

Exercise # 1

- Q.1** In the reaction product D is, $\begin{matrix} \text{CH}_2 \\ || \\ \text{CH}_2 \end{matrix} \xrightarrow{\text{Br}_2/\text{CCl}_4} \text{A} \xrightarrow{\text{KCN}} \text{B} \xrightarrow{\text{H}_3\text{O}^+} \text{C} \xrightarrow{\Delta} \text{D}$
- [1] $\begin{matrix} \text{COOH} \\ / \\ \text{CH}_2 \\ \backslash \\ \text{COOH} \end{matrix}$ [2] $\text{CH}_3\text{CH}_2\text{COOH}$ [3] $\begin{matrix} \text{CH}_2 - \text{CO} \\ \backslash \quad / \\ \text{O} \\ / \quad \backslash \\ \text{CH}_2 - \text{CO} \end{matrix}$ [4] $\text{CH}_2 - \text{OH} - \text{CH}_2\text{CN}$
- Q.2** In the following sequence of reaction A is-
 $\text{A} \xrightarrow{\text{PCl}_3} \text{B} \xrightarrow{\text{KCN}} \text{B} \xrightarrow{\text{H}_2/\text{Ni}} \text{CH}_3 - \text{CH}_2 - \text{NH}_2$
- [1] $\text{CH}_2\text{CH}_2\text{Cl}$ [2] CH_3OH [3] CH_3CN [4] $\text{CH}_3\text{CH}_2\text{OH}$
- Q.3** The electrolysis of sodium propionate give-
- [1] C_3H_8 [2] C_2H_6 [3] C_4H_{10} [4] All
- Q.4** $\text{CH}_3\text{COOAg} + \text{Br}_2 \xrightarrow{\Delta} \text{CH}_3\text{Br} + \text{CO}_2 + \text{AgBr}$, The above reaction is called-
- [1] Hunsdiecker reaction [2] Wurtz fittig reaction
 [3] Mustard oil reaction [4] Hofmann bromamide reaction
- Q.5** $\text{C}_2\text{H}_2 \xrightarrow[\text{HgSO}_4, 1\%]{\text{H}_2\text{SO}_4 \text{ dil}} \text{A} \xrightarrow{[\text{O}]} \text{B} \xrightarrow{\text{NaOH}} \text{C} \xrightarrow{\text{NaOH}/\text{CaO}} \text{D}$ [D] is-
- [1] CH_4 [2] $\text{CH}_3 - \text{CH}_3$ [3] C_3H_8 [4] C_4H_{10}
- Q.6** $\text{C}_2\text{H}_5\text{Br} \xrightarrow{\text{aq. NaOH}} \text{X} \xrightarrow{\text{Cu}/300^\circ\text{C}} \text{Y} \xrightarrow{(\text{C}_2\text{H}_5\text{O})_3\text{Al}} \text{Z}$, [Z] is
- [1] Ethyl acetate [2] Acetic acid [3] Propionic Acid [4] Acetaldehyde
- Q.7** The acid formed when propyl magnesium bromide is treated with carbon dioxide is-
- [1] $\text{C}_3\text{H}_7\text{COOH}$ [2] $\text{C}_2\text{H}_5\text{COOH}$ [3] Both [4] None
- Q.8** The acid present in tomatoes is-
- [1] Lactic Acid [2] Oxalic Acid [3] Citric Acid [4] Tartaric Acid
- Q.9** Amides may be converted into amines by reaction named after
- [1] Perkin [2] Claisen [3] Hoffman [4] Kekule
- Q.10** Acetyl chloride is reduced to acetaldehyde by-
- [1] $\text{Na} - \text{C}_2\text{H}_5\text{OH}$ [2] LiAlH_4 [3] $\text{H}_2/\text{Pd} - \text{BaSO}_4$ [4] H_2/Ni
- Q.11** Which reagent can convert acetic acid into ethanol
- [1] $\text{Sn} + \text{HCl}$ [2] $\text{H}_2 + \text{Pt}$ [3] LiAlH_4 [4] $\text{Na} + \text{alcohol}$
- Q.12** $(\text{COOH})_2$ on treatment with H_2SO_4 gives-
- [1] $\text{H}_2\text{O} + \text{CO} + \text{CO}_2$ [2] $\text{HCOOH} + \text{CO} + \text{O}_2$ [3] $\text{CO} + \text{H}_2\text{O}$ [4] $\text{CO}_2 + \text{HCOOH}$
- Q.13** Formic and acetic acid can be distinguished
- [1] with the help of litmus [2] with caustic soda
 [3] with sodium bicarbonate [4] with ammonical AgNO_3

- Q.14** The reaction of formic acid with concentrated sulphuric acid gives
 [1] CO₂ [2] CO [3] Oxalic acid [4] Acetic acid
- Q.15** COOH can be converted into -CH₃ group
 [1] Na & alcohol [2] Zn + HCl [3] LiAlH₄ [4] HI & red phosphorus
- Q.16** When formic acid reacts with PCl₃ it forms-
 [1] Methyl chloride [2] Acetyl chloride [3] Formyl chloride [4] Carbon monoxide and HCl
- Q.17** Bouvaut Blanc reduction involves-
 [1] C₂H₅OH/Na [2] LiAlH₄ [3] C₂H₅MgX [4] Zn/HCl
- Q.18** CH₃CONH₂ $\xrightarrow{\text{Br}_2/\text{NaOH}}$?
 [1] CH₃COOH [2] CH₃CH₂NH₂ [3] CH₃NH₂ [4] CH₃Br
- Q.19** Dry distillation of a mixture of calcium formate and the calcium acetate gives-
 [1] HCHO [2] CH₃CHO [3] CH₃COCH₃ [4] None
- Q.20** Propanoic acid is obtained by the hydrolysis of-
 [1] Ethyl cyanide [2] Acetyl Chloride [3] Acetamide [4] All
- Q.21** Formic acid on heating gives-
 [1] CO + H₂O [2] CO₂ + H₂ [3] Formic anhydride [4] Oxalic acid
- Q.22** Which of the ester on pyrolysis forms acetic acid-
 [1] Methyl acetate [2] Ethyl acetate [2] 1 and 2 both [4] None
- Q.23** Acetyl Chloride on reaction with sodium acetate followed by hydrolysis of the product gives-
 [1] Acetic anhydride [2] Acetic acid [3] Ethane [4] Ethyl alcohol
- Q.24** Hydrocyanic acid on hydrolysis gives A, which on further reaction with conc. H₂SO₄ gives
 [1] (HCO)₂O [2] CO + H₂O [3] CO₂ + H₂ [4] C₂H₅HSO₄
- Q.25** Acetic acid on reaction with Diazomethane gives-
 [1] Methyl acetate [2] Ethanoic acid [3] Acetic ester [4] None
- Q.26** A $\xrightarrow{\text{SOCl}_2}$ B $\xrightarrow[\text{BaSO}_4]{\text{pd}}$ Ethanal [B] is-
 [1] Propanone [2] Ethanol [3] Acetic acid [4] Acetyl chloride
- Q.27** [A] + ethanol \longrightarrow ethyl acetate, [A] is-
 [1] CH₃COCl [2] CH₃COOH [3] (CH₃CO)₂O [4] All
- Q.28** Which compound reacts with sodium bicarbonate as well as tollen's reagent ?
 [1] CH₃COOH [2] (COOH)₂ [3] HCOOH [4] CH₂(COOH)₂
- Q.29** Which of the following is an alpha hydroxy acid ?
 [1] Citric acid [2] Lactic acid [3] Maleic acid [4] Alanine
- Q.30** Of the three acids - formic acid, trichloro acetic acid and trifluoro acetic acid which is the strongest acid-
 [1] Formic acid [2] Trichloroacetic acid [3] Trifluoro acetic acid [4] None
- Q.31** Which of the following will have the highest B.P. ?
 [1] CH₃CO NH₂ [2] CH₃ O C₂H₅ [3] C₃H₇ NH₂ [4] C₄H₁₀
- Q.32** Which of the following compounds will give a yellow precipitate with I₂ and NaOH ?
 [1] 2-Hydroxy propane [2] Methyl acetate [3] Acetamide [4] None

