EXERCISE-I (Conceptual Questions) Build Up Your Understanding

1. 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) $CH_3-C\equiv N$

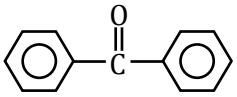
CAA004

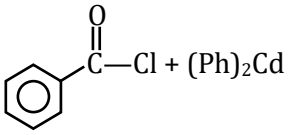
2. $Ph-\underset{\underset{Cl}{|}}{\overset{\overset{Cl}{|}}{C}}-CH_3 + \text{aq. KOH} \rightarrow A \rightarrow \xrightarrow[H^{\oplus}]{KCN} B$?

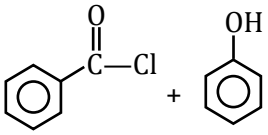
(1) 50% d + 50% ℓ (2) 80% d + 20% ℓ

(3) Meso compound (4) Optically active

CAA005

3.  can be obtained by :-

(1) 

(2) 

(3)  + CO + $ZnCl_2$ + HCN

(4) None of the above

CAA006

4. Ketones can be prepared by :-

(1) Rosenmund reduction

(2) Etard reaction

(3) Cannizzaro reaction

(4) Friedel-Craft reaction

CAA008

5. The most suitable reagent for the conversion of $RCH_2OH \longrightarrow RCHO$

(1) $KMnO_4$

(2) $K_2Cr_2O_7$

(3) CrO_3/H_2SO_4

(4) PCC (Pyridinium chloro chromate)

CAA024

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

(1) $R - MgX + \xrightarrow{R-COCl}$

(2) $R - CN + R - MgX \longrightarrow \xrightarrow{H_3O^+}$

(3)  + RCOCl $\xrightarrow{\text{anhy. } AlCl_3}$

(4)  $-CH_3 + CrO_2Cl_2 \xrightarrow{CS_2} \xrightarrow{H_2O^+}$

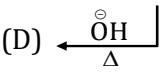
CAA028

7. Select the incorrect option :

Conversion	**Reagent**
(1) Hexan-1-ol $\longrightarrow$ hexanal	$C_5H_5NH^+CrO_3Cl^-$
(2) Ethanenitrile $\longrightarrow$ Ethanal	DIBAL–H
(3) p-fluorotoluene, $\longrightarrow$ p-fluorobenzaldehyde	$K_2Cr_2O_7$, H^+
(4) But-2-ene $\longrightarrow$ Ethanal	O_3, H_2O-Zn dust

CAA029

8. $CH_3CH_3 \xrightarrow[h\nu]{Cl_2} (A) \xrightarrow{Aq.KOH} (B) \xrightarrow{PCC} (C)$

(D) 

The product D is :-

(1) $CH_2 = CH_2$

(2) $CH_3-\underset{\underset{OH}{|}}{CH}-CH_2-CHO$

(3) $CH_3-\underset{\underset{O}{||}}{C}-CH_3$

(4) $CH_3-CH=CH-CHO$

CAA031

9. Carbonyl group is converted into methylene group by -

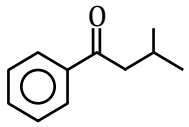
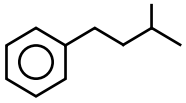
(1) Acidic reduction

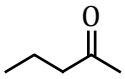
(2) Raney Ni

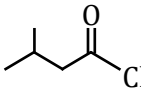
(3) Basic hydrolysis

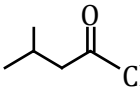
(4) Normal Hydrogenation

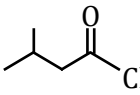
CAA021

10. Benzene $\xrightarrow{A}$  $\xrightarrow{B}$  ; A and B respectively are

(1) Zn – Hg + HCl , 

(2)  , $LiAlH_4$

(3)  , $NaBH_4$

(4)  + $AlCl_3$, Zn—Hg + HCl

CAA181

11. 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)  $CH(OCrCl_2)_2$ and Etard reaction

(2)  $CH(OCrOHCl_2)_2$ and Etard reaction

(3)  $CH_2(OCrOHCl_2)$ and Rosenmund reaction

(4)  $CH(OCrOH_2Cl)_2$ and Rosenmund reaction

CAA033

12. 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

CAA002

13. Carbonyl compounds readily undergo :-

(1) Nucleophilic substitutions

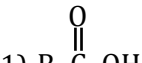
(2) Electrophilic addition reactions

(3) Nucleophilic addition reactions

(4) Free radical substitution reactions

CAA010

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

(1) 

(2) R–ONO

(3) R'–CH=N–R

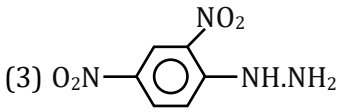
(4) $R–NO_2$

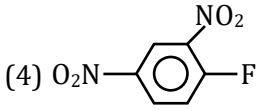
CAA017

15. Brady's reagent is

(1) $[Cu(NH_3)_4]SO_4$

(2) $KMnO_4/NaIO_4$

(3) 

(4) 

CAA018

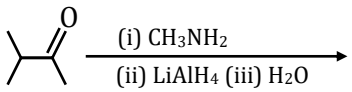
16. When acetaldol is treated with excess of acid then unsaturated product will be :-

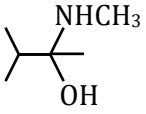
(1) Alcohol (2) Aldehyde

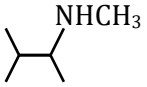
(3) Acid (4) Alkyl halide

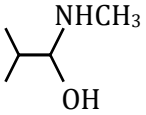
CAA022

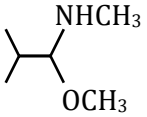
17. The major organic product formed from the following reaction is :–



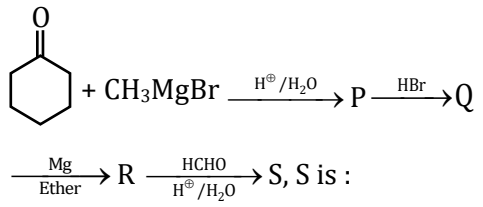
(1) 

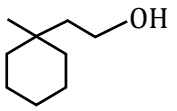
(2) 

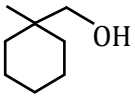
(3) 

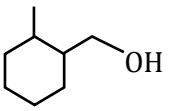
(4) 

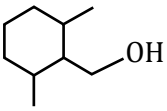
CAA025

18. 

