

ORGANIC CHEMISTRY

ENTHUSIAST | LEADER | ACHIEVER



EXERCISE

Oxygen Containing Compounds

ENGLISH MEDIUM

EXERCISE-I (Conceptual Questions)

Build Up Your Understanding

ALCOHOL

1. The compound A, B and C in the reaction sequence
 $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{PBr}_3} \text{A} \xrightarrow[\Delta]{\text{alc. KOH}} \text{B} \xrightarrow{\text{Br}_2} \text{C}$
 are given by the set
 (1) $\text{C}_2\text{H}_5\text{Br}$, $\text{CH}_3\text{CH}_2\text{OH}$, CH_3CHBr_2 .
 (2) $\text{C}_2\text{H}_5\text{Br}$, $\text{CH}\equiv\text{CH}$, $\text{CH}_2=\text{CHBr}$
 (3) $\text{C}_2\text{H}_5\text{Br}$, $\text{CH}_2=\text{CH}_2$, $\text{CH}_2\text{Br}-\text{CH}_2\text{Br}$
 (4) $\text{C}_2\text{H}_5\text{Br}$, $\text{CH}_3\text{CH}_2\text{OH}$, $\text{BrCH}_2-\text{CH}_2\text{Br}$

AE0001

2. Which of the following alcohols gives a red colour in Victor Meyer test

- (1) $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{OH}$
 (2) $\text{CH}_3-\underset{\text{CH}_3}{\text{CH}}-\text{OH}$
 (3) $(\text{CH}_3)_3\text{C}-\text{OH}$
 (4) $\text{CH}_3-\underset{\text{OH}}{\text{CH}}-\text{CH}_2-\text{CH}_3$

AE0003

3. Which of the following does not turn orange colour of chromic acid to green
 (1) 1° alcohol (2) 2° alcohol
 (3) 3° alcohol (4) Allyl alcohol

AE0005

4. p, s and t-alcohols can be distinguished by :-
 (1) Reimer-Tiemann reaction
 (2) Tollen's reagent
 (3) Lucas test
 (4) Lassaigue's test

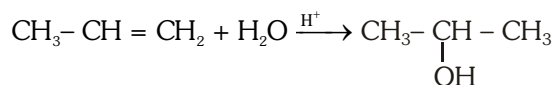
AE0006

5. Consider the following reaction :
 $\text{C}_2\text{H}_5\text{OH} + \text{H}_2\text{SO}_4 \rightarrow \text{Product}$
 Among the following, which one cannot be formed as a product under any conditions ?

- (1) $\text{C}_2\text{H}_5\text{OSO}_3\text{H}$
 (2) $\text{H}_2\text{C}=\text{CH}_2$
 (3) $\text{HC}\equiv\text{CH}$
 (4) $\text{CH}_3-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_3$

AE0007

6. Select the incorrect option for the following reaction:



- (1) This is an example of NAR of alkene
 (2) In the first step, protonation of alkene takes place to form carbocation
 (3) In the second step, *Nucleophilic attack of water* takes place on carbocation
 (4) In the last step deprotonation takes place to form an alcohol

HC0201

7. For the reduction of aldehydes and ketones into alcohol the reagent which can be used is/are :

- (1) H_2 in presence of Ni, Pt or Pd
 (2) NaBH_4
 (3) LiAlH_4
 (4) All of these

CC0202

8. Which of the following does not reduces the carboxylic acids into alcohol ?

- (1) $\frac{1. \text{LiAlH}_4/\text{ether}}{2. \text{H}_3\text{O}^+}$ (2) $\frac{1. \text{B}_2\text{H}_6}{2. \text{H}_3\text{O}^+}$
 (3) NaBH_4 (4) $\frac{\text{ROH}}{\text{H}^+} \xrightarrow[\text{Catalyst}]{\text{H}_2}$

CA0203

9. $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow[413\text{K}]{\text{H}_2\text{SO}_4} \text{B}$ A and B are
 $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow[443\text{K}]{\text{H}_2\text{SO}_4} \text{A}$

(respectively)

- (1) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$, $\text{CH}_2=\text{CH}_2$
 (2) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$, $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_2\text{CH}_3$
 (3) $\text{CH}_2=\text{CH}_2$, $\text{CH}_2=\text{CH}_2$
 (4) $\text{CH}_2=\text{CH}_2$, $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_2\text{CH}_3$

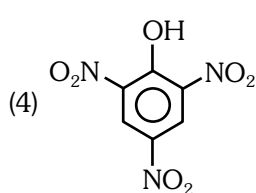
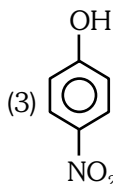
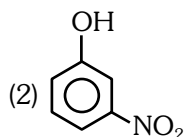
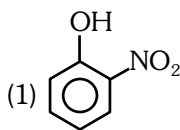
AE0204

10. Which of the following is insoluble in water ?
 (1) Ethanol (2) Ethoxyethane
 (3) Phenol (4) Pentane

AE0206

PHENOL

11. Nitration of phenol with conc. H_2SO_4 followed by nitric acid gives :-



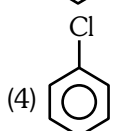
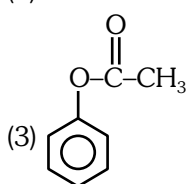
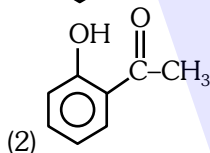
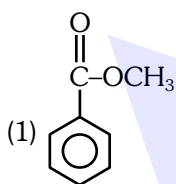
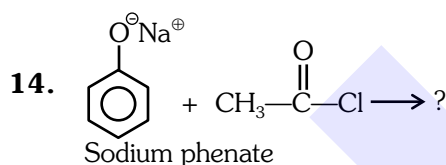
AE0008

12. Deoxygenation of phenol can be achieved by distillation with :-
 (1) Raney nickel
 (2) Lithium aluminium hydride
 (3) Sodium borohydride
 (4) Zinc dust

AE0009

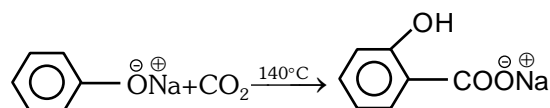
13. Which of the following compounds shows intramolecular hydrogen bonding :-
 (1) p-Nitrophenol (2) Ethanol
 (3) o-Nitrophenol (4) Methanamine

AE0010



CA0011

15. The reaction



is called :-

- (1) Schotten Bauman reaction
 (2) Kolbe Schmidt reaction
 (3) Reimer-Tiemann reaction
 (4) Lederer-Manasse reaction

AE0012

16. Phenol can be distinguished from ethanol by reactions with the following except :-

- (1) Iodine and alkali
 (2) Ferric chloride
 (3) Acetyl chloride
 (4) Bromine water

HD0013

17. Phenol on treatment with methyl chloride in the presence of anhydrous AlCl_3 gives chiefly :-

- (1) o-cresol (2) m-cresol
 (3) anisole (4) p-cresol

AE0014

18. Phenol on heating with NaNO_2 and a few drops of conc. H_2SO_4 mainly gives :-

- (1) p-nitrophenol
 (2) p-nitrosophenol
 (3) o-nitrophenol
 (4) m-nitrosophenol

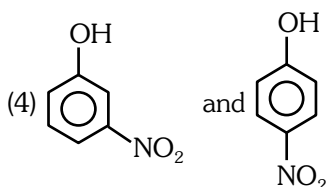
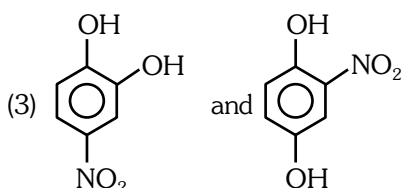
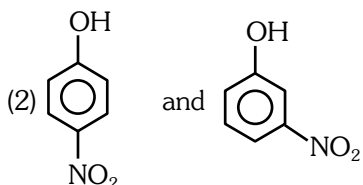
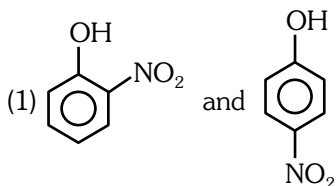
AE0015

19. Phenol and benzoic acid are distinguished by :-

- (1) Lucas reagent
 (2) Victor Meyer test
 (3) Caustic soda
 (4) Sodium bicarbonate

PO0016

20. Phenol on treatment with dil HNO_3 at low temp (298 K) gives two products P and Q. P is steam volatile but Q is not. P and Q are respectively.



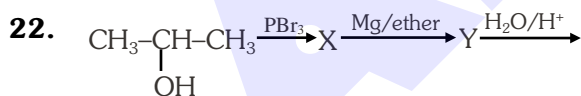
AE0207

ETHER

21. The preparation of ethers from alcohols by using sulphuric acid is called :-

- (1) Williamson's ether Synthesis
- (2) Williamson's continuous etherification process
- (3) Ziesel's method
- (4) Zerewitinoff method

AE0236

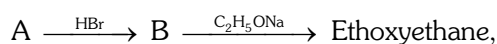


The final product is :-

- (1) $\text{CH}_3-\underset{\text{CH}}{\text{CH}}-\text{OH}$
- (2) $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{OH}$
- (3) $\text{CH}_3-\underset{\text{CH}_3}{\text{CH}}-\text{O}-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_3$
- (4) $\text{CH}_3-\text{CH}_2-\text{CH}_3$

AE0020

23. In the reaction sequence



A and B are :-

- (1) C_2H_6 , $\text{C}_2\text{H}_5\text{Br}$
- (2) CH_4 , CH_3Br
- (3) $\text{CH}_2=\text{CH}_2$, $\text{C}_2\text{H}_5\text{Br}$
- (4) $\text{CH}\equiv\text{CH}$, $\text{CH}_2=\text{CHBr}$

AE0021

24. $\text{CH}_3-\text{CH}_2-\text{OH} + \text{Ph}-\text{CH}_2-\text{OH} \xrightarrow[140^\circ\text{C}]{\text{H}^+}$ of which is not obtained?