Q.33 H-V-Z reaction is specific for-

- [1] Replacement of β -hydrogens [2] replacement of α -hydrogens
 [3] Replacement of β -carbons [4] replacement of α -carbons

Q.34 Which of the following can exist in optically active form-

- [1] Br HC = CHCl [2] $\text{CH}_3 - \overset{\text{H}}{\underset{\text{NH}_2}{\text{C}}} - \text{COOH}$ [3] HOOC (CH₂)₂ COOH [4] None

Q.35 Which is not correct about acid chlorides-

- [1] They can be prepared by the action of PCl₅ on the corresponding acid
 [2] They reacts with ammonia forming amines
 [3] They decompose in the presence of water
 [4] None of the above

Q.36 In the electronic structure of acetic acid there are-

- [1] 16 shared and 8 unshared electron [2] 8 shared and 16 unshared electrons
 [3] 12 shared and 12 unshared electrons [4] 18 shared and 6 unshared electrons

Q.37 Which one is known as tear gas

- [1] H CHO [2] CH₃ COCl [3] COCl₂ [4] CCl₃ NO₂

Q.38 An acid amide on degradation using Br₂ and warm NaOH solution give ethyl amine. The amide could be-

- [1] CH₃CONH₂ [2] CH₃CH₂CH₂CONH₂ [3] HCO NH₂ [4] CH₃ CH₂ CO NH₂

Q.39 Sodium acetate and acetyl chloride react to give-

- [1] CH₃COOH [2] CH₃COCH₃ [3] (CH₃CO)₂O [4] HCOONa

Q.40 Carboxylic acids can not be prepared by the hydrolysis of -

- [1] Acid amides [2] Acid chlorides [3] Acid halide [4] Alkyl halides

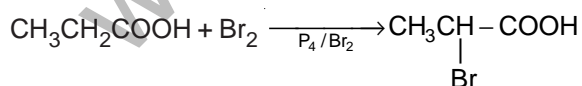
Q.41 In the esterification of acids, the nucleophilic reagent is the-

- [1] Acid [2] Alcohol [3] Water [4] OH⁻

Q.42 Glycine is acting both as-

- [1] An ester and an acid [2] An acid and an amine
 [3] An amine and a hydrogen [4] A hydrocarbon and an ester

Q.43 The name of the following reaction is associated with the following scientists-



- [1] Hoffmann [2] Friedel & Crafts [3] Wurtz and Fitting [4] Hell, Volhard and Zelinski

Q.44 Formic acid reacts with ammonical AgNO₃ to form

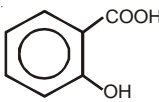
- [1] Metallic Silver [2] Silver acetylide [3] Formaldehyde [4] Acetaldehyde

Q.45 The acid used in removing ink spots is

- [1] Citric acid [2] Oxalic acid [3] Formic acid [4] none of the above

Q.46 Cyanogen (CN₂) on hydrolysis yields-

- [1] malonic acid [2] Maleic acid [3] Formic acid [4] Oxalic acid

- Q.47** The strongest acid among the following acids is-
 [1] HCOOH [2] CH₃COOH [3] (CH₃)₂CHCOOH [4] (CH₃)₃C COOH
- Q.48** The general formula R₂C₂O₃ represents-
 [1] A ketone [2] An ester [3] An acid anhydride [4] A carboxylic acid
- Q.49** In the nomenclature of the compounds  least number will be given to carbon atom carrying :
 [1] -COOH group [2] -OH group
 [3] Both -COOH & -OH groups [4] None
- Q.50** the ratio of C, H and O atoms in 2-methyl benzoic acid is :
 [1] 4 : 4 : 2 [2] 4 : 4 : 1 [3] 4 : 2 : 2 [4] 2 : 4 : 1
- Q.51** I $\xleftarrow{O_2}$ Benzaldehyde $\xrightarrow{NH_3}$ II, I II are :
 [1] Benzoic acid, Benzaldehyde ammonia [2] Benzoic acid, Hydrobenzamide
 [3] Phenyl acetic acid, Benzaldehyde ammonia [4] Benzoic acid, Aniline
- Q.52** Trichloro methyl benzene on hydrolysis gives :
 [1] Phenol [2] Benzyl alcohol [3] Benzophenone [4] Benzoic acid
- Q.53** Decarboxylation of which of the following acid gives benzoic acid :
 [1] Phthalic acid [2] Anthranilic acid [3] Phenylacetic acid [4] Malic acid
- Q.54** When toluene is treated with acidic KMnO₄, we get :
 [1] Benzoic acid [2] Benzyl alcohol [3] Benzaldehyde [4] Benzene
- Q.55** Benzoic acid is not the product of which of the following reactions :
 [1] C₆H₅CCl₃ + 2H₂O $\xrightarrow{Ca(OH)_2 + Fe}$ [2] C₆H₆ + COCl₂ $\xrightarrow{(i) AlCl_3 (ii) H_3O^+}$
 [3] C₆H₅CH₃ $\xrightarrow{KMnO_4 + OH^-}$ [4] C₆H₅OH $\xrightarrow{MnO_2, H_2SO_4, 40^\circ}$
- Q.56** What happens when sodium benzene sulphonate is fused with sodium formate :
 [1] C₆H₅COOH + Na₂SO₃ [2] C₆H₅OH + Na₂SO₃
 [3] C₆H₅CH₂OH + Na₂SO₃ [4] C₆H₄ $\begin{matrix} \text{OH} \\ \diagup \\ \text{COOH} \end{matrix}$ + Na₂SO₃
- Q.57** In the preparation of C₆H₅COOH and CH₃COOH, which method is equally applicable to both :
 [1] Grignard reagent and dry ice [2] Hydrolysis of esters
 [3] Hydrolysis of nitriles [4] All the above
- Q.58** Which of the following reaction gives different product than the other three :
 [1] C₆H₅CH₃ $\xrightarrow[(ii) H_2O]{(i) Cr_2O_2Cl_2}$ [2] C₆H₆ + CO + HCl $\xrightarrow[AlCl_3]{\text{anhydrous}}$
 [3] C₆H₅COCl + H₂ $\xrightarrow{Pd/BaSO_4}$ [4] C₆H₅-CH(CH₃)₂ $\xrightarrow[H^+]{MnO_4^-}$
- Q.59** A mixture of benzene and benzoic acid is separated by the following reagent :
 [1] Toluene [2] NaHCO₃ [3] HCl [4] Diethyl ether