(1) 

(2) 

(3) 

(4) 

CAA026

19. 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

CAA032

20. 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

CAA001

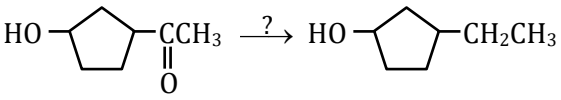
21. CH_3CHO and CH_3COCH_3 can not be distinguished by :-

(1) Fehling solution (2) Grignard reagent

(3) Schiff's reagent (4) Tollen's reagent

CAA003

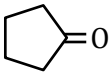
22. Which of the following reagent can be used for following conversion



(1) Zn – Hg/HCl (2) Red P + HI

(3) $NH_2 - NH_2/\overset{\ominus}{O}H$ (4) All of them

CAA182

23.  can be converted to  by :

(1) Red P + HI

(2) Wolf Kishner reduction

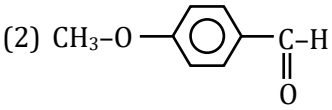
(3) Clemmensen reaction

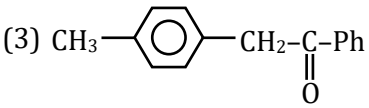
(4) All

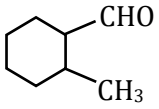
CAA183

24. Which does not react with $NaHSO_3$.

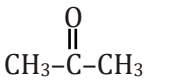
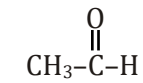
(1) 

(2) 

(3) 

(4) 

CAA007

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

(1) Iodine and alkali

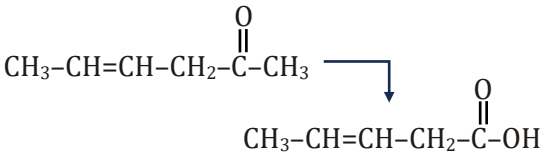
(2) 2,4-dinitrophenylhydrazine

(3) Tollen's reagent

(4) All the above

CAA011

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



(1) $\xrightarrow[(ii)\ H^{\oplus}]{(i)\ \text{Tollen's reagent}}$

(2) $\xrightarrow[(ii)\ H^{\oplus}]{(i)\ \text{Benzoyl peroxide}}$

(3) $\xrightarrow[(ii)\ H^{\oplus}]{(i)\ I_2 \text{ and NaOH}}$

(4) $\xrightarrow{KMnO_4/H^{\oplus},\ \Delta}$

CAA012

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

(1) A resinous mass

(2) Formic acid

(3) A mixture of methanol and sodium formate

(4) Methanol

CAA013

28. A compound with molecular formula C_3H_6O, not gives silver mirror with Tollen's reagent but forms oxime with hydroxyl amine. Compound will be -

(1) $CH_2=CH-CH_2-OH$

(2) CH_3CH_2CHO

(3) $CH_2=CH—O—CH_3$

(4) CH_3COCH_3

CAA019

29. Aldehyde and ketone are distinguished by reagent

(1) Fehling solution (2) H_2SO_4

(3) $NaHSO_3$ (4) NH_3

CAA020

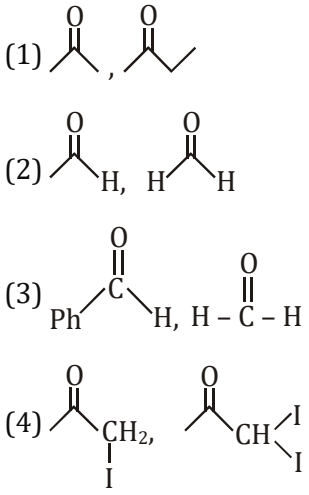
30. The reagent used for the separation of acetaldehyde from acetophenone is -

(1) $NaHSO_3$ (2) $C_6H_5NHNH_2$

(3) NH_2OH (4) $NaOH + I_2$

CAA023

31. Which of the following pair is differentiated by iodoform test?



CAA184

32. Identify z in the following series

$CH_2=CH_2 \xrightarrow{HBr} x \xrightarrow{\text{Hydrolysis}} y \xrightarrow{I_2/NaOH} z$

(1) C_2H_5I (2) C_2H_5OH

(3) CHI_3 (4) CH_3CHO

CAA185

33. Which of the following will not give iodoform test

(1) $CH_3-\underset{\underset{O}{\|}}{C}-CH_3$ (2) $C_2H_5-\underset{\underset{O}{\|}}{C}-C_2H_5$

(3) $H-CH_2-\underset{\underset{OH}{|}}{CH}-C_2H_5$ (4) $I-CH_2-\underset{\underset{O}{\|}}{C}-CH_2-H$

CAA186

34. Which of the following product is obtained when bleaching powder is distilled with acetone

(1) CCl_4 (2) $CHCl_3$

(3) $CH_3—CH_3$ (4) All

CAA187

35. Which will give yellow ppt. with iodine and alkali

(1) Propan–2–ol (2) Benzophenone

(3) Methyl acetate (4) Acetamide

CAA188

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

(1) CH_3CHO (2) CH_3CH_2CHO

(3) HCHO (4) $CH_3CH_2CH_2CHO$

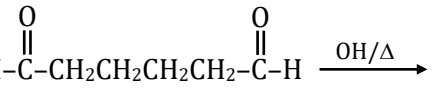
CAA014

37. Which of the following can be converted to $CH_3-CH=CH-CHO$:-

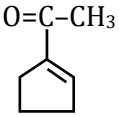
(1) Acetone (2) Acetaldehyde

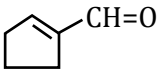
(3) Propanaldehyde (4) Formaldehyde

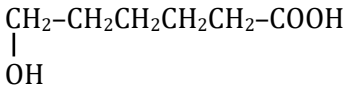
CAA016

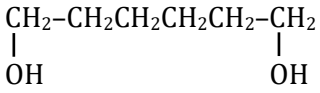
38. 

