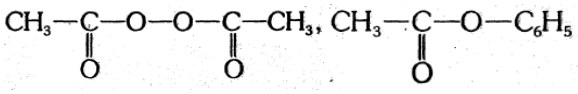
Acid Derivative

62. The compounds A and B in the reaction sequence B $\xleftarrow{\text{Phenol}}$ CH_3COCl $\xrightarrow{CH_3COONa}$ A are give by the set :-

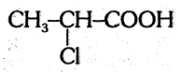
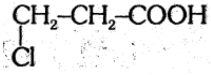
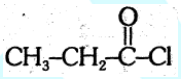
(1) $CH_3CO–O–COCH_3$, $C_6H_5CH_2OH$

(2) $CH_3CO–O–COCH_3$, $C_6H_5OCOCH_3$

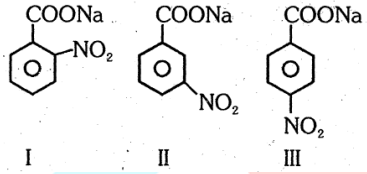
(3) CH_3COCH_3, $C_6H_5OCOCH_3$

(4) 

63. $CH_3–CH_2–COOH$ $\xrightarrow{P/Cl_2}$ A $\xrightarrow[KOH]{Alc.}$ B structure of B is :-

(1) $CH_2=CH–COOH$ (2)  (3)  (4) 

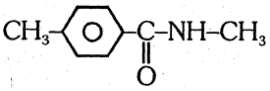
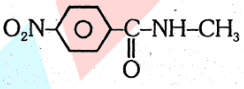
64. Correct reactivity order of deearboxylation is

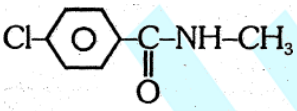
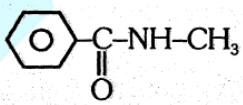


I II III

(1) I > U >III (2) I > III > II (3) III > II > I (4) III > I > II

65. Which is most reactive towards hydrolysis

(1)  (2) 

(3)  (4) 

66. Which of the following reagents may be used to distinguish between phenol and benzoic acid ?

(1) Victor-Mayer test (2) Neutral $FeCl_3$

(3) Aqueous NaOH (4) Tollen's reagent

67. Acyl chlorides undergo :-

(1) Nudeophilic addition reactions (2) Nudeophilic substitution reactions

(3) Erectrophilic substitution reactions (4) Electrophilic addition reactions

68. The reaction of ethanol on acetic anhydride is an example of :-

(1) Nucleophilic addition (2) Nucleophilic substitution

(3) Electrophilic addition (4) Free radical substitution

69. The reduction of acetamide gives :-

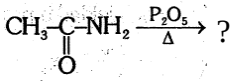
(1) $CH_3CH_2NH_2$ (2) $(CH_3)_2CHNH_2$ (3) $(CH_3)_3CNH_2$ (4) $(CH_3CH_2)_2NH$

70. Which is used in preparation of aldehyde by rosenmund reduction

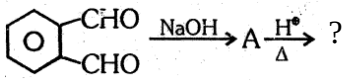
(1) Ester (2) Acid (3) Acid halide (4) Alcohol

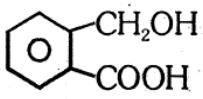
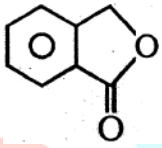
71. Which is maximum reactive :-

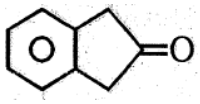
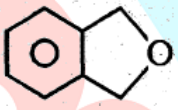
(l) CH_3CONH_2 (2) CH_3COOCH_3 (3) CH_3COCl (4) $CH_3COOC_2H_5$

72. 

(1) CH_3COOH (2) $CH_3–CN$ (3) $CH_3–CH_3$ (4) $CH_3–CHO$

73. 

(1)  (2) 

(3)  (4) 

EXERCISE-I (Conceptual Questions) ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	**3**	**3**	**1**	**2**	**3**	**3**	**3**	**4**	**4**	**3**	**3**	**2**	**3**	**4**	**2**
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	**4**	**2**	**3**	**4**	**4**	**3**	**1**	**4**	**2**	**2**	**4**	**2**	**3**	**2**	**3**
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	**4**	**1**	**1**	**3**	**4**	**2**	**3**	**3**	**4**	**3**	**3**	**3**	**3**	**2**	**2**
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	**3**	**3**	**4**	**1**	**1**	**2**	**1**	**4**	**2**	**2**	**2**	**2**	**1**	**2**	**4**
Que.	61	62	63	64	65	66	67	68	69	70	71	72	73		
Ans.	**1**	**2**	**1**	**1**	**2**	**2**	**2**	**2**	**1**	**3**	**3**	**2**	**2**		