- Q.60** The compounds (a) $\phi\text{-CH}_2\text{OH}$, (b) $\phi\text{-OH}$, (c) $\phi\text{-COOH}$ are all capable of acting as acid under some conditions. Which of the following lists them in order of increasing acid strength :
- [1] c, a, b [2] b, c, a [3] a, b, c [4] b, a, c
- Q.61** The acid strength of benzoic acid is affected by introducing a substituent in the ring :
- [1] By the nature of the substituent [2] By the position of the substituent in the ring
 [3] Both the above [4] The acid strength always increases by the substituent
- Q.62** Decreasing order of acidity of p-methoxy benzoic acid (A), p-nitrobenzoic acid (B) and benzoic acid (C) is
- [1] B, C, A [2] A, B, C [3] C, A, B [4] None
- Q.63** Which of the following acids is weaker than benzoic acid :
- [1] $\text{NO}_2\text{-C}_6\text{H}_4\text{-COOH}$ [2] $\text{CH}_3\text{-C}_6\text{H}_4\text{-COOH}$ [3] $\text{Cl-C}_6\text{H}_4\text{-COOH}$ [4] $\text{SO}_3\text{H-C}_6\text{H}_4\text{-COOH}$
- Q.64** Benzoic acid reacts with Ca(OH)_2 . The product obtained on dry distillation gives :
- [1] Benzophenone [2] Acetophenone [3] Benzaldehyde [4] None of these
- Q.65** The product of the reaction of benzoic acid with SOCl_2 is :
- [1] Chlorobenzene [2] Dichlorobenzene [3] Benzoyl chloride [4] Benzyl chloride
- Q.66** The acid which does not form an anhydride when treated with P_2O_5 is :
- [1] Formic acid [2] Acetic acid [3] Propionic acid [4] Benzoic acid
- Q.67** $\text{C}_6\text{H}_5\text{COOH} + \text{A} \xrightarrow{\text{conc. H}_2\text{SO}_4} \text{N}_2 + \text{CO}_2 + \text{C}_6\text{H}_5\text{NH}_2$
 The above reaction is a Schmidt reaction. Here A is :
- [1] Polyprotic acid [2] Monobasic acid [3] Monoacid base [4] None
- Q.68** $?\xrightarrow[\text{EtOH, H}_2\text{O}]{\Delta, \text{CN}^-} \text{Benzoin}$
 The reactant is obtained by dry distillation of the calcium salts of the following pairs :
- [1] $\text{C}_6\text{H}_5\text{CH}_2\text{COOH}$, HCOOH [2] $\text{C}_6\text{H}_5\text{COOH}$, HCOOH
 [3] $\text{C}_6\text{H}_4(\text{OH})\text{COOH}$, HCOOH [4] $\text{C}_6\text{H}_4(\text{NH}_2)\text{COOH}$, HCOOH
- Q.69** The number of aromatic ketones formed by the dry distillation of $(\text{C}_6\text{H}_5\text{COO})_2\text{Ca}$ and $(\text{C}_6\text{H}_5\text{CH}_2\text{COO})_2\text{Ca}$ would be :
- [1] 1 [2] 2 [3] 3 [4] 4
- Q.70** End product in the sequence would be :
- $$\text{C}_6\text{H}_6 \xrightarrow{\text{CH}_3\text{Cl/AlCl}_3} \text{Aromatic hydrocarbon} \xrightarrow[\text{boiling}]{\text{Cl}_2} \text{C}_6\text{H}_5\text{CCl}_3 \xrightarrow{\text{Ca(OH)}_2} (\text{C}_6\text{H}_5\text{COO})_2\text{Ca} \xrightarrow{\text{H}_2\text{SO}_4} \text{End product}$$
- [1] $\text{C}_6\text{H}_5\text{COOH} + \text{CaSO}_4$ [2] $\text{C}_6\text{H}_5\text{COC}_6\text{H}_5 + \text{CaSO}_4$
 [3] $\text{C}_6\text{H}_5\text{CHO} + \text{CaSO}_4$ [4] $(\text{C}_6\text{H}_5\text{CO})_2\text{O} + \text{CaSO}_4$
- Q.71** The following compound is obtained by the reduction of benzoic acid with lithium aluminium hydride :
- [1] Cyclohexanoic acid [2] Benzyl alcohol
 [3] Cyclohexa-1, 4-dioic acid [4] No reaction
- Q.72** Benzoic acid is reduced with sodium in boiling amyl alcohol, the compound formed is :
- [1] Benzoic anhydride [2] Cyclohexane Carboxylic acid
 [3] Toluene [4] Benzyl alcohol

- Q.73** Chlorine reacts with benzoic acid in presence of halogen carrier :
 [1] Benzoyl chloride [2] Benzal chloride
 [3] m-Chlorobenzoic acid [4] o- & p-Chlorobenzoic acid
- Q.74** Benzoic acid can be distinguished from acetic acid by the use of :
 [1] Sodium bicarbonate [2] Ferric chloride [3] Litums [4] Phosphorous pentachloride
- Q.75** $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O} \xrightarrow{\text{H}^+} \text{C}_2\text{H}_5\text{OH} + \text{CH}_3\text{COOH}$. The reaction is known as
 [1] Esterification [2] Saponification [3] Hydrolysis [4] Protonolysis
- Q.76** Derivative of a mono carboxylic acid is
 [1] An acid chloride and amide [2] An ester
 [3] An acid anhydride [4] All of these
- Q.77** Hydrolysis of CH_3COCl is easier than $\text{CH}_3\text{COOC}_2\text{H}_5$, because
 [1] CH_3 exerts (+I) effect [2] Chloride is a best leaving group
 [3] π -electrons of carboxyl group lie nearer to -O- atom
 [4] None of the above
- Q.78** Alkanamides on treatment with dilute hydrochloric acid give
 [1] A carboxylic acid only [2] An ammonium carboxylate
 [3] A carboxylic acid and NH_4Cl [4] An anhydride
- Q.79** Acetyl chloride can not be obtained by treating acetic acid with
 [1] CHCl_3 [2] SOCl_2 [3] PCl_3 [4] PCl_5
- Q.80** $\text{CH}_3\text{COOC}_4\text{H}_9 + \text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{C}_2\text{H}_5\text{ONa}} \text{CH}_3\text{COOC}_2\text{H}_5 + \text{C}_4\text{H}_9\text{OH}$. The above reaction may be given the name
 [1] Alcoholysis [2] Trans esterification
 [3] Both the above [4] None of the above
- Q.81** Amides are readily obtained by
 [1] Heating ammonium carboxylates [2] Heating an acid and a primary amine
 [3] Treating an alkanenitrile with ammonia [4] Stephen reaction
- Q.82** Name the ultimate product of the following series of reactions, $\text{CH}_3\text{COOH} \xrightarrow{\text{NH}_3} \text{A} \xrightarrow{\Delta} \text{B} \xrightarrow{\text{P}_2\text{O}_5} \text{C}$ —
 [1] CH_4 [2] CH_3OH [3] Acetonitrile [4] Ammonium acetate
- Q.83** Hydrolysis of CH_3CONH_2 with NaOH forms
 [1] Methylamine and CO_2 [2] HCOOH
 [3] CH_3COONa and ammonia [4] Acetaldehyde
- Q.84** Apart from CH_3COOH and H_2O , what is the other product obtained from CH_3CONH_2 & HNO_2
 [1] O_2 [2] N_2 [3] H_2 [4] NH_3
- Q.85** Acetylation is the reaction of acetyl chloride with
 [1] Sodium acetate
 [2] A compound having an active hydrogen atom such as primary and secondary alcohols, amines and phenols
 [3] Acetic Anhydride
 [4] Acetylacetone

- Q.86** Reaction of benzene with acetyl chloride in the presence of anhydrous AlCl_3 gives
 [1] Acetophenone [2] Benzophenone [3] Benzaldehyde [4] Benzoyl chloride
- Q.87** The reaction $\text{CH}_3\text{CONH}_2 \xrightarrow{\text{NaOBr}}$ gives
 [1] CH_3Br [2] CH_4 [3] CH_3OBr [4] CH_3NH_2
- Q.88** Which will not give acetamide on reaction with ammonia
 [1] Acetic acid [2] Acetyl chloride [3] Acetic anhydride [4] Methyl acetate
- Q.89** Select the reaction where acidolysis occurs
 [1] $\text{CH}_3\text{CONH}_2 + \text{H}_2\text{O} + \text{HCl} \rightarrow \text{CH}_3\text{COOH} + \text{NH}_4\text{Cl}$
 [2] $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \rightarrow \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$
 [3] $\text{CH}_3\text{COOH} + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{H}_2\text{O}$
 [4] $\text{CH}_3\text{COONa} + \text{CH}_3\text{COCl} \rightarrow (\text{CH}_3\text{CO})_2\text{O} + \text{NaCl}$
- Q.90** Acetamide reacts with sodium nitrite and dilute hydrochloric acid to give
 [1] Ethyl alcohol [2] Ethyl nitrite [3] Ethyl chloride [4] Acetic acid

Answer Key

Qus.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	3	2	3	1	1	1	1	2	3	3	3	1	4	2	4	4	1	3	2	1
Qus.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	2	2	2	2	1	4	4	3	2	3	1	1	2	2	2	1	4	4	3	4
Qus.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	2	2	4	1	2	4	1	3	1	2	2	4	1	1	4	1	4	4	2	3
Qus.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Ans.	3	1	2	1	3	1	2	2	3	1	2	2	3	2	3	4	2	3	1	3
Qus.	81	82	83	84	85	86	87	88	89	90										
Ans.	1	3	3	2	2	1	4	1	1	4										