- (1) $\text{CH}_3-\text{CH}_2-\text{OCH}_2-\text{CH}_3$
- (2) $\text{Ph}-\text{CH}_2-\text{OCH}_2-\text{Ph}$
- (3) $\text{Ph}-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_3$
- (4) $\text{Ph}-\text{CH}_2-\text{O}-\text{CH}_2-\text{O}-\text{CH}_3$

AE0023

25. Oxonium ion of ether has the structure :-

- (1) $\text{C}_2\text{H}_5-\text{O}-\underset{\text{CH}_3}{\underset{\text{H}}{\text{CH}}}-\text{O}^+-\text{H}$
- (2) $\text{CH}_3-\text{CH}_2-\underset{\text{H}}{\text{O}^+}-\text{CH}_2-\text{CH}_3$
- (3) $(\text{C}_2\text{H}_5)_2\text{O} \rightarrow \text{O}$
- (4) $\text{CH}_3-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\underset{\text{H}}{\text{CH}_2}-\text{O}^+-\text{H}$

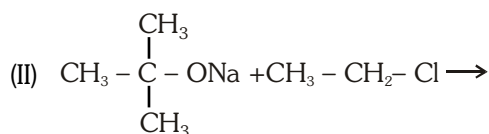
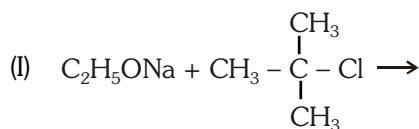
AE0024

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

- (1) Phenol
- (2) Benzoic acid
- (3) CH_3COOH
- (4) $\text{CH}_3-\text{O}-\text{C}_6\text{H}_5$

PO0026

27. A student tried two reactions for preparing tert-butyl ether :



Which reaction will give better yield of tert butyl ether ?

- (1) Only I (2) Only II
(3) Both I & II (4) Neither I nor II

HD0208

CARBONYL COMPOUNDS

28. 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

CC0027

29. 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

CC0028

30. CH_3CHO and CH_3COCH_3 can not be distinguished by :-

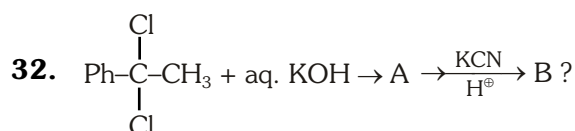
- (1) Fehling solution
(2) Grignard reagent
(3) Schiff's reagent
(4) Tollen's reagent

CC0029

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

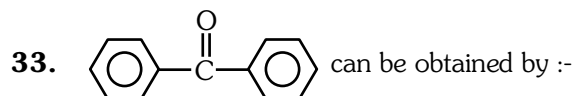
- (1) $HCHO$ (2) CH_3CHO
(3) CH_3COCH_3 (4) $CH_3-C \equiv N$

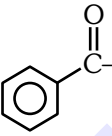
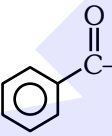
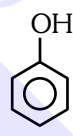

CC0031



- (1) 50% d + 50% l (2) 80% d + 20% l
(3) Meso compound (4) optically active

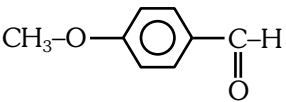
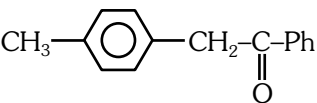
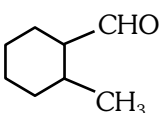
CC0032



- (1)  + $(Ph)_2Cd$
(2)  + 
(3)  + $CO + ZnCl_2 + HCN$
(4) None of the above

CC0033

34. Which does not react with $NaHSO_3$.

- (1) $Ph - \overset{\overset{O}{||}}{C} - H$
(2) 
(3) 
(4) 

CC0034

35. Ketones can be prepared by :-

- (1) Rosenmund reduction
(2) Etard reaction
(3) Cannizzaro reaction
(4) Friedel-Craft reaction

CC0035

36. Carbonyl compounds are best purified by :-

- (1) Steam distillation
(2) Hydrolysis of sodium bisulphite adducts
(3) Fractional crystallisation
(4) Sublimation

CC0036

37. Carbonyl compounds readily undergo :-

- (1) Nucleophilic substitutions
- (2) Electrophilic addition reactions
- (3) Nucleophilic addition reactions
- (4) Free radical substitution reactions

CC0037

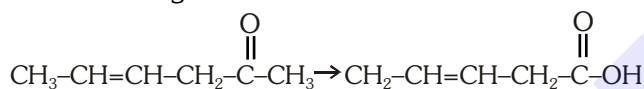
38. $\text{CH}_3\text{--}\overset{\text{O}}{\parallel}\text{C--CH}_3$ and $\text{CH}_3\text{--}\overset{\text{O}}{\parallel}\text{C--H}$ are readily

distinguished by their reaction with :-

- (1) Iodine and alkali
- (2) 2,4-dinitrophenylhydrazine
- (3) Tollen's reagent
- (4) All the above

CC0038

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



- (1) $\xrightarrow[\text{(ii)H}^+]{\text{(i)Tollen's reagent}}$
- (2) $\xrightarrow[\text{(ii)H}^+]{\text{(i)Benzoyl peroxide}}$
- (3) $\xrightarrow[\text{(ii)H}^+]{\text{(i)I}_2 \text{ and NaOH}}$
- (4) $\xrightarrow{\text{KMnO}_4/\text{H}^+, \Delta}$

HD0040

40. Formaldehyde reacts with conc. alkali to form :-

- (1) A resinous mass
- (2) Formic acid
- (3) A mixture of methanol and sodium formate
- (4) Methanol

CC0041

41. Which of the following compounds does not give aldol condensation :-

- (1) CH_3CHO
- (2) $\text{CH}_3\text{CH}_2\text{CHO}$
- (3) HCHO
- (4) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$

CC0042

42. 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

CC0043

43. Which of the following can be converted to $\text{CH}_3\text{--CH=CH--CHO}$:-

- (1) Acetone
- (2) Acetaldehyde
- (3) Propanaldehyde
- (4) Formaldehyde

CC0045

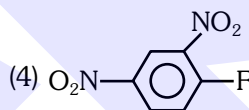
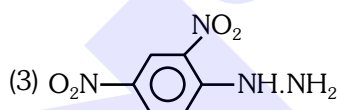
44. The product of reaction with primary amine and aldehyde is -

- (1) $\text{R--}\overset{\text{O}}{\parallel}\text{C--OH}$
- (2) R--ONO
- (3) R'--CH=N--R
- (4) R--NO_2

CC0046

45. Brady's reagent is

- (1) $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$
- (2) $\text{KMnO}_4/\text{NaIO}_4$



CC0047

46. A compound with molecular formula $\text{C}_3\text{H}_6\text{O}$, not gives silver mirror with Tollen's reagent but forms oxime with hydroxyl amine. Compound will be -

- (1) $\text{CH}_2=\text{CH--CH}_2\text{--OH}$
- (2) $\text{CH}_3\text{CH}_2\text{CHO}$
- (3) $\text{CH}_2=\text{CH--O--CH}_3$
- (4) CH_3COCH_3

CC0048

47. Aldehyde and ketone are distinguished by reagent

- (1) Fehling solution
- (2) H_2SO_4
- (3) NaHSO_3
- (4) NH_3

CC0049

48. Carbonyl group is converted into methylene group by -

- (1) Acidic reduction
- (2) Raney Ni
- (3) Basic hydrolysis
- (4) Normal Hydrogenation

CC0050

49. When acetaldol is treated with excess of acid then unsaturated product will be :-

- (1) Alcohol
- (2) Aldehyde
- (3) Acid
- (4) Alkyl halide

CC0051

50. The reagent used for the separation of acetaldehyde from acetophenone is -

- (1) NaHSO_3 (2) $\text{C}_6\text{H}_5\text{NHNH}_2$
(3) NH_2OH (4) $\text{NaOH} + \text{I}_2$

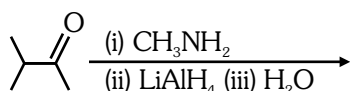
CC0052

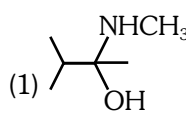
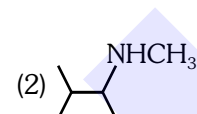
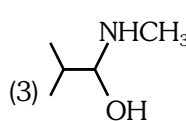
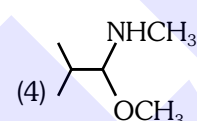
51. The most suitable reagent for the conversion of $\text{RCH}_2\text{OH} \longrightarrow \text{RCHO}$

- (1) KMnO_4
(2) $\text{K}_2\text{Cr}_2\text{O}_7$
(3) $\text{CrO}_3/\text{H}_2\text{SO}_4$
(4) PCC (Pyridinium chloro chromate)

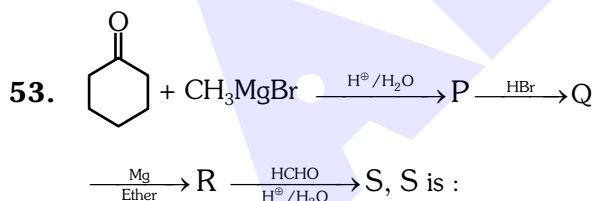
CC0053

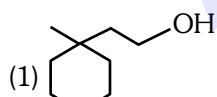
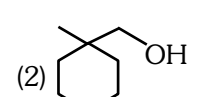
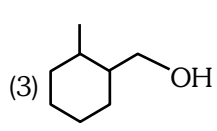
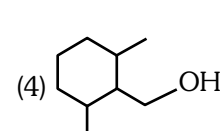
52. The major organic product formed from the following reaction is :-



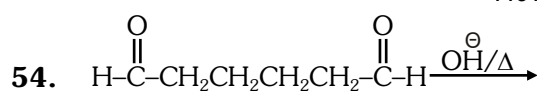
- (1)  (2) 
(3)  (4) 

CC0054

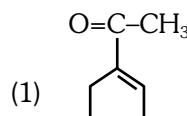
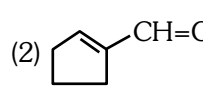
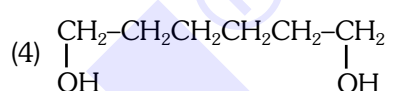


- (1)  (2) 
(3)  (4) 