Product (A) is :-

(1) 

(2) 

(3) 

(4) 

CAA027

39. 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

CAA030

40. 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

CAA015

41. 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

CAA034

42. 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

CAA035

43. Which of the following carbonyl group give the positive Fehling test ?

(1) Aliphatic aldehydes

(2) Aromatic aldehydes

(3) Ketones

(4) Both (1) and (2)

CAA036

44. 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

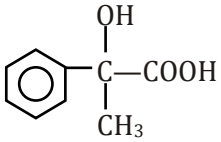
(4) Bicarbonate

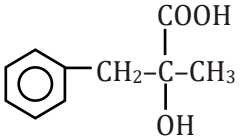
CAA037

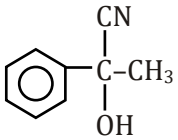
45. In a set of reactions acetic acid yielded a product C

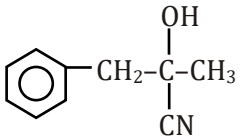
$CH_3COOH \xrightarrow{SOCl_2} A \xrightarrow[Anhy.AlCl_3]{Benzene} B \xrightarrow[H^+]{NaCN} C$

The structure of C would be –

(1) 

(2) 

(3) 

(4) 

CAA038

46. The compounds A and B in the reaction sequence

$B \xleftarrow{\text{Phenol}} CH_3COCl \xrightarrow{CH_3COONa} A$

are given by the set respectively :-

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

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

(3) CH_3COCH_3, $C_6H_5OCOCH_3$

(4) $CH_3-\overset{\overset{O}{\|}}{C}-O-O-\overset{\overset{O}{\|}}{C}-CH_3$, $CH_3-\overset{\overset{O}{\|}}{C}-O-C_6H_5$

CAA039

47. $CH_3-CH_2-COOH \xrightarrow{\text{Red } P/Cl_2} A \xrightarrow[KOH]{\text{Alc.}} B$

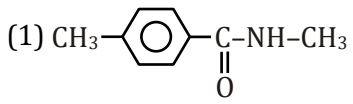
structure of B is :-

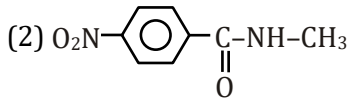
(1) $CH_2=CH-COOH$ (2) $CH_3-\underset{\underset{Cl}{|}}{CH}-COOH$

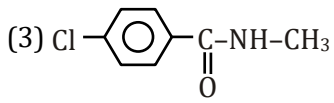
(3) $\underset{\underset{Cl}{|}}{CH_2}-CH_2-COOH$ (4) $CH_3-CH_2-\overset{\overset{O}{\|}}{C}-Cl$

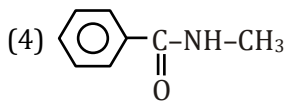
CAA040

48. Which is most reactive towards hydrolysis.

(1) 

(2) 

(3) 

(4) 

CAA041

49. 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

CAA042

50. Acyl chlorides undergo :-

(1) Nucleophilic addition reactions

(2) Nucleophilic substitution reactions

(3) Electrophilic substitution reactions

(4) Electrophilic addition reactions

CAA043

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

(1) Nucleophilic addition

(2) Nucleophilic substitution

(3) Electrophilic addition

(4) Free radical substitution

CAA044

52. The reduction of acetamide gives :-

(1) $CH_3CH_2NH_2$

(2) $(CH_3)_2CHNH_2$

(3) $(CH_3)_3CNH_2$

(4) $(CH_3CH_2)_2NH$

CAA045

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

(1) Ester (2) Acid

(3) Acid halide (4) Alcohol

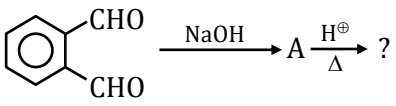
CAA046

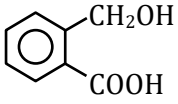
54. $CH_3-\overset{\overset{O}{\|}}{C}-NH_2 \xrightarrow[\Delta]{P_2O_5} ?$

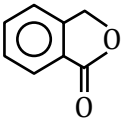
(1) CH_3COOH (2) CH_3-CN

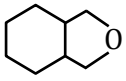
(3) CH_3-CH_3 (4) CH_3-CHO

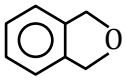
CAA047

55. 

(1) 

(2) 

(3) 

(4) 

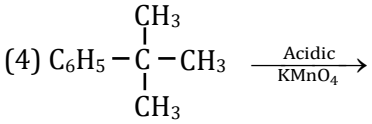
CAA048

56. Which of the following reaction does not gives benzoic acid

(1) $C_6H_5-CH_3 \xrightarrow[KMnO_4]{Acidic}$

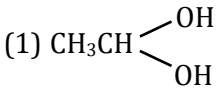
(2) $C_6H_5-CH_3 \xrightarrow[H_2O]{CrO_2Cl_2} \xrightarrow{[O]}$

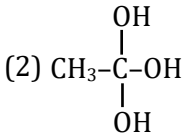
(3) $C_6H_5\,C\equiv CH \xrightarrow[KMnO_4]{Acidic}$

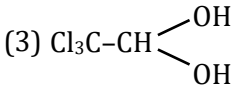
(4)  $\xrightarrow[KMnO_4]{Acidic}$

CAA189

57. A compound containing two –OH groups attached with one carbon atom is unstable but which one of the following is stable

(1) 

(2) 

(3) 

(4) All

CAA190

58. Carbonyl compounds are best purified by :-

(1) Steam distillation

(2) Hydrolysis of sodium bisulphite adducts

(3) Fractional crystallisation

(4) Sublimation

CAA009

59. Hydrazine on reaction with acetone gives:–

(1) Acetylene (2) Hydrazone

(3) Nitrochloroform (4) Chloroacetone

CAA191

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

(1) $\xrightarrow[2.\ H_3O^+]{1.\ LiAlH_4/ether}$ (2) $\xrightarrow[2.\ H_3O^+]{1.\ B_2H_6}$