Exercise # 2

- Q.1** The general molecular formula of acid anhydrides is
 [1] $C_nH_{2n-1}O_3$ [2] $C_nH_{2n+2}O_3$ [3] $C_nH_{2n-2}O_3$ [4] $C_nH_{2n+1}O_3$
- Q.2** An aliphatic carboxylic acid of molecular formula $C_2H_4O_2$ on reaction with PCl_5 gives a compound Y. Y when heated with sodium salt of the acetic acid produces
 [1] Ethyl acetate [2] Ethyl ace'oacetate [3] Methyl methanoate [4] Ethanoic anhydride
- Q.3** One mole of each of the following compounds is heated with water in a sealed test tube, the lowest pH will be shown by
 [1] CH_3COOH [2] $\begin{array}{c} CH_2COOH \\ | \\ Cl \end{array}$ [3] C_6H_5OH [4] CH_3COCl
- Q.4** Hydrolysis of an amide with alkali involves
 [1] Nucleophilic attack of the hydroxide ion on acyl carbon
 [2] Deamination of the amide
 [3] Dehydration of the amide
 [4] Slow decarboxylation of the amide
- Q.5** Following reagent is capable of converting ethyl acetate to ethanol
 [1] $Zn-Cu/H_2O$ [2] P/HI [3] $LiAlH_4$ [4] None of these
- Q.6** On heating sodium methoxide and CO the compound formed is
 [1] Methyl acetate [2] Ether [3] Sodium acetate [4] Sodium methanoate
- Q.7** Amides are dehydrated to alkyl cyanides by heating with
 [1] PCl_5 only [2] $SOCl_2$ only [3] $POCl_3$ only [4] $PCl_5/SOCl_2/POCl_3$
- Q.8** Except one all other names represent the same compound
 [1] Ethyl acetoacetate [2] Acetoacetic ester
 [3] Ethyl- 3 - oxobutanoate [4] Ethyl- 2 - ketobutanoate
- Q.9** Acetic anhydride is capable of reacting with the following triad
 [1] $>C=O, -CHO, -COOH$ [2] $-OH > NH > C-OH$
 [3] $\rightarrow N > C=O, -NH_2$ [4] $>C=C<, >O, -NH$
- Q.10** Acetic anhydride reacts with nitrogen pentoxide to form
 [1] Nitroacetic acid [2] Acetonitrile [3] Acetyl nitrate [4] Acyl nitrene
- Q.11** The electronegativity order of Y in $R-\overset{\overset{O}{||}}{C}-Y$ is-
 [1] $-OR' > -NH_2 > -Cl > OCOR$ [2] $-OCOR > -Cl > OR > -NH_2$
 [3] $-OCOR > -OR' > -Cl > -NH_2$ [4] $-Cl > -OCOR > -OR' > -NH_2$
- Q.12** Which of the following is a correct statement
 [1] Ethyl acetate has an odour of pineapple
 [2] Acetamide has an odour of fish
 [3] Acetic anhydride can be prepared by heating acetic acid with P_2O_5
 [4] Acetyl chloride is a gas at ordinary temperature in a tropical country like India

- Q.13** Detaching H atom from the carboxylic acid, the remainder portion is called
 [1] Acyl group [2] Acetyl group [3] Acyl oxy group [4] None of these
- Q.14** Match list I with list II and then select the correct answer from the codes given below the lists
- | List I | List II |
|---|----------------------------------|
| (A) Organic acid + alcohol \longrightarrow | (a) Irreversible reaction |
| (B) RCOOH + Diazomethane \longrightarrow | (b) Preparation of ethyl acetate |
| (C) RCOCl + H ₂ O \longrightarrow | (c) Reversible Reaction |
| (D) CH ₃ CHO $\xrightarrow{\text{Al(OC}_2\text{H}_5)_3}$ | (d) Preparation of methyl esters |
- | Code | A | B | C | D |
|------|---|---|---|---|
| [1] | c | d | a | b |
| [2] | c | b | a | d |
| [3] | c | a | b | d |
| [4] | d | b | c | a |
- Q.15** Hydrolysis and decarboxylation of ethylacetoacetate gives
 [1] Methyl ketone + formic acid [2] Acetone + dry ice
 [3] Butanone + CO₂ [4] Acetic acid + dry ice
- Q.16** Pick up the incorrect statement
 [1] Amides (RCONH₂) are reduced by sodium and ethanol into primary amines (RCH₂NH₂)
 [2] Amides are dehydrated with PCl₅ into alkanenitriles
 [3] Amide on treatment with nitrous acid evolve CO₂
 [4] Amides are formed by heating ammonium carboxylates
- Q.17** CH₃COOCH₃ + Br⁻ → CH₃COBr + ⁻OCH₃. The above reaction is
 [1] Possible [2] Not possible [3] Difficult to predict [4] None of these
- Q.18** Which of the following statements is incorrect
 [1] Acetyl chloride is a colourless fuming liquid with irritating odour.
 [2] AcOH, Ac₂O and AcCl respectively represent acetic acid, acetic anhydride and acetyl chloride.
 [3] Amides of the structure RCO-NH-CO-R are called tertiary amides.
 [4] Dimethylformamide is a very good solvent for polar and non-polar compounds.
- Q.19** Select the wrong statement. Amides are hydrolysed
 [1] Slowly by water [2] Rapidly by acids
 [3] Far more rapidly by alkalis [4] Very slowly by acids or alkalis.
- Q.20** RCOOAg + Br₂ $\xrightarrow[\Delta]{\text{CCl}_4}$ R - Br + AgBr + CO₂ This reaction is called
 [1] Wurtz reaction [2] Hundiecker reaction [3] Friedel- Craft reaction [4] Kolbe reaction
- Q.21** Which is incorrect in regard to the formation of ester –
 [1] It can be obtained by heating silver acetate and ethyl bromide
 [2] It can be obtained by the action of ethyl alcohol on CH₃COCl or acetic anhydride
 [3] It can be obtained by heating CH₃CHO in presence of aluminium ethoxide
 [4] None of these

- Q.22** When acetic acid reacts with ethylene in presence of BF_3 we get
 [1] Ethyl acetate [2] Acetic anhydride [3] Methyl alcohol [4] Ethyl alcohol
- Q.23** Arrange acetyl chloride (I), ethyl acetate (II), acetamide (III) and acetic anhydride (IV) in order of reactivity towards nucleophilic acyl substitution -
 [1] I > IV > II > III [2] I > II > III > IV [3] III > II > IV > I [4] IV > III > II > I
- Q.24** Reaction between $\text{CH}_2 = \text{C} = \text{O}$ and $\text{C}_2\text{H}_5\text{OH}$ forms
 [1] Methyl acetate [2] Methyl formate [3] Ethyl acetate [4] Acetic acid
- Q.25** Synthetic flavours contain -
 [1] Unsaturated acids [2] Esters [3] Dicarboxylic acids [4] Hydroxy acid
- Q.26** Ethyl acetate reacts with hydrazine forming-
 [1] Acetamide [2] Acid hydrazide [3] Acid anhydride [4] Hydrazoic acid
- Q.27** The reaction, $\text{CH}_3\text{COOC}_2\text{H}_5 \xrightarrow[4[\text{H}]]{\text{Na} + \text{C}_2\text{H}_5\text{OH}} \text{C}_2\text{H}_5\text{OH} + \text{CH}_3\text{CH}_2\text{OH}$, is called
 [1] Claisen reduction [2] Claisen condensation
 [3] Bouveault-Blanc reduction [4] Tischenko reduction
- Q.28** The reaction of acetaldehyde in the presence of $\text{Al}(\text{OC}_2\text{H}_5)_3$ produces
 [1] $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{CHO}$ [2] $\text{CH}_3\text{CH} = \text{CH}-\text{CHO}$ [3] $\text{CH}_3\text{COOC}_2\text{H}_5$ [4] No reaction
- Q.29** Which of the following is not an inorganic acid ester
 [1] Dimethyl sulphate [2] Ethyl nitrate [3] Nitroglycerine [4] Ethyl orthoformate
- Q.30** Which of the following test is not carried out to examine the presence of $-\text{COOH}$ groups
 [1] Litmus test [2] Sodium bicarbonate test
 [3] Ester test [4] Bromine water test
- Q.31** Acetic acid can be prepared by heating methyl cyanide with
 [1] Dilute NaOH solution [2] P_2O_5
 [3] Sodium and alcohol [4] All of these
- Q.32** Manufacture of acetic acid by fermentation process is called
 [1] Wood distillation method [2] Pyroligneous acid method
 [3] Quick vinegar method [4] None of the above
- Q.33** Decarboxylation of monocarboxylic acids to give alkanes is achieved by
 [1] Heating sodium salts of acids with soda lime [2] Electrolysis of potassium salts
 [3] Dry distillation of calcium salts [4] Heating ammonium salts
- Q.34** While naming the organic compound under Geneva system it is usual practice to count the carbon atom of the following functional group except -
 [1] Cyanides [2] Carboxylic acids [3] Carbylamines [4] Carbinols