CC0056





Product (A) is :-

- (1) 
(2) 
(3) $\text{CH}_2-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2-\text{COOH}$
(4) $\text{CH}_2-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2-\text{CH}_2$


CC0057

55. Which of the following reaction will not give ketone?

- (1) $\text{R}-\text{MgX} + \text{R}-\text{COCl} \longrightarrow$
(2) $\text{R}-\text{CN} + \text{R}-\text{MgX} \longrightarrow \xrightarrow{\text{H}_3\text{O}^+}$
(3)  + $\text{RCOCl} \xrightarrow{\text{anhy. AlCl}_3}$
(4)  + $\text{CrO}_2\text{Cl}_2 \xrightarrow{\text{CS}_2} \xrightarrow{\text{H}_2\text{O}^+}$

CC0209

56. Select the incorrect option :

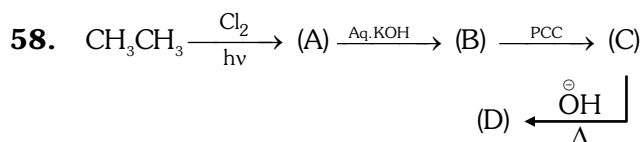
- | Conversion | Reagent |
|---|--|
| (1) Hexan-1-ol \longrightarrow hexanal | $\text{C}_5\text{H}_5\text{NH}^+\text{CrO}_3\text{Cl}^-$ |
| (2) Ethanenitrile \longrightarrow Ethanal | DIBAL-H |
| (3) p-fluorotoluene, \longrightarrow p-fluorobenzaldehyde | $\text{K}_2\text{Cr}_2\text{O}_7, \text{H}^+$ |
| (4) But-2-ene \longrightarrow Ethanal | $\text{O}_3, \text{H}_2\text{O}-\text{Zn dust}$ |

CC0210

57. True statement about acetone is

- (1) α -H of acetone is acidic due to strong electron withdrawing carbonyl group
(2) α -H of acetone is acidic due to resonance stabilisation of conjugate base
(3) It gives β -Hydroxy ketone with dilute alkali
(4) All

CC0211



The product D is :-

- (1) $\text{CH}_2 = \text{CH}_2$
- (2) $\text{CH}_3 - \underset{\text{OH}}{\text{CH}} - \text{CH}_2 - \text{CHO}$
- (3) $\text{CH}_3 - \underset{\text{O}}{\underset{\parallel}{\text{C}}} - \text{CH}_3$
- (4) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CHO}$





CC0212

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

- (1) Carbon-Oxygen double bond is polar but carbon-carbon double bond is non-polar
- (2) Carbon-Oxygen bond length is 123 pm than that of carbon-carbon bond length is 134 pm
- (3) Carbonyl compounds undergo nucleophilic addition reaction but compounds containing ethylenic double bonds undergo electrophilic addition reaction
- (4) All of these

CC0213

60. Select the structure of chromium complex formed by the reaction of toluene with chromylchloride followed by hydrolysis to give benzaldehyde and also the name of the reaction.

- (1)  and Etard reaction
- (2)  and Etard reaction
- (3)  and Rosenmund reaction
- (4)  and Rosenmund reaction

CC0214

61. The methanal, ethanal and propanone are miscible with water because they form

- (1) Vander waal's forces with water
- (2) H-bond with water
- (3) dipole-dipole bond with water
- (4) ion-dipole bond with water

CC0215

62. The correct increasing order of carbonyl compounds towards nucleophilic addition reaction.

- (1) Butanone < Propanone < Propanal < Ethanal
- (2) Butanone < Propanal < Propanone < Ethanal
- (3) Butanone < Ethanal < Propanone < Propanal
- (4) Butanone < Ethanal < Propanal < Propanone

CC0216

63. Which of the following carbonyl group give the positive fehling test ?

- (1) Aliphatic aldehydes
- (2) Aromatic aldehydes
- (3) Ketones
- (4) Both (1) and (2)

PO0217

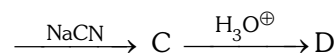
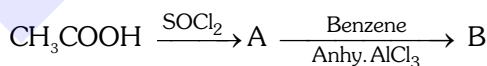
CARBOXYLIC ACID

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

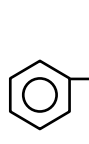
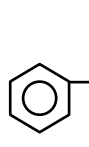
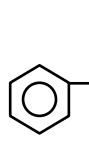
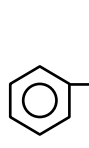
- (1) methyl group
- (2) carboxylic acid group
- (3) methylene group
- (4) bicarbonate

PO0060

65. In a set of reactions acetic acid yielded a product D



The structure of D would be -

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

CA0061

ACID DERIVATIVE

66. The compounds A and B in the reaction sequence



are given by the set respectively :-

- (1) $\text{CH}_3\text{CO-O-COCH}_3$, $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$
- (2) $\text{CH}_3\text{CO-O-COCH}_3$, $\text{C}_6\text{H}_5\text{OCOCH}_3$
- (3) CH_3COCH_3 , $\text{C}_6\text{H}_5\text{OCOCH}_3$
- (4) $\text{CH}_3-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{O}-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{CH}_3$, $\text{CH}_3-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{O}-\text{C}_6\text{H}_5$

CA0062

67. $\text{CH}_3\text{-CH}_2\text{-COOH} \xrightarrow{\text{Red P/Cl}_2} A \xrightarrow[\text{KOH}]{\text{Alc.}} B$

structure of B is :-

- (1) $\text{CH}_2=\text{CH-COOH}$
- (2) $\text{CH}_3-\underset{\text{Cl}}{\text{CH}}-\text{COOH}$
- (3) $\underset{\text{Cl}}{\text{CH}_2}-\text{CH}_2-\text{COOH}$

- (4) $\text{CH}_3-\text{CH}_2-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{Cl}$

CA0063

68. Which is most reactive towards hydrolysis.

- (1) $\text{CH}_3-\text{C}_6\text{H}_4-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{NH-CH}_3$
- (2) $\text{O}_2\text{N-C}_6\text{H}_4-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{NH-CH}_3$
- (3) $\text{Cl-C}_6\text{H}_4-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{NH-CH}_3$
- (4) $\text{C}_6\text{H}_5-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{NH-CH}_3$

CA0065

69. 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

PO0066

70. Acyl chlorides undergo :-

- (1) Nucleophilic addition reactions
- (2) Nucleophilic substitution reactions
- (3) Electrophilic substitution reactions
- (4) Electrophilic addition reactions

CA0067

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

- (1) Nucleophilic addition
- (2) Nucleophilic substitution
- (3) Electrophilic addition
- (4) Free radical substitution

CA0068

72. The reduction of acetamide gives :-

- (1) $\text{CH}_3\text{CH}_2\text{NH}_2$
- (2) $(\text{CH}_3)_2\text{CHNH}_2$
- (3) $(\text{CH}_3)_3\text{CNH}_2$
- (4) $(\text{CH}_3\text{CH}_2)_2\text{NH}$

CA0069

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

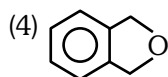
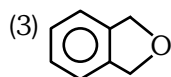
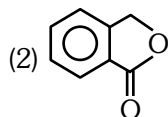
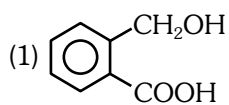
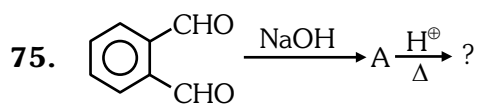
- (1) Ester
- (2) Acid
- (3) Acid halide
- (4) Alcohol

CC0070

74. $\text{CH}_3-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{NH}_2 \xrightarrow[\Delta]{\text{P}_2\text{O}_5} ?$

- (1) CH_3COOH
- (2) $\text{CH}_3\text{-CN}$
- (3) $\text{CH}_3\text{-CH}_3$
- (4) $\text{CH}_3\text{-CHO}$

CA0072



CC0073

EXERCISE-I (Conceptual Questions)

ANSWER KEY

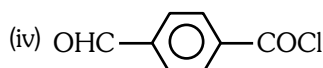
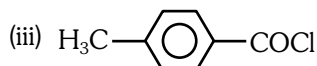
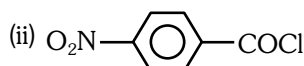
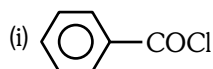
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Ans.	3	1	3	3	3	1	4	3	4	4	4	4	3	3	2
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	3	4	2	4	1	2	4	3	4	2	4	2	2	3	2
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	4	1	1	3	4	2	3	3	3	3	3	3	2	3	3
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	4	1	1	2	1	4	2	2	2	4	3	4	4	4	2
Que.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	2	1	1	4	1	2	1	2	2	2	2	1	3	2	2

EXERCISE-II (Previous Year Questions)

AIPMT/NEET

AIPMT 2007

1. Consider the following compounds:



The correct order of reactivity towards hydrolysis is:-

- (1) (i) > (ii) > (iii) > (iv)
 (2) (iv) > (ii) > (i) > (iii)
 (3) (ii) > (iv) > (i) > (iii)
 (4) (ii) > (iv) > (iii) > (i)

CA0075

2. Which one of the following on treatment with 50% aq. NaOH yields the corresponding alcohol and acid

- (1) C_6H_5CHO
 (2) $CH_3CH_2CH_2CHO$
 (3) CH_3COCH_3
 (4) CH_3CHO

CC0076

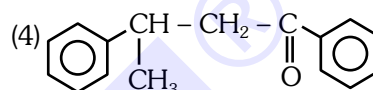
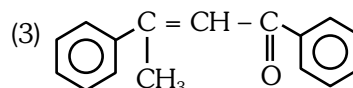
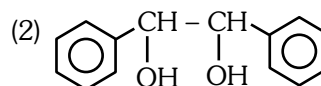
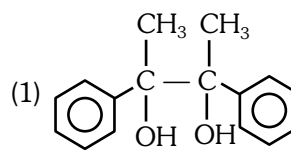
3. The product formed in aldol reaction is :-