(3) $NaBH_4$ (4) $\xrightarrow[H^+]{ROH} \xrightarrow[Catalyst]{H_2}$

CAA192

EXERCISE-I (Conceptual Questions) ANSWER KEY

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

EXERCISE-II (Previous Year Questions) AIPMT/NEET

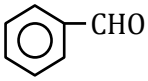
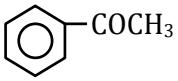
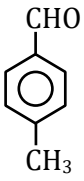
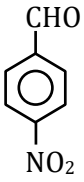
AIPMT 2014

1. Among the following sets of reactants which one produces anisole?
(1) CH_3CHO ; RMgX
(2) C_6H_5OH ; NaOH ; CH_3I
(3) C_6H_5OH ; neutral $FeCl_3$
(4) $C_6H_5 - CH_3$; CH_3COCl; $AlCl_3$

CAA069

2. 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

CAA070

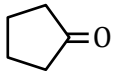
3. Which one is most reactive towards Nucleophilic addition reaction?
(1) 
(2) 
(3) 
(4) 

CAA071

AIPMT 2015

4. An organic compound 'X' having molecular formula $C_5H_{10}O$ 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

CAA072

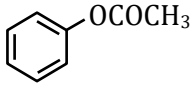
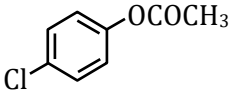
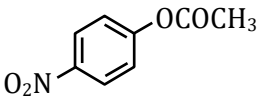
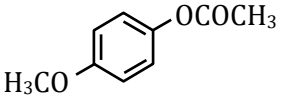
5. Treatment of cyclopentanone  with methyl lithium gives which of the following species ?
(1) Cyclopentanonyl cation
(2) Cyclopentanonyl radical
(3) Cyclopentanonyl biradical
(4) Cyclopentanonyl anion

CAA073

RE-AIPMT 2015

6. Reaction of carbonyl compound with one of the following reagents involves nucleophilic addition followed by elimination of water. The reagent is :
(1) Hydrocyanic acid
(2) Sodium hydrogen sulphite
(3) A Grignard reagent
(4) Hydrazine in presence of feebly acidic solution

CAA074

7. Which one of the following esters gets hydrolysed most easily under alkaline conditions?
(1) 
(2) 
(3) 
(4) 

CAA075

NEET-I 2016

8. Which of the following reagents would distinguish cis-cyclopentane-1,2-diol from its trans-isomer?

(1) Acetone

(2) Ozone

(3) MnO_2

(4) Aluminium isopropoxide

CAA076

9. The product formed by the reaction of an aldehyde with a primary amine is :-

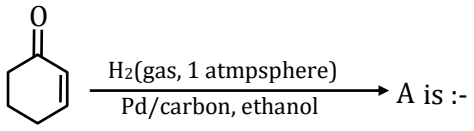
(1) Schiff base (2) Ketone

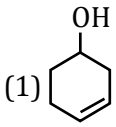
(3) Carboxylic acid (4) Aromatic acid

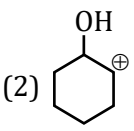
CAA077

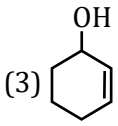
NEET-II 2016

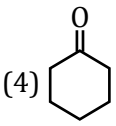
10. The **correct** structure of the product A formed in the reaction



(1) 

(2) 

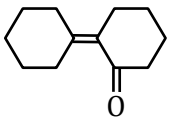
(3) 

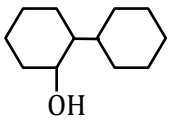
(4) 

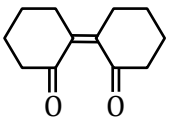
CAA078

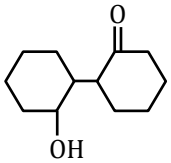
NEET(UG) 2017

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

(1) 

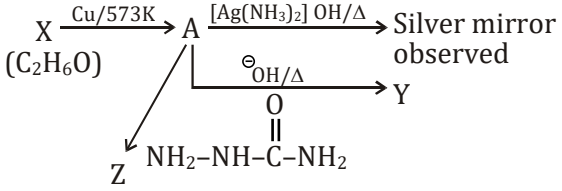
(2) 

(3) 

(4) 

CAA079

12. Consider the reactions :-



Identify A, X, Y and Z

(1) A-Methoxymethane, X-Ethanol, Y-Ethanoic acid, Z-Semicarbsazide.

(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

CAA080

NEET(UG) 2018

13. 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

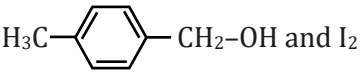
(3) More extensive association of carboxylic acid via van der Waals force of attraction

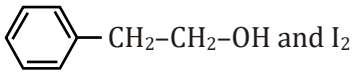
(4) Formation of intermolecular H-bonding.

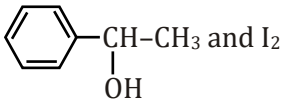
CAA081

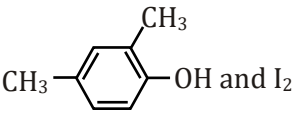
14. Compound A, $C_8H_{10}O$, is found to react with NaOI (produced by reacting Y with NaOH) and yields a yellow precipitate with characteristic smell.