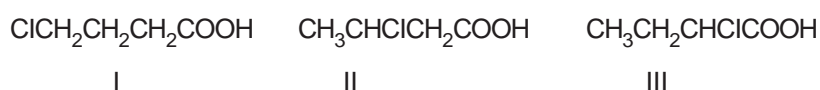
Q.35 Formic acid decolorises an acidic solution of potassium dichromate because it

- [1] Has a $\text{—}\overset{\text{O}}{\parallel}{\text{C}}\text{—OH}$ group [2] It is stronger acid than acetic acid
 [3] Reduces Tollen's reagent [4] It readily oxidised to CO_2

Q.36 Which of the following statement are correct

- [1] The two carbon-oxygen bond lengths in formic acid are different
 [2] The two carbon-oxygen bond length in sodium formate are equal.
 [3] Very partial resonance is there in formic acid
 [4] All of the above

Q.37 Arrange the following compounds in decreasing order of acidity



- [1] I > II > III [2] III > II > I [3] I > III > II [4] III > I > II

Q.38 Reaction of a fat or oil with alkali is called -

- [1] Esterification [2] Saponification [3] Etherification [4] Epoxidation

Q.39 Arrange the following compounds in decreasing order of acidity



- [1] I > II > III > IV [2] IV > III > II > I [3] III > IV > I > II [4] I > II > IV > III

Q.40 Arrange the following carboxylic acids in decreasing order of acidity



- [1] I > II > III [2] III > II > I [3] I > III > II [4] II > III > I

Q.41 Formic acid and acetic acid can be distinguished by

- [1] P_2O_5 [2] $\text{C}_2\text{H}_5\text{OH}$ [3] NaHCO_3 [4] $\text{KMnO}_4 + \text{H}_2\text{SO}_4$

Q.42 Succinic acid is a functional group isomer of

- [1] Tartaric acid [2] Lactic acid [3] Glycol diacetate [4] Dimethyl oxalate

Q.43 Arrange OHCH_2COOH (I) $\text{HOCH}_2\text{CH}_2\text{COOH}$ (II) and CH_3COOH (III) in order of acidity

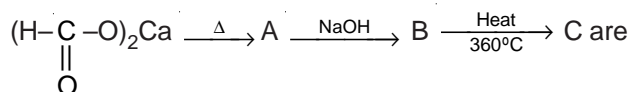
- [1] I > II > III [2] III > II > I [3] I > III > II [4] II > III > I

Q.44 $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH} + \text{R}'\text{OH} \xrightarrow{\text{H}^+} \text{RCOOR}' + \text{H}_2\text{O}$. The rate of the above reaction will be maximum if R is

- [1] H [2] CH_3 [3] $(\text{CH}_3)_2\text{CH}$ [4] None

- Q.45** The rate of esterification of acetic acid with methyl alcohol (I), ethyl alcohol (II), isopropyl alcohol (III) and tert. butyl alcohol (IV) follows in the order
 [1] I > II > III > IV [2] IV > III > II > I [3] II > I > IV > III [4] III > IV > I > II
- Q.46** The reaction of chlorine on carboxylic acids to form alpha chloro acids is called
 [1] Hunsdiecker reaction [2] Hell-Volhard-Zelinsky reaction
 [3] Hoffmann mustard oil reaction [4] Rosenmund reaction
- Q.47** The rate of esterification of HCOOH (I), CH₃COOH (II), (CH₃)₂CHCOOH (III) and (CH₃)₃CCOOH (IV) with ethanol follows in the order
 [1] IV > III > II > I [2] I > II > III > IV [3] II > I > IV > III [4] III > IV > I > II
- Q.48** X and Y in the reaction sequence $R-C \equiv N \xrightarrow{H_3O^+} X \xrightarrow{\text{diazomethane}} Y$, are given by the set -
 [1] Carboxamide, Carbonitrile [2] Carboxylic acid, Carbonitrile
 [3] RCOOH, RCOOCH₃ [4] RCONH₂, RCOCH₃
- Q.49** Which of the following reagent attacks the carbonyl group of carboxylic acid -
 [1] P₂O₅ [2] PCl₅ [3] LiAlH₄ [4] NaOH + CaO
- Q.50** In the electrolysis of the aqueous solution of CH₃CH₂COONa, anion goes to anode the possibility of formation of following compounds takes place -
 [1] CH₃-CH₂-CH₂-CH₃ [2] CH₂=CH₂, CH₃-CH₃
 [3] CH₃CH₂COOC₂H₅ [4] All the above
- Q.51** Which of the following will liberate hydrogen when treated with a monocarboxylic acid
 [1] NaOH [2] Sodium [3] NaHCO₃ [4] Na₂CO₃
- Q.52** In esterification conc. H₂SO₄ acts as
 [1] Dehydrating agent [2] Catalyst
 [3] Both catalyst and dehydrating agent [4] Hydrolysing agent
- Q.53** Which of the following organic acid decolourises bromine water as well as forms anhydride
 [1] HOOC-COOH [2] HOOC-CH₂-COOH
 [3] $\begin{array}{c} \text{H}-\text{C}-\text{COOH} \\ || \\ \text{H}-\text{C}-\text{COOH} \end{array}$ [4] $\begin{array}{c} \text{H}-\text{C}-\text{COOH} \\ || \\ \text{HOOC}-\text{C}-\text{H} \end{array}$
- Q.54** Aqueous formic acid solution cannot be fractionated because formic acid
 [1] Is miscible with water in all proportion [2] Forms azeotrope with water
 [3] Boils at 100.5°C [4] Is a pungent corrosive liquid
- Q.55** The general formula of dicarboxylic acid is
 [1] (COOH)₂ [2] (CH₂)_n(COOH)₂
 [3] (CH₂)_{n-2}(COOH)₂ [4] (CH₂)_{n-1}(COOH)₂

Q.56 The product A, B and C in the reaction sequence



[1] HCHO, HCOONa, CH₃OH

[2] HCHO, Na₂CO₃, NaHCO₃

[3] HCHO, HCOONa, (COONa)₂

[4] HCHO, HCOONa, Na₂CO₃

Q.57 Arrange formic acid (I), benzoic acid (II), acetic acid (III) and phenylacetic acid (IV) in order of acidity

[1] I > II > III > IV

[2] IV > III > II > I

[3] I > II > IV > III

[4] III > IV > II > I

Q.58 A compound with molecular formula C₄H₁₀O₄ on acylation with acetic anhydride gives a compound with molecular formula C₁₂H₁₈O₈. How many hydroxyl groups are present in the compound -