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

CC0078

AIPMT 2008

4. Acetophenone when reacted with a base, C_2H_5ONa , yields a stable compound which has the structure :-



CC0079

5. A strong base can abstract an α -hydrogen from

- (1) Ketone (2) Alkane
 (3) Alkene (4) Amine

CC0080

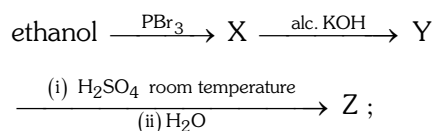
AIPMT 2009

6. $H_2COH \cdot CH_2OH$ on heating with periodic acid gives :-

- (1) $2 \begin{array}{c} H \\ \diagup \quad \diagdown \\ C=O \\ \diagdown \quad \diagup \\ H \end{array}$ (2) $2CO_2$
 (3) $2HCOOH$ (4) $\begin{array}{c} CHO \\ | \\ CHO \end{array}$

AE0081

7. Consider the following reaction,

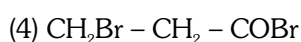
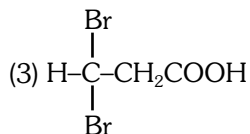
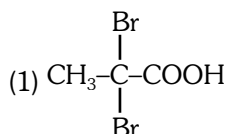


the product Z is :-

- (1) CH_3CH_2OH
 (2) $CH_2 = CH_2$
 (3) $CH_3CH_2 - O - CH_2 - CH_3$
 (4) $CH_3 - CH_2 - O - SO_3H$

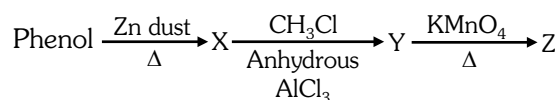
AE0082

8. Propionic acid with Br_2/P yields a dibromo product. Its structure would be :-



CA0083

9. Consider the following reaction :

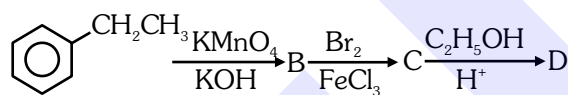


the product Z is :-

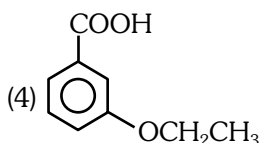
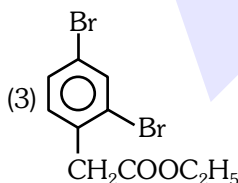
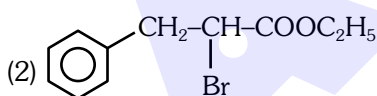
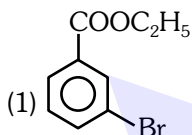
- (1) Benzene (2) Toluene
(3) Benzaldehyde (4) Benzoic acid

AH0084

10. In a set of reactions, ethyl benzene yielded a product D



'D' would be :-



AH0085

AIPMT 2010

11. Which of the following reactions will not result in the formation of carbon-carbon bonds ?

- (1) Friedel-Crafts acylation
(2) Reimer-Tieman reaction
(3) Cannizzaro reaction
(4) Wurtz reaction

CC0086

12. When glycerol is treated with excess of HI, it produces :-

- (1) allyl iodide
(2) propene
(3) glyceryl triiodide
(4) 2-iodopropane

AE0087

13. Match the compounds given in List-I with their characteristic reactions given in List-II. Select the correct option.

List-I (Compounds)

- (a) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{NH}_2$
(b) $\text{CH}_3\text{C}\equiv\text{CH}$
(c) $\text{CH}_3\text{CH}_2\text{COOCH}_3$
(d) $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$

List-II (Reactions)

- (i) Alkaline hydrolysis
(ii) With KOH (alcohol) and CHCl_3 produces bad smell
(iii) Gives white ppt. with ammonical AgNO_3
(iv) With Lucas reagent cloudiness appears after 5 minutes

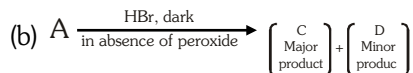
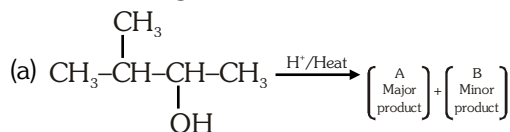
Options :

- | | | | | |
|-----|-------|-------|-------|-------|
| | (a) | (b) | (c) | (d) |
| (1) | (iii) | (ii) | (i) | (iv) |
| (2) | (ii) | (iii) | (i) | (iv) |
| (3) | (iv) | (ii) | (iii) | (i) |
| (4) | (ii) | (i) | (iv) | (iii) |

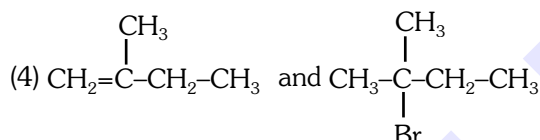
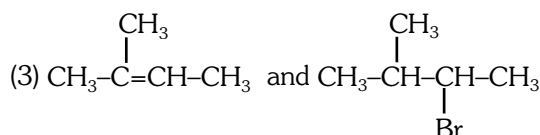
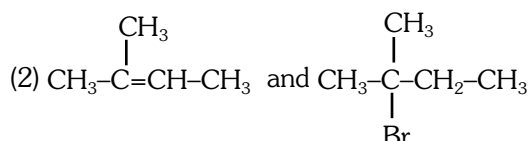
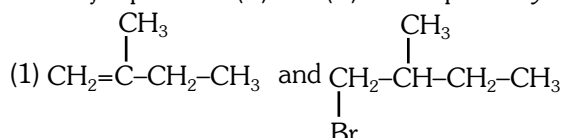
PO0088

AIPMT Pre. 2011

14. In the following reactions,

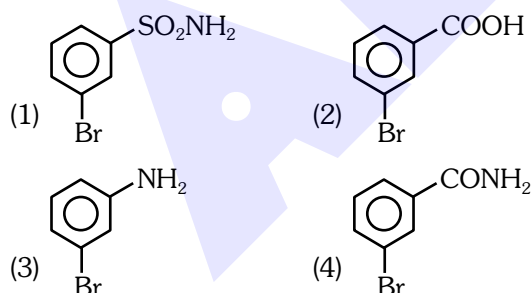
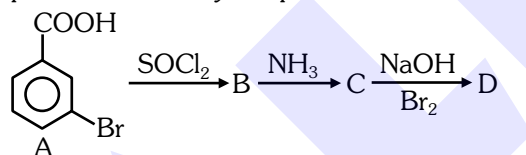


the major products (A) and (C) are respectively :-



AE0091

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



CA0092

16. Clemmensen reduction of a ketone is carried out in the presence of which of the following ?

- (1) Glycol with KOH
- (2) Zn-Hg with HCl
- (3) LiAlH₄
- (4) H₂ and Pt as catalyst

CC0093

AIPMT Mains 2011

17. An organic compound 'A' on treatment with NH₃ gives 'B' which on heating gives 'C'. 'C' when treated with Br₂ in the presence of KOH produces ethylamine. Compound 'A' is :-

- (1) CH₃CH₂COOH
- (2) CH₃COOH
- (3) CH₃CH₂CH₂COOH
- (4) CH₃- $\underset{\text{CH}_3}{\text{CH}}$ -COOH

CA0094

18. Match the compounds given in List-I with List-II and select the suitable option using the code given below.

List-I

List-II

- | | |
|------------------------|---------------------------|
| (a) Benzaldehyde | (i) Phenolphthalein |
| (b) Phthalic anhydride | (ii) Benzoin condensation |
| (c) Phenyl benzoate | (iii) Oil of wintergreen |
| (d) Methyl salicylate | (iv) Fries rearrangement |

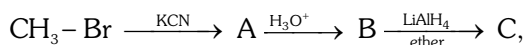
Code :

- | | | | |
|----------|-------|-------|-------|
| (a) | (b) | (c) | (d) |
| (1) (ii) | (i) | (iv) | (iii) |
| (2) (iv) | (i) | (iii) | (ii) |
| (3) (iv) | (ii) | (iii) | (i) |
| (4) (ii) | (iii) | (iv) | (i) |

CA0095

AIPMT Pre. 2012

19. In the following sequence of reactions

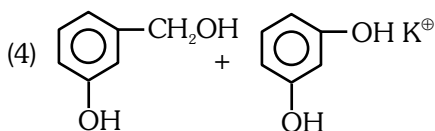
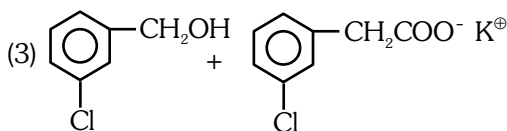
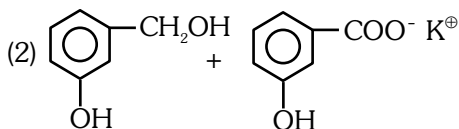
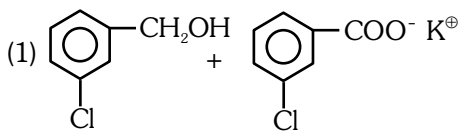
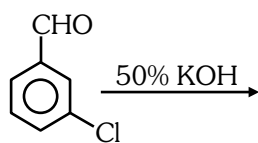


the end product (C) is:

- (1) Acetaldehyde
- (2) Ethyl alcohol
- (3) Acetone
- (4) Methane

CA0097

20. Predict the products in the given reaction.



CC0098

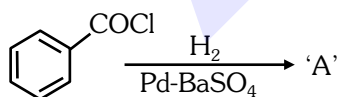
21. CH_3CHO and $\text{C}_6\text{H}_5\text{CH}_2\text{CHO}$ can be distinguished chemically by :

- (1) Tollen's reagent test
- (2) Fehling solution test
- (3) Benedict test
- (4) Iodoform test

HD0099

AIPMT Mains 2012

22. Consider the following reaction :



The product 'A' is :

- (1) $\text{C}_6\text{H}_5\text{COCH}_3$
- (2) $\text{C}_6\text{H}_5\text{Cl}$
- (3) $\text{C}_6\text{H}_5\text{CHO}$
- (4) $\text{C}_6\text{H}_5\text{OH}$

CA0100

NEET UG 2013

23. Reaction by which Benzaldehyde cannot be prepared :-

- (1) O=C(c1ccccc1)O + Zn/Hg and conc. HCl
- (2) Cc1ccccc1 + CrO_2Cl_2 in CS_2 followed by H_3O^+
- (3) O=C(c1ccccc1)Cl + H_2 in presence of Pd+ BaSO_4
- (4) c1ccccc1 + CO+HCl in presence of anhydrous AlCl_3