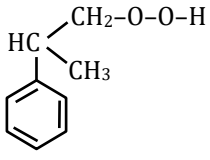
A and Y are respectively

(1) 

(2) 

(3) 

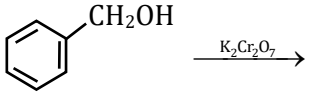
(4) 

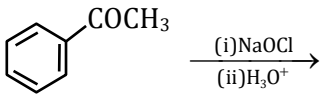


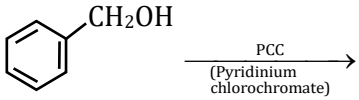
CAA082

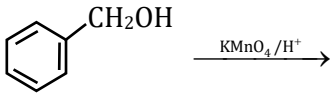
NEET(UG) 2019 (ODISHA)

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

(1) 

(2) 

(3) 

(4) 

CAA083

16. 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

CAA084

NEET(UG) 2020

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

(1) Cross Aldol condensation

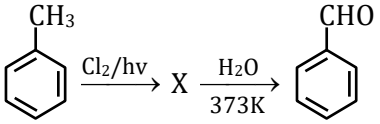
(2) Aldol condensation

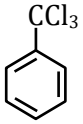
(3) Cannizzaro's reaction

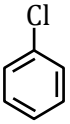
(4) Cross Cannizzaro's reaction

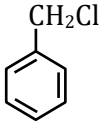
CAA085

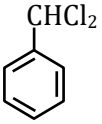
18. Identify compound X in the following sequence of reactions :



(1) 

(2) 

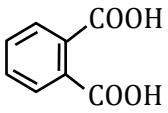
(3) 

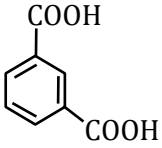
(4) 

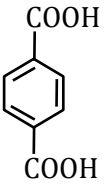
CAA193

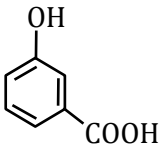
NEET(UG) 2020 (COVID-19)

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

(1) 

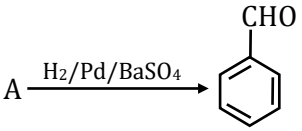
(2) 

(3) 

(4) 

CAA086

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



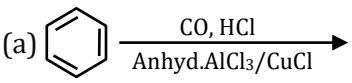
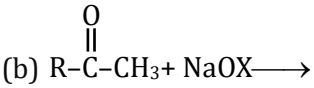
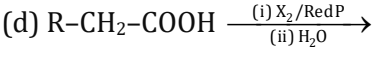
(1) Benzoyl chloride (2) Toluene

(3) Acetophenone (4) Benzoic acid

CAA087

NEET(UG) 2021

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

List-I	**List-II**
(a) 	(i) Hell-Volhard-Zelilnsky reaction
(b) 	(ii) Gattermann-Koch Reaction
(c) 	(iii) Haloform reaction
(d) 	(iv) Esterification

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

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

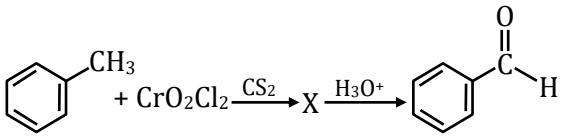
(2) (a)-(iii), (b)-(ii), (c)-(i), (d)-(iv)

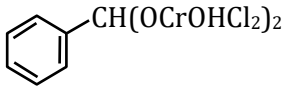
(3) (a)-(i), (b)-(iv), (c)-(iii), (d)-(ii)

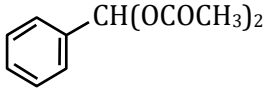
(4) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

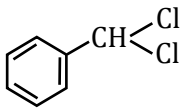
CAA088

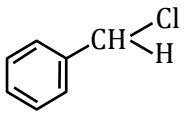
22. The intermediate compound 'X' in the following chemical reaction is :



(1) 

(2) 

(3) 

(4) 

CAA089

NEET(UG) 2022

23. $RMgX + CO_2 \xrightarrow[ether]{dry} Y \xrightarrow{H_3O^+} RCOOH$

What is Y in the above reaction :

(1) $R_3CO^-Mg^+X$

(2) $RCOO^-X^+$

(3) $(RCOO)_2Mg$

(4) $RCOO^-Mg^+X$

CAA139

24. 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.

CAA140

25. 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)

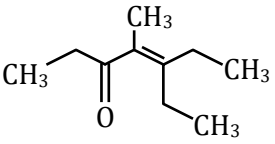
(2) (a) - (i), (b) - (iii), (c) - (ii), (d)- (iv)

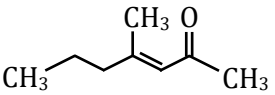
(3) (a) - (iv), (b) - (iii), (c) - (ii), (d)- (i)

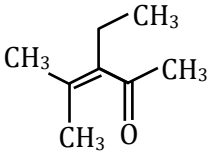
(4) (a) - (iii), (b) - (iv), (c) - (ii), (d)- (i)

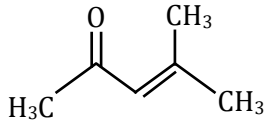
CAA141

26. 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) 

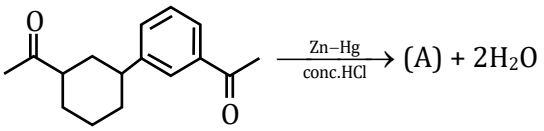
(3) 

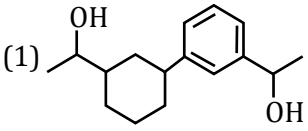
(4) 

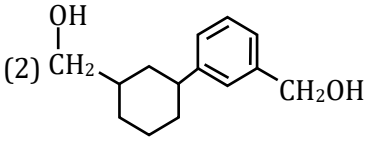
CAA142

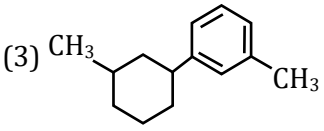
NEET(UG) 2023

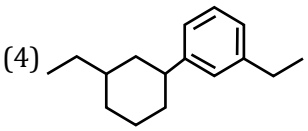
27. Identify product (A) is the following reaction :



(1) 

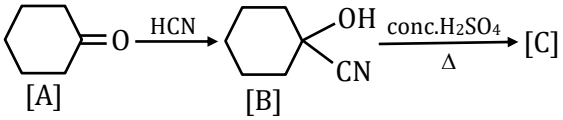
(2) 

(3) 

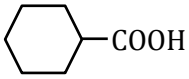
(4) 

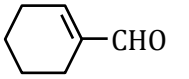
CAA143

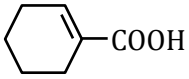
28. Complete the following reaction :

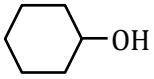


[C] is ____.