[1] One

[2] Two

[3] Three

[4] Four

Answer Key

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

- Q.16** What are the organic products formed in the following reaction : $C_6H_5COOCH_3 \xrightarrow{1. LiAlH_4}$ **[IIT 95]**
 [1] C_6H_5COOH and CH_4 [2] $C_6H_5CH_2OH$ and CH_4
 [3] $C_6H_5CH_3$ and CH_3OH [4] $C_6H_5CH_2OH$ and CH_3OH
- Q.17** n-Butyraldehyde can be synthesised from n-propyl magnesium bromide and : **[ICS Pr. 95]**
 [1] Ethyl formate [2] Acetyl chloride [3] n-Butyl formate [4] Formic acid
- Q.18** The IUPAC name of $C_2H_5CONH_2$ is : **[BHU 95]**
 [1] Methanamide [2] Benzamide [3] Propanamide [4] Ethanamide
- Q.19** Pyruvic is obtained by : **[AFMC 95]**
 [1] Oxidation & hydration of acetaldehyde cyanohydrin
 [2] Oxidation of acetone cyanohydrin
 [3] Oxidation of formaldehyde
 [4] None of these
- Q.20** Which of the following compounds is an amino acid : **[Manipal MEE 95]**
- [1] $CH_3-CH_2-\overset{\overset{O}{\parallel}}{C}-ONH_4$ [2] $CH_3-\underset{\underset{NH_2}{|}}{CH}-\overset{\overset{O}{\parallel}}{C}-OH$ [3] $CH_3-CH_2-\overset{\overset{O}{\parallel}}{C}-NH_2$ [4] $CH_3-\underset{\underset{NH_2}{|}}{CH}-\overset{\overset{O}{\parallel}}{C}-Cl$
- Q.21** An acid on reaction with alcohol produces : **[REE 95]**
 [1] High carbon containing acid [2] Secondary alcohol
 [3] Alkane [4] Ester
- Q.22** The acid showing salt like character in aqueous solution is : **[MPPMT 96]**
 [1] Acetic acid [2] Benzoic acid [3] Formic acid [4] α -Aminoacetic acid
- Q.23** Which of the following is used for the formation of α -chloro acetic acid : **[MPPMT 96]**
 [1] HVZ reaction [2] Nef reaction [3] Stephen's reaction [4] Perkin reaction
- Q.24** The conversion of CH_3OH into CH_3COOH can be brought about by the following reagents : **[CPMT 96]**
 [1] $K_2Cr_2O_7 / H^+$ [2] $CO + Rh$ [3] $KMnO_4$ [4] H_3PO_4
- Q.25** Acetaldehyde changes to a sweet smell liquid on reacting with aluminium ethoxide. This liquid is : **[RPMT 96]**
 [1] $CH_3COOC_2H_5$ [2] CH_3COOH [3] CH_3CH_2OH [4] $(CH_3O)_3Al$
- Q.26** Hydrolysis of ester, in an alkaline medium, is : **[AFMC 94, Manipal MEE 96]**
 [1] First order reaction with molecularity one [2] Second order reaction with molecularity one
 [3] First order reaction with molecularity two [4] Second order reaction with molecularity two
- Q.27** The following reaction is called: $2CH_3COOC_2H_5 \rightarrow CH_3COCH_2COOC_2H_5$ **[KCET 96]**
 [1] Perkin reaction [2] Tischenko reaction
 [3] Claisen ester condensation [4] Schotten baumann reaction
- Q.28** To which of the following groups does soap belongs : **[MPPAT 96]**
 [1] Esters [2] Amines [3] Salts of organic acids [4] Aldehydes

Q.29 Consider the following reaction sequence $\text{CH}_3\text{COOH} \xrightarrow{\text{A}} \text{ClCH}_2\text{COOH} \xrightarrow{\text{B}} \text{H}_2\text{NCH}_2\text{COOH}$. Which one of the following combination of A and B would be the best for the above transformation : **[ICS Pro 96]**

- | | | | | | |
|-----|---------------|-----------------|-----|-----------------|---------------|
| | A | B | | A | B |
| [1] | Cl_2 | NH_3 | [2] | HCl | NH_3 |
| [3] | HCl | NaNH_2 | [4] | CHCl_3 | NH_3 |

Q.30 Weakest acid among the following : **[Pb.CET 96]**

- [1] Acetic acid [2] Phenol [3] Water [4] Acetylene

Q.31 PCl_5 is used in synthesis of : **[RPMT 97]**

- [1] CH_3COCl [2] $\text{C}_2\text{H}_5\text{OH}$ [3] $\text{C}_2\text{H}_5\text{O-C}_2\text{H}_5$ [4] CH_3COCH_3

Q.32 Acetamide reacts with P_2O_5 (phosphorous pentoxide) to give : **[AFMC 97]**

- [1] Methyl cyanide [2] Methyl cyanate [3] Ethyl cyanide [4] Ethyl isocyanate

Q.33 The product of the reaction between HNO_2 and $\text{CH}_3\text{CH}_2\text{CONH}_2$ is : **[RPET 98]**

- [1] $\text{CH}_2(\text{NO}_2)\text{CH}_2\text{CONH}_2$ [2] $\text{CH}_3\text{CH}_2\text{COOH}$ [3] $\text{CH}_3\text{CH}_2\text{COONO}_2$ [4] $\text{CH}_3\text{CH}_2\text{N}\equiv\text{C}$

Q.34 A colourless liquid, at room temperature react with sodalime to form sodium salt of carboxylic acid and ammonia gas. The liquid is : **[REE 98]**

- [1] Propanamide [2] Propanoic acid [3] Formamide [4] Methyl ethanoate

Q.35 An acyl halide is formed when PCl_5 reacts with an : **[AIIMS 98]**

- [1] Acid [2] Alcohol [3] Amide [4] Ester

Q.36 If acetyl chloride is reduced in the presence of BaSO_4 and Pd, then product formed is : **[AFMC 98]**

- [1] CH_3CHO [2] $\text{CH}_3\text{CH}_2\text{OH}$ [3] CH_3COOH [4] CH_3COCH_3

Q.37 Glacial acetic acid is : **[KCET 98]**

- [1] Pure acetic acid at 100°C [2] Acetic acid mixed with methanol
[3] Pure acetic acid below 16.6°C [4] Pure acetic acid above 16.6°C

Q.38 Acetic acid does not form acetyl chloride with : **[RPET 99]**

- [1] COCl_2 [2] PCl_5 [3] PCl_3 [4] SOCl_2

Q.39 Which of the following reaction is expected to readily give a hydrocarbon product in good yields : **[CPMT 99]**

- [1] $\text{RCOOK} \xrightarrow[\text{Oxidation}]{\text{Electrolysis}}$ [2] $\text{RCOO Ag} \xrightarrow{-h\nu}$
[3] $\text{CH}_3\text{CH}_3 \xrightarrow[\text{hv}]{\text{Cl}_2}$ [4] $(\text{CH}_3)_2\text{CCl} \xrightarrow{\text{C}_2\text{H}_5\text{OH}}$

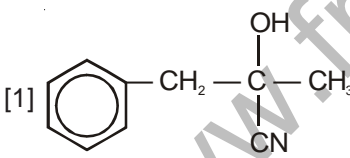
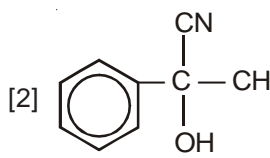
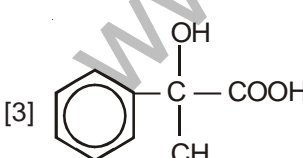
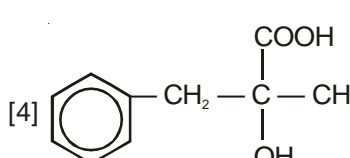
Q.40 Decreasing order of Basicity is : **[RPET 2000]**

- (a) $\text{CH}_3\text{-}\overset{\text{O}}{\parallel}\text{C-NH}_2$ (b) $\text{CH}_3\text{CH}_2\text{NH}_2$ (c) $\text{Ph-CH}_2\text{-}\overset{\text{O}}{\parallel}\text{C-NH}_2$
- [1] $a > b > c$ [2] $b > a > c$ [3] $c > b > a$ [4] None of these