CC0101

AIPMT 2014

24. Among the following sets of reactants which one produces anisole?

- (1) CH_3CHO ; RMgX
- (2) $\text{C}_6\text{H}_5\text{OH}$; NaOH ; CH_3I
- (3) $\text{C}_6\text{H}_5\text{OH}$; neutral FeCl_3
- (4) $\text{C}_6\text{H}_5 - \text{CH}_3$; CH_3COCl ; AlCl_3

AE0105

25. Which of the following will not be soluble in sodium hydrogen carbonate?

- (1) 2, 4, 6-trinitrophenol
- (2) Benzoic acid
- (3) o-Nitrophenol
- (4) Benzenesulphonic acid

PO0106

AIPMT 2015

26. An organic compound 'X' having molecular formula $\text{C}_5\text{H}_{10}\text{O}$ yields phenyl hydrazone and gives negative response to the Iodoform test and Tollen's test. It produces n-pentane on reduction. 'X' could be :-

- (1) 2-pentanone
- (2) 3-pentanone
- (3) n-amyl alcohol
- (4) pentanal

CC0108

RE-AIPMT 2015

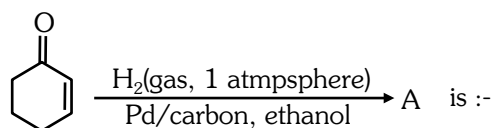
27. Reaction of phenol with chloroform in presence of dilute sodium hydroxide finally introduces which one of the following functional group ?

- (1) $-\text{CHCl}_2$ (2) $-\text{CHO}$
(3) $-\text{CH}_2\text{Cl}$ (4) $-\text{COOH}$

AH0109

NEET-II 2016

28. The **correct** structure of the product A formed in the reaction



- (1) OC1C=CCCC1
(2) OC1CCCCC1
(3) OC1C=CCCC1
(4) O=C1CCCCC1

CC0113

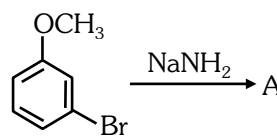
NEET(UG) 2017

29. The heating of phenyl-methyl ethers with HI produces

- (1) iodobenzene (2) phenol
(3) benzene (4) ethyl chlorides

AE0120

30. Identify A and predict the type of reaction



- (1) COc1cc(N)ccc1 and elimination addition reaction

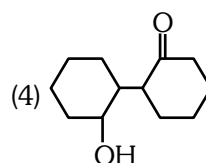
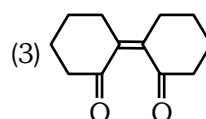
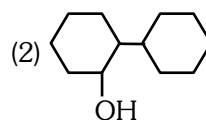
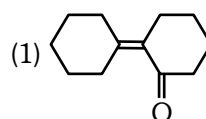
- (2) COc1cc(Br)ccc1 and cine substitution reaction

- (3) COc1ccccc1 and cine substitution reaction

- (4) COc1cc(N)ccc1 and substitution reaction

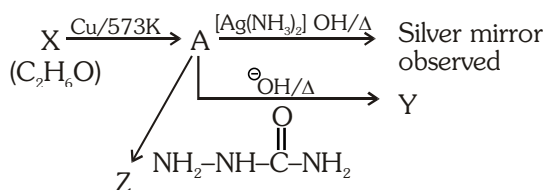
HD0121

31. Of the following, which is the product formed when cyclohexanone undergoes aldol condensation followed by heating ?



CC0122

32. Consider the reactions :-



Identify A, X, Y and Z

- (1) A-Methoxymethane, X-Ethanol, Y-Ethanoic acid, Z-Semicarbazide.
- (2) A-Ethanal, X-Ethanol, Y-But-2-enal, Z-Semicarbazone
- (3) A-Ethanol, X-Acetaldehyde, Y-Butanone, Z-Hydrazone
- (4) A-Methoxymethane, X-Ethanoic acid, Y-Acetate ion, Z-hydrazine

CC0123

NEET(UG) 2018

33. Carboxylic acid have higher boiling points than aldehydes, ketones and even alcohols of comparable molecular mass. It is due to their

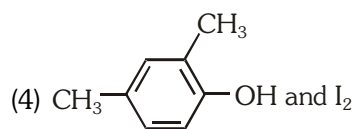
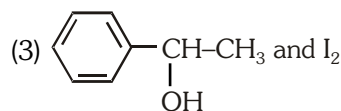
- (1) formation of intramolecular H-bonding
- (2) formation of carboxylate ion
- (3) more extensive association of carboxylic acid via van der Waals force of attraction
- (4) formation of intermolecular H-bonding.

CC0132

34. Compound A, $\text{C}_8\text{H}_{10}\text{O}$, is found to react with NaOI (produced by reacting Y with NaOH) and yields a yellow precipitate with characteristic smell.

A and Y are respectively

- (1) CC1=CC=CC=C1CO and I_2
- (2) CC1=CC=CC=C1CCO and I_2



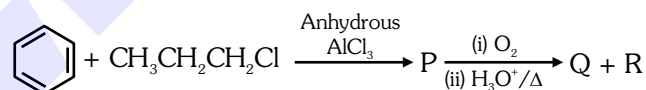
HD0133

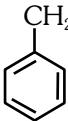
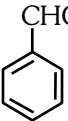
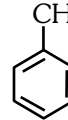
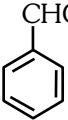
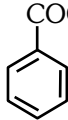
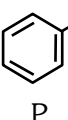
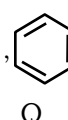
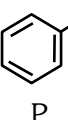
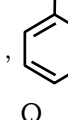
35. The compound A on treatment with Na gives B, and with PCl_5 gives C. B and C react together to give diethyl ether. A, B and C are in the order

- (1) $\text{C}_2\text{H}_5\text{OH}$, C_2H_6 , $\text{C}_2\text{H}_5\text{Cl}$
- (2) $\text{C}_2\text{H}_5\text{OH}$, $\text{C}_2\text{H}_5\text{Cl}$, $\text{C}_2\text{H}_5\text{ONa}$
- (3) $\text{C}_2\text{H}_5\text{Cl}$, C_2H_6 , $\text{C}_2\text{H}_5\text{OH}$
- (4) $\text{C}_2\text{H}_5\text{OH}$, $\text{C}_2\text{H}_5\text{ONa}$, $\text{C}_2\text{H}_5\text{Cl}$

AE0134

36. Identify the major products P, Q and R in the following sequence of reaction :

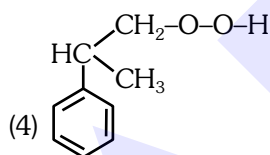
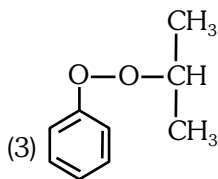
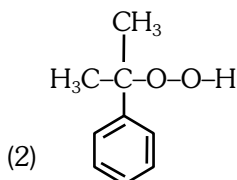
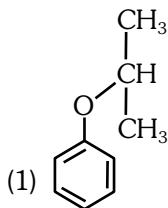
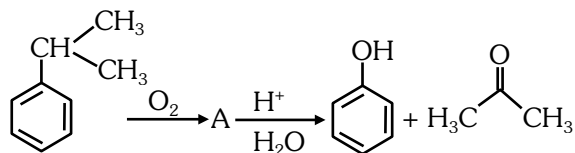


- (1)  ,  , $\text{CH}_3\text{CH}_2\text{-OH}$
P Q R
- (2)  ,  , 
P Q R
- (3)  ,  , $\text{CH}_3\text{CH(OH)CH}_3$
P Q R
- (4)  ,  , $\text{CH}_3\text{-CO-CH}_3$
P Q R

AH0135

NEET(UG) 2019

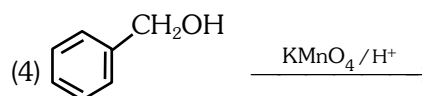
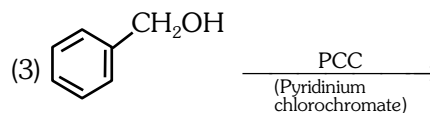
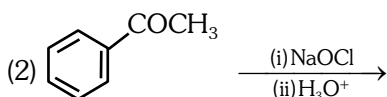
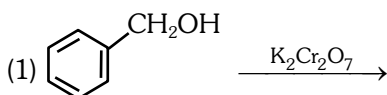
37. The structure of intermediate A in the following reaction is :-



AE0218

NEET(UG) 2019 (ODISHA)

38. The reaction that **does not** give benzoic acid as the major product is :-



CA0219

39. When vapours of a secondary alcohol is passed over heated copper at 573 K, the product formed is :-

- (1) a carboxylic acid (2) an aldehyde
(3) a ketone (4) an alkene

CC0220

40. The major products C and D formed in the following reactions respectively are :-



- (1) $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{I}$ and $\text{I}-\text{C}(\text{CH}_3)_3$
(2) $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{OH}$ and $\text{I}-\text{C}(\text{CH}_3)_3$
(3) $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{I}$ and $\text{HO}-\text{C}(\text{CH}_3)_3$
(4) $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{OH}$ and $\text{HO}-\text{C}(\text{CH}_3)_3$

AE0221

NEET(UG) 2020

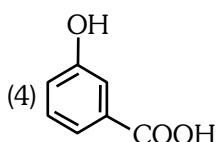
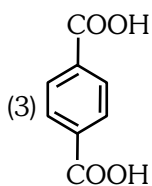
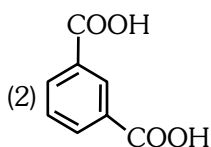
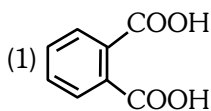
41. Reaction between benzaldehyde and acetophenone in presence of dilute NaOH is known as :

- (1) Cross Aldol condensation
(2) Aldol condensation
(3) Cannizzaro's reaction
(4) Cross Cannizzaro's reaction

CC0237

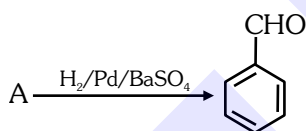
NEET(UG) 2020 (COVID-19)

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



CA0238

43. Identify compound (A) in the following reaction :

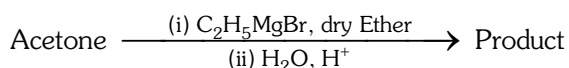


- (1) Benzoyl chloride
(2) Toluene
(3) Acetophenone
(4) Benzoic acid

CC0239

NEET(UG) 2021

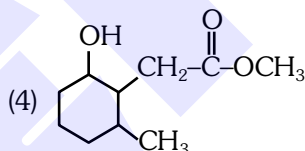
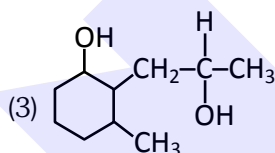
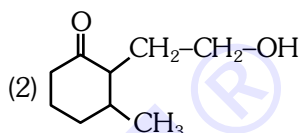
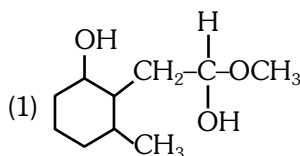
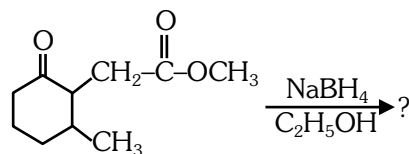
44. What is the IUPAC name of the organic compound formed in the following chemical reaction ?