(1) 

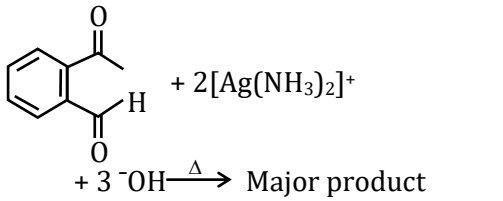
(2) 

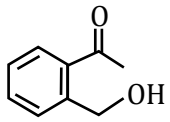
(3) 

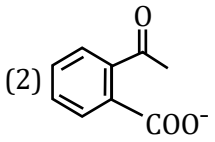
(4) 

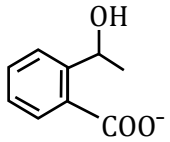
CAA144

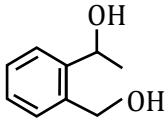
29. Identify the major product obtained in the following reaction:



(1) 

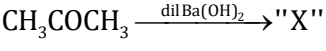
(2) 

(3) 

(4) 

CAA145

30. Consider the given reaction :



The functional groups present in compound "X" are:

(1) ketone and double bond

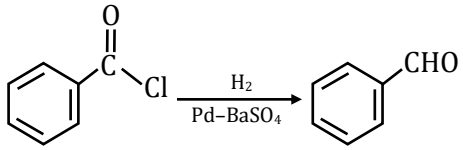
(2) double bond and aldehyde

(3) alcohol and aldehyde

(4) alcohol and ketone

CAA146

31. The following conversion is known as :



(1) Stephen reaction

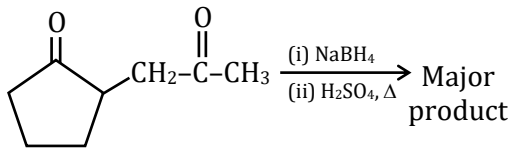
(2) Gattermann-Koch reaction

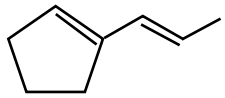
(3) Etard reaction

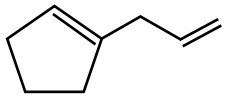
(4) Rosenmund reaction

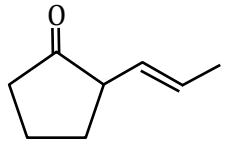
CAA147

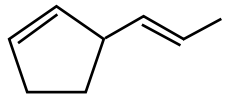
32. The **major** product formed in the following conversion is ____.



(1) 

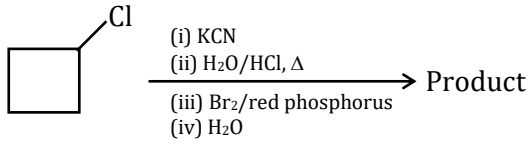
(2) 

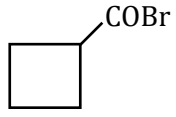
(3) 

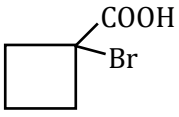
(4) 

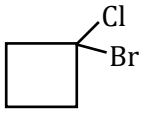
CAA148

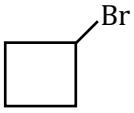
33. Identify the product in the following reaction



(1) 

(2) 

(3) 

(4) 

CAA149

NEET(UG) 2024

34. Fehling's solution 'A' is

(1) aqueous copper sulphate

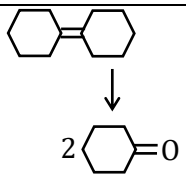
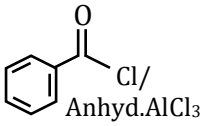
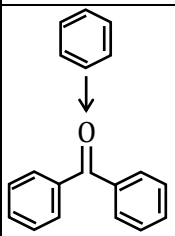
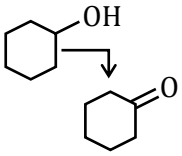
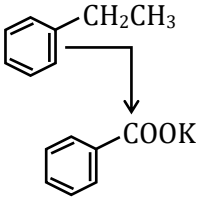
(2) alkaline copper sulphate

(3) alkaline solution of sodium potassium tartrate (Rochelle's salt)

(4) aqueous sodium citrate

CAA150

35. Match List-I with List-II.

List-I (Reaction)		**List-II (Reagents/Condition)**	
(A)		(I)	
(B)		(II)	CrO_3
(C)		(III)	$KMnO_4/KOH, \Delta$
(D)		(IV)	(i) O_3 (ii) Zn-H_2O

Choose the correct answer from the options given below :

(1) A-IV, B-I, C-III, D-II

(2) A-III, B-I, C-II, D-IV

(3) A-IV, B-I, C-II, D-III

(4) A-I, B-IV, C-II, D-III

CAA151

36. The reagents with which glucose does **not** react to give the corresponding tests/products are

A. Tollens' reagent B. Schiff's reagent

C. HCN D. NH_2OH

E. $NaHSO_3$

Choose the correct options from the given below :

(1) B and C (2) A and D

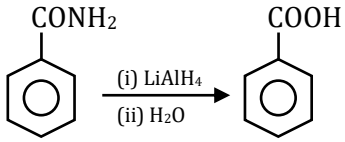
(3) B and E (4) E and D

CAA152

NEET(UG) 2024 (Re-examination)

37. Select the **incorrect** reaction among the following :

(1) $CH_3COCl \xrightarrow[\Delta]{H_2O} CH_3COOH$

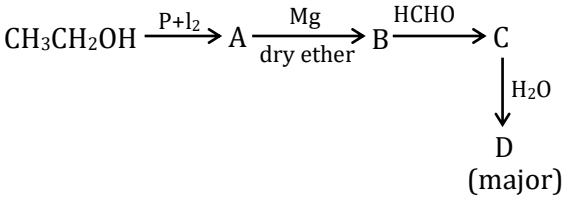
(2) 