- Q.41** $\text{Me}_2\text{-CH-C(=O)-NH}_2 \xrightarrow[\text{Br}_2]{\text{NaOH}}$ In the above reaction the product is : **[RPET 2000]**
 [1] $\text{Me}_2\text{-CH-NH}_2$ [2] Me_2CHOH [3] MeCHO [4] $\text{Me-CH}_2\text{-C(=O)-NH}_2$
- Q.42** Acetic anhydride with diethyl ether in the presence of anhydrous AlCl_3 to give : **[RPMT 2000]**
 [1] $\text{CH}_3\text{COOCH}_3$ [2] $\text{CH}_3\text{CH}_2\text{COOCH}_3$ [3] $\text{CH}_3\text{COOC}_2\text{H}_5$ [4] $\text{CH}_3\text{CH}_2\text{COOH}$
- Q.43** Main product of the reaction : **[RPMT 2000]**
 $\text{CH}_3\text{CONH}_2 + \text{HNO}_2 \rightarrow \dots\dots\dots$
 [1] CH_3NH_2 [2] $\text{CH}_3\text{CH}_2\text{NH}_2$ [3] $\text{CH}_3\text{COONH}_4$ [4] CH_3COOH
- Q.44** When acetic anhydride reacts with water, the following product is obtained : **[RPMT 2000]**
 [1] $\text{CH}_3\text{COOC}_2\text{H}_5$ [2] CH_3COOH [3] $\text{C}_2\text{H}_5\text{OH}$ [4] None of these
- Q.45** Amino acids usually exists in the form of Zwitter Ions. This means that it consists of : **[KCET 2000]**
 [1] The basic group $-\text{NH}_3^+$ and the acid group $-\text{CO}_2^-$
 [2] The basic group $-\text{NH}_2$ and the acid group $-\text{COOH}$
 [3] No acidic or basic group
 [4] The basic group $-\text{COO}^-$ and the acidic group NH_3^+
- Q.46** $\text{CH}_3\text{-COCl} + \text{H}_2 \xrightarrow{[\text{Pd}]}$ X. This product X may be : **[AFMC 2000]**
 [1] $\text{CH}_3\text{-CHO}$ [2] $\text{CH}_3\text{-CH}_2\text{-OH}$ [3] $\text{CH}_3\text{-C}\begin{matrix} \text{OH} \\ | \\ \text{H} \end{matrix}\text{-Cl}$ [4] both 1 and 2
- Q.47** Acetic acid is dissolved easily in nonpolar solvent although it is polar because : **[RPET 2000]**
 [1] Enthalpy change is very high [2] Impurities are added along with CH_3COOH
 [3] Dimer formation takes place [4] It is heavy
- Q.48** When calcium acetate and calcium formate are heated together gives : **[RPET 2000]**
 [1] CH_3CHO [2] $\text{CH}_3\text{-C(=O)-CH}_3$ [3] CH_3COOH [4] $\text{C}_2\text{H}_5\text{OH}$
- Q.49** The product of the reaction $\text{CH}_3\text{COOH} + \text{H}_2\text{C}=\text{C}=\text{O} \rightarrow$ Product is : **[RPET 2000]**
 [1] $(\text{CH}_3\text{CO})_2\text{O}$ [2] $\text{CH}_3\text{-C(=O)-CH}_3$ [3] HCHO [4] $\text{CH}_3\text{-C(=O)-C}_2\text{H}_5$
- Q.50** Carboxylic acids dissolve in aqueous NaOH because the acids undergo : **[RPMT 2000]**
 [1] Protonation [2] Deprotonation [3] Carboxylation [4] Decarboxylation
- Q.51** The name glacial acetic acid is given to pure acetic acid because : **[RPMT 2000]**
 [1] Below 16.6°C where it is a white liquid [2] It forms ice like solid below 16.6°C
 [3] It is mixed with methanol [4] None
- Q.52** In reaction $\text{HCOOH} + \text{CH}_3\text{COOH} \xrightarrow[\Delta]{\text{MnO}}$ X product X is : **[RPET 2001]**
 [1] HCHO [2] $\text{CH}_3\text{-C(=O)-H}$ [3] $\text{CH}_3\text{-C(=O)-O-C}_2\text{H}_5$ [4] $\text{H-C(=O)-O-C}_2\text{H}_5$

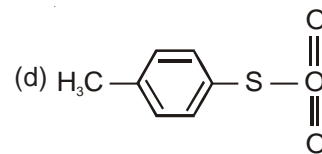
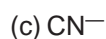
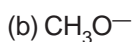
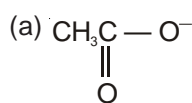
- Q.53** Hydrolysis of acetamide gives : **[MPPET 2001]**
 [1] Acetic acid [2] Acetaldehyde [3] Methyl amine [4] Formic acid
- Q.54** Aq. KOH hydrolyse which of following compound fastly : **[AIIMS 2001]**
 [1] $\text{CH}_3\text{COOC}_2\text{H}_5$ [2] $\text{C}_2\text{H}_5\text{CN}$ [3] $\text{CH}_3\text{CH}_2\text{CONHCH}_3$ [4] $(\text{CH}_3\text{CO})_2\text{O}$
- Q.55** Which one among the following is the strongest acid : **[MPPET 2001]**
 [1] Acetic acid [2] Propionic acid
 [3] Mono-chloro-acetic acid [4] Butyric acid
- Q.56** Chemical formula of pyruvic acid is : **[MPPET 2002]**
 [1] HOCH_2COOH [2] CH_3COCOOH [3] $\text{CH}_3\text{COCH}_2\text{COOH}$ [4] CH_3COCH_3
- Q.57** $\text{CH}_3\text{COCl} + \text{KCN} \rightarrow \text{CH}_3\text{COCN} \xrightarrow{\text{H}_3\text{O}^+} \text{Z}$ **[RPET 2002]**
 The last product in given reaction would be
 [1] $\text{CH}_3\text{COCONH}_2$ [2] CH_3COCOOH [3] CH_3COOH [4] $\text{CH}_3\text{COCH}_2\text{NH}_2$
- Q.58** A & B both compounds give H_2 gas with sodium. If A & B react in presence of acid catalyst then they form ethyl acetate. Thus, A & B would be - **[RPET 2002]**
 [1] $\text{CH}_3\text{COOH}, \text{CH}_3\text{OH}$ [2] $\text{HCOOH}, \text{CH}_3\text{COOH}$ [3] $\text{CH}_3\text{COOH}, \text{C}_2\text{H}_5\text{OH}$ [4] $\text{C}_3\text{H}_7\text{COOH}, \text{C}_3\text{H}_7\text{OH}$
- Q.59** Which compound gives CO_2 effervescence with NaHCO_3 solution : **[RPET 2002]**
 [1] $\text{C}_6\text{H}_5\text{OH}$ [2] $[\text{C}_6\text{H}_5\text{OH} + \text{CH}_3\text{COOH}]$ [3] $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ [4] CH_3COOH
- Q.60** $\text{CH}_3\text{CH}_2\text{Cl} \xrightarrow{\text{NaCN}} \text{X} \xrightarrow{\text{Ni}/\text{H}_2} \text{Y} \xrightarrow{\text{acetic-anhydride}} \text{Z}$. **[CBSE 2002]**
 What would be Z in following reaction :
 [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] $\text{CH}_3\text{CH}_2\text{CH}_2\text{CONHCOCH}_3$
- Q.61** $\text{CH}_3\text{CH}_2\text{COOH} \xrightarrow[\text{Red p}]{\text{Cl}_2} \text{A} \xrightarrow{\text{Alc. KOH}} \text{B}$ what is B : **[AIEEE 2002]**
 [1] $\text{CH}_3\text{CH}_2\text{COCl}$ [2] $\text{CH}_3\text{CH}_2\text{CHO}$ [3] $\text{CH}_2=\text{CHCOOH}$ [4] $\text{ClCH}_2\text{CH}_2\text{COOH}$
- Q.62** Glacial acetic is obtained by : **[Karnataka CET 2002]**
 [1] Distilling vinegar
 [2] Crystallizing separating and melting acetic acid
 [3] Treating vinegar with dehydrating agent
 [4] Chemically separating acetic acid
- Q.63** When propionic acid is treated with aqueous sodium bicarbonate CO_2 is liberated. The 'C' of CO_2 comes from : **[IIT Screening 1999]**
 [1] Methyl group [2] Carboxylic acid group [3] Methylene group [4] Bicarbonate
- Q.64** Benzoyl chloride is prepared from benzoic acid by : **[IIT Screening 2000]**
 [1] Cl_2, hv [2] SO_2Cl_2 [3] SOCl_2 [4] $\text{Cl}_2, \text{H}_2\text{O}$
- Q.65** Which of the following acids has the smallest dissociation constant : **[IIT Screening 2002]**
 [1] $\text{CH}_3\text{CHF}_2\text{COOH}$ [2] $\text{FCH}_2\text{CH}_2\text{COOH}$ [3] $\text{BrCH}_2\text{CH}_2\text{COOH}$ [4] $\text{CH}_3\text{CHBrCOOH}$
- Q.66** When benzoic acid is treated with PCl_5 at 100°C , it gives :
 [1] Benzoyl chloride [2] o-chlorobenzoic acid [3] p-chlorobenzoic acid [4] Benzyl chloride