- (1) 2-methyl propan-2-ol
(2) pentan-2-ol
(3) pentan-3-ol
(4) 2-methyl butan-2-ol

CC0240

45. The product formed in the following chemical reaction is



CC0241

46. Match List-I with List-II.

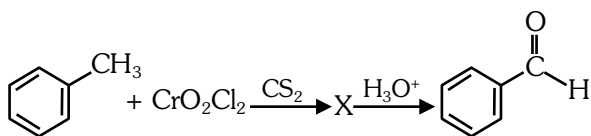
List-I	List-II
(a) $\xrightarrow[\text{Anhyd. } AlCl_3/CuCl]{CO, HCl}$	(i) Hell-Volhard-Zelinsky reaction
(b) $R-\overset{\overset{O}{\parallel}}{C}-CH_3 + NaOX \longrightarrow$	(ii) Gattermann-Koch Reaction
(c) $R-CH_2-OH + R'COOH \xrightarrow{\text{Conc. } H_2SO_4}$	(iii) Haloform reaction
(d) $R-CH_2-COOH \xrightarrow[\text{(ii) } H_2O]{\text{(i) } X_2/RedP}$	(iv) Esterification

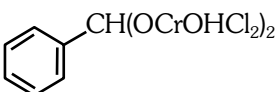
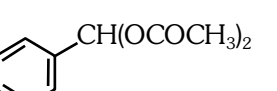
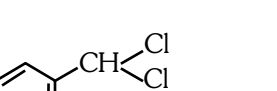
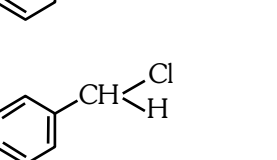
Choose the **correct** answer from the options given below.

- (1) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)
(2) (a)-(iii), (b)-(ii), (c)-(i), (d)-(iv)
(3) (a)-(i), (b)-(iv), (c)-(iii), (d)-(ii)
(4) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

CA0242

47. The intermediate compound 'X' in the following chemical reaction is :

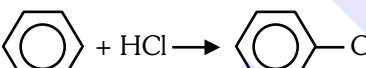


- (1) 
- (2) 
- (3) 
- (4) 

CC0243

NEET (UG) 2021(Paper-2)

48. Which of the following reactions is not possible?

- (1) $\text{HC} \equiv \text{CH} + \text{NaOH} \rightarrow \text{HC} \equiv \text{CNa} + \text{H}_2\text{O}$
- (2) 
- (3) $\text{C}_2\text{H}_5\text{OH} + \text{NaCl} \rightarrow \text{C}_2\text{H}_5\text{Cl}$
- (4) All of the these

HC0244

NEET(UG) 2022

49. Given below are two statements :

Statement I:

In Lucas test, primary, secondary and tertiary alcohols are distinguished on the basis of their reactivity with cone. $\text{HCl} + \text{ZnCl}_2$, known as Lucas Reagent.

Statement II:

Primary alcohols are most reactive and immediately produce turbidity at room temperature on reaction with Lucas Reagent.

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

- (1) Both **Statement I** and **Statement II** are incorrect.
- (2) **Statement I** is correct but **Statement II** is incorrect.
- (3) **Statement I** is incorrect but **Statement II** is correct
- (4) Both **Statement I** and **Statement II** are correct

AE0245

50. Given below are two statements : -

Statement I :

The boiling points of aldehydes and ketones are higher than hydrocarbons of comparable molecular masses because of weak molecular association in aldehydes and ketones due to dipole - dipole interactions.

Statements II :

The boiling points aldehydes and ketones are lower than the alcohols of similar molecular masses due to the absence of H-bonding.

In the light of the statements, choose the most appropriate answer from the options given below:

- (1) Both statements I and statements II are incorrect.
- (2) Statement I is correct but statements II is incorrect
- (3) Statements I is incorrect but statements II is correct.
- (4) Both statements I and statements II are correct.

CC0246

51. Match **List-I** with **List-II**.

List-I (Products formed)	List-II (Reaction of carbonyl compound with)
------------------------------------	--

- | | |
|-------------------|----------------------------|
| (a) Cyanohydrin | (i) NH_2OH |
| (b) Acetal | (ii) RNH_2 |
| (c) Schiff's base | (iii) alcohol |
| (d) Oxime | (iv) HCN |

Choose the correct answer from the options given below :

- (1) (a)-(ii), (b) - (iii), (c) - (iv), (d)- (i)
- (2) (a)-(i), (b) - (iii), (c) - (ii), (d)- (iv)
- (3) (a)-(iv), (b) - (iii), (c) - (ii), (d)- (i)
- (4) (a) -(iii), (b) - (iv), (c) - (ii), (d)- (i)

CC0247

52. Which one of the following is not formed when acetone reacts with 2-pentanone in the presence of dilute NaOH followed by heating ?

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

CC0248

NEET(UG) 2022 (Overseas)

53. Given below are two statements :

Statement - I : The product of reaction of phenol with bromine depends on the nature of solvent.

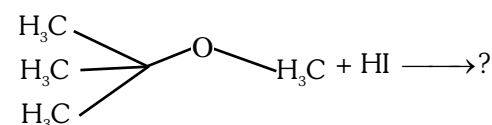
Statement - II : Reaction of phenol with bromine in CHCl_3 gives monosubstituted bromo derivative whereas reaction of phenol with bromine water yields trisubstituted bromo derivative of phenol.

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

- (1) **Statement-I** is incorrect and **Statement-II** is correct
- (2) Both **Statement-I** and **Statement-II** are correct
- (3) Both **Statement-I** and **Statement-II** are incorrect
- (4) **Statement-I** is correct and **Statement-II** is incorrect

AE0249

54. The major products formed in the following reaction are



- (1) , CH_3I
- (2) , $\text{CH}_3\text{-OH}$
- (3) , $\text{CH}_3\text{-OH}$
- (4) , $\text{CH}_3\text{-I}$

AE0250

55. Given below are two statements :

Statement-I : Aldehydes and ketones having at least one α -hydrogen undergo aldol condensation in the presence of dilute alkali as catalyst.

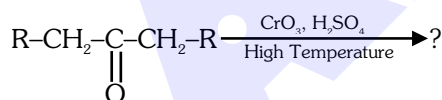
Statement-II : When aldol condensation is carried out between two different aldehydes, it is called cross aldol condensation. Ketones do not give this reaction.

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

- (1) **Statement-I** is incorrect and **Statement-II** is correct.
- (2) Both **Statement-I** and **Statement-II** are correct.
- (3) Both **Statement-I** and **Statement-II** are incorrect.
- (4) **Statement-I** is correct and **Statement-II** is incorrect.

CC0251

56. The product(s) formed from the following reaction is/are



- (1) RCH_2COOH only
- (2) $\text{R}-\text{CH}_2-\underset{\text{COOH}}{\underset{|}{\text{CH}}}-\text{CH}_2-\text{R}$ only

- (3) RCOOH and RCH_2COOH
- (4) RCOOH only

CC0252

Re-NEET(UG) 2022

57. Match the reagents (**List-I**) with the product (**List-II**) obtained from phenol.


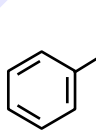
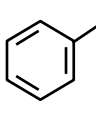
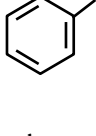
	List-I		List-II
(a)	(i) NaOH (ii) CO_2 (iii) H^+	(i)	Benzoquinone
(b)	(i) Aqueous NaOH + CHCl_3 (ii) H^+	(ii)	Benzene
(c)	Zn duct, Δ	(iii)	Salicyl aldehyde
(d)	$\text{Na}_2\text{Cr}_2\text{O}_7, \text{H}_2\text{SO}_4$	(iv)	Salicylic acid

Choose the **correct answer** from the options given below :

- (1) (a) – (iii), (b) – (iv), (c) – (i), (d) – (ii)
- (2) (a) – (ii), (b) – (i), (c) – (iv), (d) – (iii)
- (3) (a) – (iv), (b) – (iii), (c) – (ii), (d) – (i)
- (4) (a) – (iv), (b) – (ii), (c) – (i), (d) – (iii)

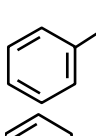
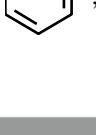
AE0253

58. The incorrect method to synthesize benzaldehyde is:

- (1)  Cl , H_2 , Pd-BaSO₄
- (2)  OC_2H_5 , DIBAL-H, followed by H_2O
- (3)  CH_3 , CrO_2Cl_2 , followed by H_3O^+ in CS_2
- (4)  CN , CH_3MgBr , followed by H_3O^+