(3) $CH_3CH_2OH \xrightarrow[(ii)H_3O^{\oplus}]{(i)KMnO_4/OH^-} CH_3COOH$

(4) $CH_3CH_2CH_2OH \xrightarrow{CrO_3-H_2SO_4} CH_3CH_2COOH$

CAA153

38. Identify D in the following sequence of reactions:



(1) n-propyl alcohol (2) isopropyl alcohol

(3) propanal (4) propionic acid

CAA154

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**2**	**3**	**4**	**2**	**4**	**4**	**3**	**1**	**1**	**4**	**1**	**2**	**4**	**3**	**3**
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	**3**	**1**	**4**	**1**	**1**	**4**	**1**	**4**	**4**	**3**	**1**	**4**	**3**	**2**	**4**
Question	31	32	33	34	35	36	37	38							
Answer	**4**	**1**	**2**	**1**	**3**	**3**	**2**	**1**							

EXERCISE-III (Analytical Questions) Master Your Understanding

1. In the reaction sequence

$RCOCl + H_2 \xrightarrow{Pd+BaSO_4} A \xrightarrow{HCN} B \xrightarrow{H_3O^{\oplus}} C$

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

(1) RCHO, RCH(OH)CN, $RCH(OH)CH_2NH_2$

(2) RCHO, RCH(OH)CN, RCH(OH)COOH

(3) RCHO, $R-\overset{\overset{O}{\|}}{C}-CH_2$, $R-\overset{\overset{O}{\|}}{C}-CH_2-\overset{\overset{O}{\|}}{C}-OH$ (CN)

(4) RCHO, $R-CH_2-CN$, $R-CH_2-COOH$

CAA094

2. In the reaction sequence

$CH_3-C\equiv CH \xrightarrow{\text{dil } H_2SO_4.Hg^{\oplus 2}} A \xrightarrow{CHCl_3} B$, $A \xrightarrow[NaOH]{I_2} C$

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

(1) CH_3CH_2CHO, $CH_3CH_2CH_2Cl$, CHI_3

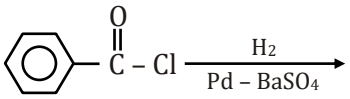
(2) CH_3COCH_3, $CCl_3-\overset{\overset{O}{\|}}{C}-CH_3$, CHI_3

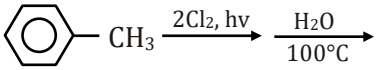
(3) CH_3COCH_3, $CCl_3-\overset{\overset{OH}{|}}{C}(CH_3)_2$, CHI_3

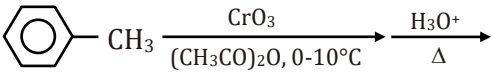
(4) CH_3CH_2CHO, $CCl_3-\overset{\overset{O}{\|}}{C}-CH_2-CH_3$, CHI_3

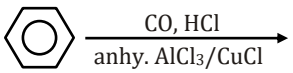
CAA095

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

(I) 

(II) 

(III) 

(IV) 

(1) I, II (2) II, III, IV

(3) I, III, IV (4) I, II, III, IV

CAA103

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

(1) $CH_3-(CH_2)_4-CN$ and $CH_3-(CH_2)_5-COOH$

(2) $CH_3-(CH_2)_4-CN$ and $CH_3-(CH_2)_4-COOC_2H_5$

(3) $CH_3-(CH_2)_4-COOH$ and $CH_3-(CH_2)_4-COCH_3$

(4) $CH_3-(CH_2)_5-COOH$ and $CH_3(CH_2)_4-COOC_2H_5$

CAA108

5. Which of the following reactions yield carboxylic acids.

(A) $RMgX + CO_2 \xrightarrow{H_2O}$

(B) $Ph-OH + NaOH + CO_2 \longrightarrow$

(C) $PhCN + H_3O^{\oplus} \longrightarrow$

(D) $PhOH + CHCl_3 + KOH \longrightarrow$

(1) A, B and C are correct

(2) A & B are correct

(3) B & D are correct

(4) A & C are correct

CAA137

6. Select the correct option for the following reaction:

$>C=O + NaHSO_3 \rightleftharpoons >C(SO_3H)(ONa) \underset{H^+ \text{ transfer}}{\rightleftharpoons} >C(SO_3Na)(OH)$

(1) The position of equilibrium is on RHS for most ketones

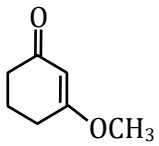
(2) The position of equilibrium is on LHS for most aldehydes

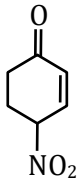
(3) The hydrogen sulphite addition compound is water insoluble

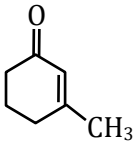
(4) Sulphite addition compounds are useful for separation and purification of aldehydes

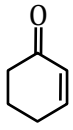
CAA104

7. Correct reactivity order towards nucleophilic addition is

(a) 

(b) 

(c) 

(d) 

(1) b > a > d > c (2) a > b > d > c

(3) b > d > c > a (4) b > d > a > c

CAA106

8. 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.

CAA109

9. Cyanohydrin of the following compound on hydrolysis gives compound that can show optical isomerism :
(1) HCHO (2) CH_3CHO
(3) CH_3COCH_3 (4) All the above

CAA114

10. When acetone reacts with Grignard reagent followed by hydrolysis, it gives :
(1) 1° –alcohol (2) 2° –alcohol
(3) 3° –alcohol (4) Methyl alcohol

CAA115

11. Which of the following aldehydes does not form iodoform on heating with iodine and alkali :-
(1) $CH_3-\overset{\overset{O}{\|}}{C}-\overset{\overset{O}{\|}}{C}-H$ (2) ICH_2CHO
(3) CH_3-CH_2-CHO (4) $CH_3-\underset{\underset{OH}{|}}{CH}-\overset{\overset{O}{\|}}{C}-H$

CAA090

12. 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

CAA091

13. 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

CAA092

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

$$\begin{matrix}CH_3\\CH_3\end{matrix}\!\!>\!C=O \xrightarrow[\text{Alkali}]{I_2} A \xrightarrow[\Delta]{Ag} B \xrightarrow[Hg^{+2}]{\text{dil. } H_2SO_4} C$$

are given by the set :-
(1) CHI_3, $H_2C=CH_2$, CH_3CH_2-OH
(2) CHI_3, $HC\equiv CH$, CH_3CHO
(3) CHI_3, $CH_3-C\equiv CH$, CH_3COCH_3
(4) CHI_3, $CH_3-\underset{\underset{OH}{|}}{CH}-CH_3$, $CH_3-\overset{\overset{O}{\|}}{C}-CH_3$

CAA093

15. 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

CAA100

16. 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

CAA105

17. Which of the following reagents is/are used in the given reaction ?
$RCHO \longrightarrow RCOOH$
(1) $KMnO_4/H^+$
(2) Potassium dichromate
(3) Tollen's reagent
(4) All of the above

CAA110

18. 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

CAA111

19. Regarding acetone from the following statement

(A) It restores the pink colour of Schiff's reagent

(B) DNP test

(C) It is very easily oxidised to acetic acid

(D) It forms 2,3-dimethylbutan-2,3-diol on treatment with magnesium amalgum and water.

(1) A, B and C are correct

(2) A & B are correct

(3) B & D are correct

(4) A & C are correct

CAA138

20. For the reaction :-

$$Ph-CHO + Ph-\underset{\underset{O}{\|}}{C}-CH_3 \xrightarrow[293K]{\overset{\ominus}{O}H} Major$$

The major product is :

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

(2) $Ph-\underset{\underset{O}{\|}}{C}-\overset{\ominus}{O} + Ph-CH_2-OH$

(3) $Ph-\underset{\underset{OH}{|}}{CH}-\overset{\overset{O}{\|}}{C}-Ph$

(4) $Ph-CH=CH-\overset{\overset{O}{\|}}{C}-Ph$

CAA107

21. What is incorrect about acetaldehyde :

(A) It is very easily oxidised

(B) It forms 1-hydroxy propane nitrile with HCN

(C) It can be obtained by hydration of acetylene

(D) It gives cannizaro reaction

(1) A, B and C (2) A & B

(3) B & D (4) A & C

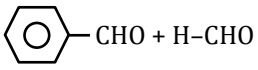
CAA136

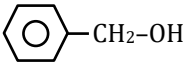
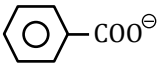
22. Which type of reaction(s) is/are involved in the cannizzaro reaction ?

(1) Reduction (2) Oxidation

(3) Both (1) and (2) (4) None of these

CAA112

23.  Product(s) will be-

(A)  (B) 

(C) $HCOO^{\ominus}$ (D) CH_3-OH

(1) A, B and C are correct

(2) A & B are correct

(3) C & D are correct

(4) A & C are correct

CAA135

24. The reagents A and B in the reaction sequence

$$CH_3COOC_2H_5 \xrightarrow{A} CH_3COOC(CH_3)_3$$
$$\downarrow B$$
$$CH_3CONHNH_2$$

are given by the set :-

(1) $CH_3-\underset{\underset{CH_3}{|}}{CH}-OH$, H_2N-NH_2

(2) $CH_3-\underset{\underset{CH_3}{|}}{CH}-OH$, H_2N-OH

(3) $CH_3-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}-OH$, H_2N-NH_2

(4) $CH_3-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}-OH$, H_2N-OH

CAA096

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

(1) CH_3NH_2 (2) CH_3NHNa

(3) $CH_3NHCOCH_3$ (4) $(CH_3)_2NCOCH_3$

CAA097

26. $CH_3CH_2Cl \xrightarrow{NaCN} X \xrightarrow{Ni/H_2} Y \xrightarrow[\text{anhydride}]{\text{Acetic}} Z$

Z in the above reaction sequence is :–

(1) $CH_3CH_2CH_2NHCOCH_3$

(2) $CH_3CH_2CH_2NH_2$

(3) $CH_3CH_2CH_2CONHCH_3$

(4) $CH_3CH_2CH_2CONHCOCH_3$

CAA098

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

$$CH_3COOH \xrightarrow{PCl_5} A \xrightarrow[AlCl_3]{C_6H_6} B \xrightarrow[\text{ether}]{C_2H_5MgBr/H_3O^{\oplus}}$$

C product C would be:-

(1) $CH_3CH(OH)C_2H_5$ (2) $CH_3COC_6H_5$

(3) $CH_3CH(OH)C_6H_5$ (4) $CH_3-\underset{\displaystyle C_2H_5}{\overset{|}{C}}(OH)C_6H_5$

CAA099

28. $CH_3CH_2CH_2-C\equiv N \xrightarrow{H_3O^{\oplus}} A \xrightarrow[\Delta]{NH_3} B$

Product 'B' is :-

(1) $CH_3-CH_2CH_2-\underset{\displaystyle O}{\overset{\|}{C}}-OH$

(2) $CH_3CH_2CH_2-\underset{\displaystyle O}{\overset{\|}{C}}-H$

(3) $CH_3CH_2CH_2-NC$

(4) $CH_3CH_2CH_2-\underset{\displaystyle O}{\overset{\|}{C}}-NH_2$

CAA101

29. 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

CAA102

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

(1) $R-\underset{\displaystyle X}{\overset{|}{C}}H-COOH$

(2) $R-CH_2-COX$

(3) $R-\underset{\displaystyle X}{\overset{|}{C}}-CH_2-COOH$

(4) $R-\underset{\displaystyle X}{\overset{|}{C}}H-CH_2-COOH$

CAA113

EXERCISE-III (Analytical Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	3	4	2	1	4	3	2	2	3	3	3	3	2	2
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	3	4	3	3	4	3	3	4	3	3	1	4	4	2	1