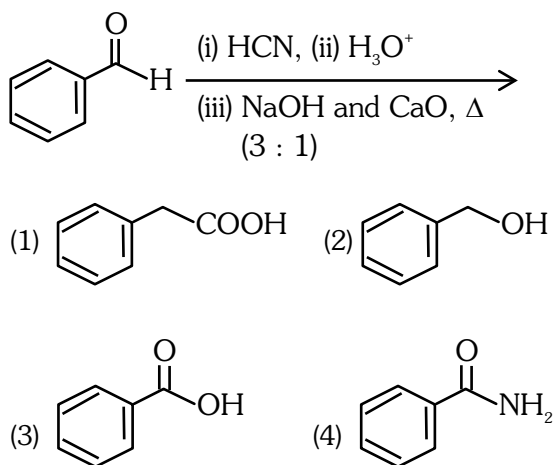
CC0254

59. Which one of the following reaction sequence is incorrect method to prepare phenol ?

- (1) Aniline, $\text{NaNO}_2 + \text{HCl}$, H_2O , heating
- (2) Cumene, O_2 , H_3O^+
- (3)  Cl , NaOH, STP condition
- (4)  H_2 , oleum, NaOH, H_3O^+

AE0255

60. The product formed from the following reaction sequence is :



CC0256

EXERCISE-II (Previous Year Questions)

ANSWER KEY

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

EXERCISE-III (Analytical Questions)

Master Your Understanding

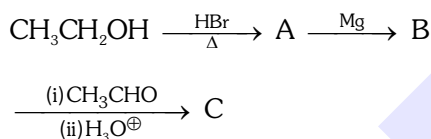
1. Methanol can be distinguished from ethanol by the following except
- (1) Reaction with iodine and alkali
 - (2) Reaction with salicylic acid and H_2SO_4
 - (3) Reaction with Lucas reagent
 - (4) Boiling point

AE0147

2. Ethanol on heating with acetic acid in the presence of a few drops of sulphuric acid gives the smell of
- (1) Oil of wintergreen
 - (2) Oil of mustard
 - (3) An ester
 - (4) Oil of bitter almonds

CA0148

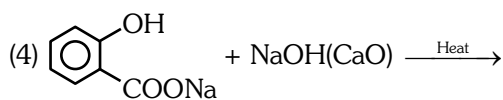
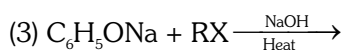
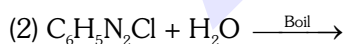
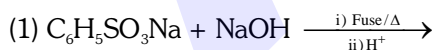
3. The compounds A, B and C in the reaction sequence are given by the set :-



- (1) $\text{CH}_3\text{CH}_2\text{Br}$, $\text{CH}_3\text{CH}_2\text{MgBr}$, $(\text{CH}_3)_3\text{C}-\text{OH}$
- (2) $\text{CH}_3\text{CH}_2\text{Br}$, $(\text{CH}_3\text{CH}_2)_2\text{Mg}$, $(\text{CH}_3)_2\text{CHCH}_2\text{OH}$
- (3) $\text{CH}_3\text{CH}_2\text{Br}$, $\text{CH}_3\text{CH}_2\text{MgBr}$, $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{CH}_3$
- (4) CH_3CHBr_2 , $\text{CH}_3\text{CH}(\text{MgBr})_2$, $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$

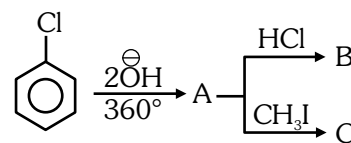
AE0149

4. Which of the following reactions will not lead to a phenol :-



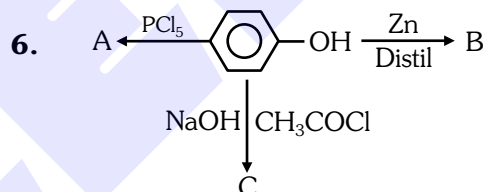
HD0150

5. The structures of the compounds / ions A, B and C in the reaction sequence are given by the set :-



- (1) $\text{C}_6\text{H}_5\text{OH}$, $\text{C}_6\text{H}_5\text{Cl}$, $\text{C}_6\text{H}_5\text{CH}_3$
- (2) $\text{C}_6\text{H}_5\text{O}^-$, $\text{C}_6\text{H}_5\text{OH}$, $\text{C}_6\text{H}_5\text{OCH}_3$
- (3) $\text{C}_6\text{H}_5\text{O}^-$, $\text{C}_6\text{H}_5\text{Cl}$, $\text{C}_6\text{H}_5\text{I}$
- (4) $\text{C}_6\text{H}_5\text{O}^-$, $\text{C}_6\text{H}_5\text{OH}$, $\text{C}_6\text{H}_5\text{I}$

HD0151

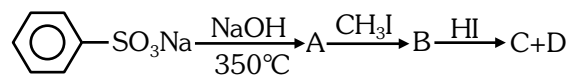


The compounds A, B and C in the above reaction sequence are :-

- (1) Chlorobenzene, benzene, methyl benzoate
- (2) Triphenyl phosphate, benzene, phenyl acetate
- (3) Benzyl chloride, benzene, phenyl acetate
- (4) Benzyl chloride, benzene, phenylacetyl chloride

AE0152

7. In the reaction sequence —

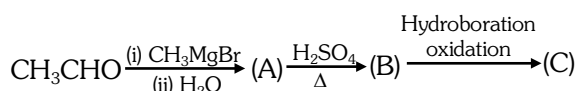


A, B, C and D are given by the set :-

- (1) Sodium phenate, anisole, $\text{C}_6\text{H}_5\text{I}$, CH_3OH
- (2) Sodium phenate, phenetole, $\text{C}_2\text{H}_5\text{I}$, $\text{C}_6\text{H}_5\text{OH}$
- (3) Sodium phenate, anisole, $\text{C}_6\text{H}_5\text{OH}$, CH_3I
- (4) Sodium phenate, phenetole, $\text{C}_6\text{H}_5\text{I}$, $\text{C}_2\text{H}_5\text{OH}$

HD0153

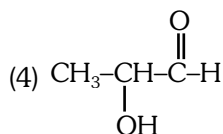
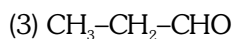
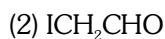
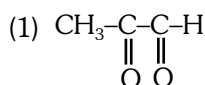
8. Compound A and C in the following reaction are



- (1) Identical
- (2) Functional isomer
- (3) Positional isomer
- (4) Optical isomer

CC0154

9. Which of the following aldehydes does not form iodoform on heating with iodine and alkali ?



HD0155

10. A carbonyl compound gives a positive iodoform test but does not reduce Tollen's reagent or Fehling's solution. It forms a cyanohydrin with HCN, which on hydrolysis gives a hydroxy acid with a methyl side chain. The compound is ?

- (1) Acetaldehyde
- (2) Propionaldehyde
- (3) Acetone
- (4) Crotonaldehyde

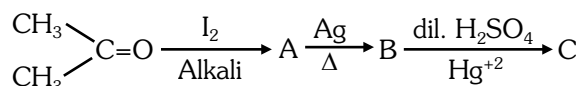
CC0157

11. Which of the following statement is wrong :-

- (1) All methyl ketones give a positive iodoform test
- (2) Acetaldehyde is the only aldehyde that gives iodoform test
- (3) All secondary alcohols give positive iodoform test
- (4) Any alcohol that can be oxidised to an acetyl group gives a positive iodoform test

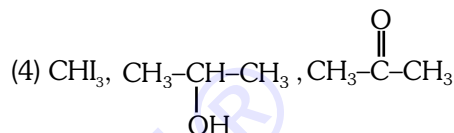
HD0158

12. The compounds A, B and C in the reaction sequence



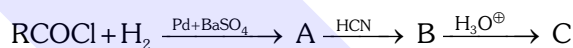
are given by the set :-

- (1) CHI_3 , $\text{H}_2\text{C}=\text{CH}_2$, $\text{CH}_3\text{CH}_2-\text{OH}$
- (2) CHI_3 , $\text{HC}\equiv\text{CH}$, CH_3CHO
- (3) CHI_3 , $\text{CH}_3-\text{C}\equiv\text{CH}$, CH_3COCH_3



HD0159

13. In the reaction sequence

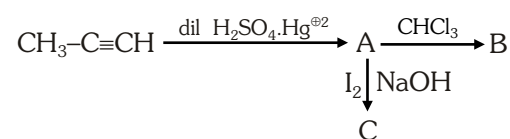


A, B and C are given by the set :-

- (1) RCHO , $\text{RCH}(\text{OH})\text{CN}$, $\text{RCH}(\text{OH})\text{CH}_2\text{NH}_2$
- (2) RCHO , $\text{RCH}(\text{OH})\text{CN}$, $\text{RCH}(\text{OH})\text{COOH}$
- (3) RCHO , $\text{R}-\text{C}-\text{CH}_2$, $\text{R}-\text{C}-\text{CH}_2-\text{C}-\text{OH}$
 $\quad \quad \quad \parallel \quad |$
 $\quad \quad \quad \text{O} \quad \text{CN}$
- (4) RCHO , $\text{R}-\text{CH}_2-\text{CN}$, $\text{R}-\text{CH}_2-\text{COOH}$

CA0160

14. In the reaction sequence

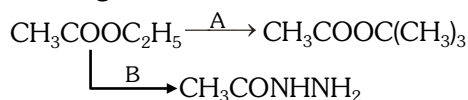


A, B and C are given by the set :-

- (1) $\text{CH}_3\text{CH}_2\text{CHO}$, $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$, CHI_3
- (2) CH_3COCH_3 , $\text{CCl}_3-\text{C}-\text{CH}_3$, CHI_3
 $\quad \quad \quad \parallel$
 $\quad \quad \quad \text{O}$
- (3) CH_3COCH_3 , $\text{CCl}_3-\text{C}(\text{CH}_3)_2$, CHI_3
 $\quad \quad \quad |$
 $\quad \quad \quad \text{OH}$
- (4) $\text{CH}_3\text{CH}_2\text{CHO}$, $\text{CCl}_3-\text{CH}-\text{CH}_2-\text{CH}_3$, CHI_3
 $\quad \quad \quad |$
 $\quad \quad \quad \text{OH}$

CC0161

15. The reagents A and B in the reaction sequence



are given by the set :-

- (1) $\text{CH}_3-\underset{\text{CH}_3}{\text{CH}}-\text{OH}$, $\text{H}_2\text{N}-\text{NH}_2$
- (2) $\text{CH}_3-\underset{\text{CH}_3}{\text{CH}}-\text{OH}$, $\text{H}_2\text{N}-\text{OH}$
- (3) $\text{CH}_3-\underset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}}-\text{OH}$, $\text{H}_2\text{N}-\text{NH}_2$
- (4) $\text{CH}_3-\underset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}}-\text{OH}$, $\text{H}_2\text{N}-\text{OH}$

CA0163

16. Methyl amine reacts with acetyl chloride and forms :-

- (1) CH_3NH_2 (2) CH_3NHNa
- (3) $\text{CH}_3\text{NHCOCH}_3$ (4) $(\text{CH}_3)_2\text{NCOCH}_3$

CA0164

17. Intermediates formed during reaction of $\text{R}-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{NH}_2$ with Br_2 and KOH are:

- (1) RCONHBr and RNCO
- (2) RNHCOBr and RNCO
- (3) $\text{RNH}-\text{Br}$ and RCONHBr
- (4) RCONBr_2

AM0165

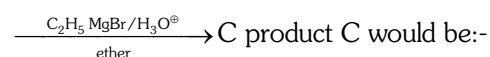
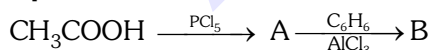
18. $\text{CH}_3\text{CH}_2\text{Cl} \xrightarrow{\text{NaCN}} \text{X} \xrightarrow{\text{Ni}/\text{H}_2} \text{Y} \xrightarrow{\text{Acetic anhydride}} \text{Z}$

Z in the above reaction sequence is :-

- (1) $\text{CH}_3\text{CH}_2\text{CH}_2\text{NHCOCH}_3$
- (2) $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$
- (3) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CONHCH}_3$
- (4) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CONHCOCH}_3$

CA0166

19. In a set of the given reactions, acetic acid yielded a product C.



- (1) $\text{CH}_3\text{CH}(\text{OH})\text{C}_2\text{H}_5$ (2) $\text{CH}_3\text{COC}_6\text{H}_5$

- (3) $\text{CH}_3\text{CH}(\text{OH})\text{C}_6\text{H}_5$ (4) $\text{CH}_3-\underset{\text{C}_2\text{H}_5}{\text{C}}(\text{OH})\text{C}_6\text{H}_5$

CA0167

20. CH_3CHO and CH_3COCH_3 can not be distinguished by :-

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

PO0168

21. $\text{CH}_3\text{CH}_2\text{CH}_2-\text{C}\equiv\text{N} \xrightarrow{\text{H}_3\text{O}^+} \text{A} \xrightarrow[\Delta]{\text{NH}_3} \text{B}$

Product 'B' is :-

- (1) $\text{CH}_3-\text{CH}_2\text{CH}_2-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{OH}$
- (2) $\text{CH}_3\text{CH}_2\text{CH}_2-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{H}$
- (3) $\text{CH}_3\text{CH}_2\text{CH}_2-\text{NC}$
- (4) $\text{CH}_3\text{CH}_2\text{CH}_2-\underset{\text{O}}{\underset{\parallel}{\text{C}}}-\text{NH}_2$

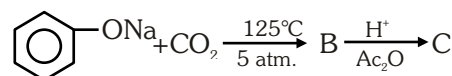
CA0170

22. Sodium ethoxide has reacted with ethanoyl chloride. The compound that is produced in the above reaction is :-

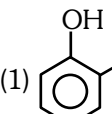
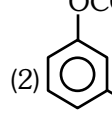
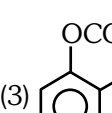
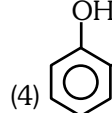
- (1) Ethyl chloride
- (2) Ethyl ethanoate
- (3) Diethyl ether
- (4) 2-Butanone

CA0171

23. Sodium phenoxide when heated with CO_2 under pressure at 125°C yields a product which on acetylation produces C

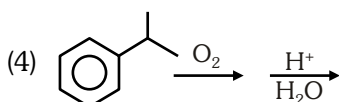
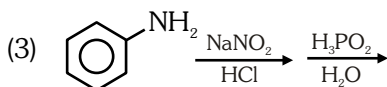
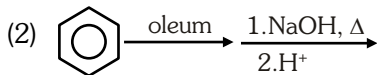
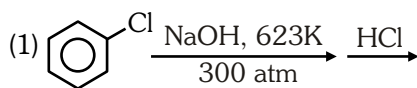


The major product C would be :

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

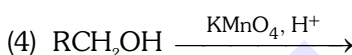
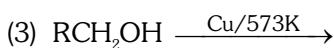
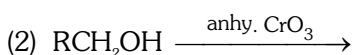
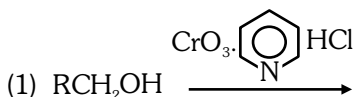
AE0175

24. Which of the following reaction sequence does not give phenol ?



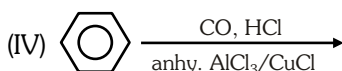
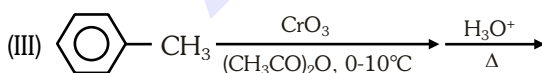
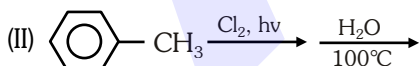
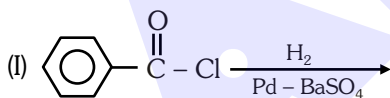
AE0222

25. Which of the following reactions does not give aldehyde as major product ?



CC0223

26. Which of the following can be used to prepare benzaldehyde ?



(1) I, II

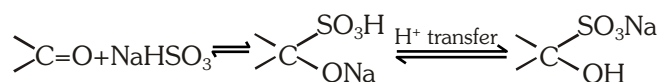
(2) II, III, IV

(3) I, III, IV

(4) I, II, III, IV

CC0224

27. Select the correct option for the following reaction:



- (1) The position of equilibrium is on RHS for most ketones
- (2) The position of equilibrium is on LHS for most aldehydes
- (3) The hydrogen sulphite addition compound is water insoluble
- (4) Sulphite addition compounds are useful for separation and purification of aldehydes

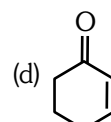
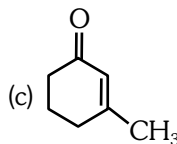
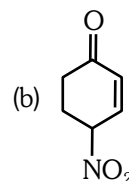
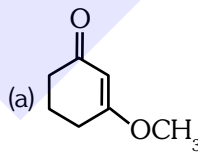
CC0225

28. Select the correct option about Fehling's test :

- (1) Fehling test is given by all aldehydes but not by ketones
- (2) A red brown ppt. of CuO confirms the test
- (3) Fehling solution 'A' is aq. CuSO_4
- (4) Fehling solution 'B' is alkaline sodium potassium citrate

PO0226

29. Correct reactivity order towards nucleophilic addition is



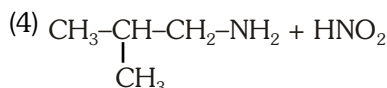
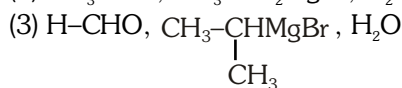
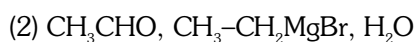
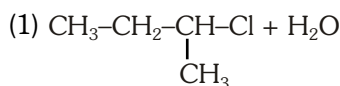
- (1) $b > a > d > c$
- (3) $b > d > c > a$

- (2) $a > b > d > c$
- (4) $b > d > a > c$

CC0227

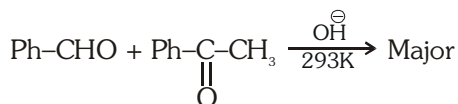
30. CH_3-CH(CH_3)-CH_2-OH is obtained from following

method

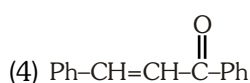
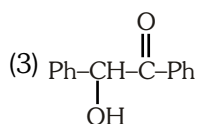
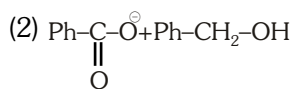
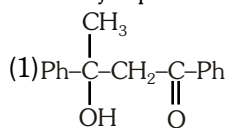


CC0228

31. For the reaction :-

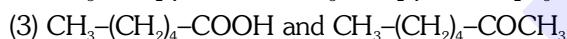


The major product is :



CC0229

32. Which of the following substrates gives same product on the reduction with DIBAL-H ?



AM0230

33. Choose the correct alternative from the following.

(1) Ketones are more reactive than aldehydes towards NAR.

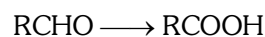
(2) Aldehydes are more reactive than ketones towards NAR.

(3) Formaldehyde is the least reactive carbonyl Compound towards NAR

(4) Steric hindrance does not play a role to effect the reactivity of carbonyl compounds towards NAR.

CC0231

34. Which of the following reagents is/are used in the given reaction ?



(1) KMnO_4/H^+

(2) Potassium dichromate

(3) Tollen's reagent

(4) All of the above

CC0232

35. Which of the following statements is/are correct?

(1) Aldehydes are generally oxidised under vigorous conditions

(2) Ketones are easily oxidised to carboxylic acids even under mild oxidising agents

(3) Oxidation of ketones involves carbon-carbon bond cleavage to give a mixture of carboxylic acids having lesser number of c-atoms than the parent ketones.

(4) All of the above

CC0233

36. Which type of reaction(s) is/are involved in the cannizzaro reaction ?

(1) Reduction

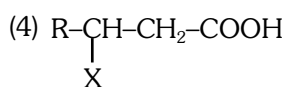
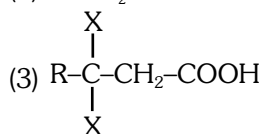
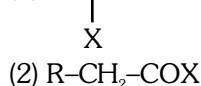
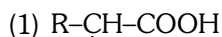
(2) Oxidation

(3) Both (1) and (2)

(4) None of these

CC0234

37. The product formed during Hell-volhard-Zelinsky reaction is :-



CA0235

EXERCISE-III (Analytical Questions)

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	3	3	3	2	2	3	3	3	3	3	2	2	3	3
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	3	1	1	4	2	4	2	3	3	4	4	4	3	3	3
Que.	31	32	33	34	35	36	37								
Ans.	4	2	2	4	3	3	1								