- Q.67** $\text{CH}_3\text{COOH} \xrightarrow[\text{P}_2\text{O}_5]{\Delta} \text{X}$, Identify X : **[CPMT 2003]**
- [1] CH_3COCH_3 [2] CH_3CHO [3] $(\text{CH}_3\text{CO})_2\text{O}$ [4] CH_4
- Q.68** Which is buffer-solution : **[CPMT 2003]**
- [1] CH_3COOH and CH_3COONa [2] HCl and NaOH
 [3] NaOH and H_2SO_4 [4] Carbonic acid and acetic acid
- Q.69** When CH_3COOH reacts with $\text{CH}_3\text{-Mg-X}$: **[BVP 2003]**
- [1] CH_3COX is formed [2] Hydrocarbon is formed
 [3] Acetone is formed [4] Alcohol is formed
- Q.70** Most acidic is : **[BHU 2003]**
- [1] CH_3COOH [2] $\text{C}_6\text{H}_5\text{CH}_2\text{COOH}$ [3] HCOOH [4] $\text{CH}_3\text{CH}_2\text{COOH}$
- Q.71** Laboratory method for the preparation of acetyl chloride is : **[Rajasthan PMT 2003]**
- [1] $\text{CH}_3\text{COOH} + \text{SOCl}_2 \rightarrow \text{CH}_3\text{COCl}$ [2] $\text{CH}_3\text{COOH} + \text{PCl}_3 \rightarrow \text{CH}_3\text{COCl}$
 [3] $\text{CH}_3\text{COONa} + \text{PCl}_3 \rightarrow \text{CH}_3\text{COCl}$ [4] All of the above
- Q.72** Order of reactivity is : **[Rajasthan PMT 2003]**
- [1] $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{X} > \text{RCONH}_2 > \text{RCOOCOR} > \text{RCOOR}$ [2] $\text{RCOX} > \text{RCOOCOR} > \text{RCOOR} > \text{RCONH}_2$
 [3] $\text{RCOOR} > \text{RCONH}_2 > \text{RCOX} > \text{RCOOCOR}$ [4] $\text{RCOOCOR} > \text{RCOOR} > \text{RCOX} > \text{RCONH}_2$
- Q.73** $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\text{COOC}_2\text{H}_5 \xrightarrow[\text{H}_2\text{O}]{\text{NaOH}} \text{A}$. Product 'A' in the reaction is : **[Rajasthan PMT 2003]**
- [1] CH_3COOH [2] $\text{C}_2\text{H}_5\text{OH}$ [3] $\text{C}_2\text{H}_5\text{CHO}$ [4] None of these
- Q.74** In quick vinegar process of acetic acid, the temperature of mixture is : **[Rajasthan PMT 2003]**
- [1] 300 K [2] 427 K [3] 500 K [4] 350 K
- Q.75** In a set of the given reactions, acetic acid yielded a product C
- $\text{CH}_3\text{COOH} + \text{PCl}_5 \rightarrow \text{A} \xrightarrow[\text{anh. AlCl}_3]{\text{C}_6\text{H}_5} \text{B} \xrightarrow[\text{ether}]{\text{C}_2\text{H}_5\text{MgBr}} \text{C}$.
- Product C would be :
- [1] $\text{CH}_3-\overset{\text{C}_2\text{H}_5}{\underset{\text{OH}}{\text{C}}}\text{C}_6\text{H}_5$ [2] $\text{CH}_3\text{CH}(\text{OH})\text{C}_2\text{H}_5$ [3] $\text{CH}_3\text{COC}_6\text{H}_5$ [4] $\text{CH}_3\text{CH}(\text{OH})\text{C}_6\text{H}_5$
- Q.76** In the anion HCOO^- the two carbon-oxygen bonds are found to be of equal length. What is the reason for it : **[AIEEE 2003]**
- [1] Electronic orbitals of carbon atom are hybridised
 [2] The $\text{C}=\text{O}$ bond is weaker than the $\text{C}-\text{O}$ bond
 [3] The anion HCOO^- has two resonating structures
 [4] The anion is obtained by removal of a proton from the acid molecule
- Q.77** The general formula $\text{C}_n\text{H}_{2n}\text{O}_2$ could be for open chain : **[AIEEE 2003]**
- [1] Diketones [2] Carboxylic acid [3] Diols [4] Dialdehydes

- Q.78** When $\text{CH}_2=\text{CH}-\text{COOH}$ is reduced with LiAlH_4 , the compound obtained will be : **[AIEEE 2003]**
 [1] $\text{CH}_3-\text{CH}_2-\text{COOH}$ [2] $\text{CH}_2=\text{CH}-\text{CH}_2\text{OH}$
 [3] $\text{CH}_3-\text{CH}_2-\text{CH}_2\text{OH}$ [4] $\text{CH}_3-\text{CH}_2-\text{CHO}$
- Q.79** The ortho / para directing group among the following is : **[AIIMS 2003]**
 [1] COOH [2] CN [3] COCH_3 [4] NHCOCH_3
- Q.80** On mixing ethyl acetate with aqueous sodium chloride, the composition of the resultant solution is : **[AIEEE 2004]**
 [1] $\text{CH}_3\text{Cl} + \text{C}_2\text{H}_5\text{COONa}$ [2] $\text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}$
 [3] $\text{CH}_3\text{COCl} + \text{C}_2\text{H}_5\text{OH} + \text{NaOH}$ [4] $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaCl}$
- Q.81** Acetyl bromide reacts with excess of CH_3MgI followed by treatment with a saturated solution of NH_4Cl gives : **[AIEEE 2004]**
 [1] acetyl iodide [2] acetamide [3] 2-methyl-2-propanol [4] acetone
- Q.82** Consider the acidity of the carboxylic acids : **[AIEEE 2004]**
 [a] PhCOOH [b] $\text{o-NO}_2\text{C}_6\text{H}_4\text{COOH}$ [c] $\text{p-NO}_2\text{C}_6\text{H}_4\text{COOH}$ [d] $\text{m-NO}_2\text{C}_6\text{H}_4\text{COOH}$
 Which of the following order is correct :
 [1] $b > c > d > a$ [2] $b > d > c > a$ [3] $b > d > a > c$ [4] $a > b > c > d$
- Q.83** Carboxylic acids on reduction with LiAlH_4 gives **[VIEEE 2005]**
 [1] Aldehydes [2] Secondary alcohols [3] Ketones [4] Primary alcohols
- Q.84** The reduction of benzoyl chloride with Pd and BaSO_4 produces **[VIEEE 2005]**
 [1] Benzyl chloride [2] Benzaldehyde [3] Benzoic acid [4] Benzene
- Q.85** In a set of reactions acetic acid yielded a product D. $\text{CH}_3\text{COOH} \xrightarrow{\text{SOCl}_2} \text{A} \xrightarrow[\text{Anhr. AlCl}_4]{\text{Benzene}} \text{B} \xrightarrow{\text{HCH}} \text{C} \xrightarrow{\text{HOH}} \text{D}$
 The structure of D would be **[CPMT 2005]**
- [1] 
- [2] 
- [3] 
- [4] 
- Q.86** Among the following acids which has the lowest pK_a value ? **[AIEEE 2005]**
 [1] $(\text{CH}_3)_2\text{CH}-\text{COOH}$ [2] $\text{CH}_3\text{CH}_2\text{COOH}$
 [3] CH_3COOH [4] HCOOH

Q.87 The decreasing order of nucleophilicity among the nucleophiles

[AIEEE 2005]



[1] (b), (c), (a), (d)

[2] (c), (b), (a), (d)

[3] (a), (b), (c), (d)

[4] (d), (c), (b), (a)

Q.88 The reaction $\text{R}-\text{C}(=\text{O})\text{X} + \text{Nu}^- \rightarrow \text{R}-\text{C}(=\text{O})\text{Nu} + \text{X}^-$ is fastest when X is

[AIEEE 2005]

[1] OC_2H_5

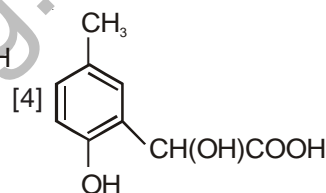
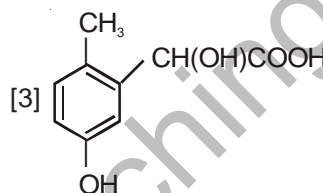
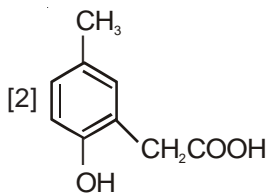
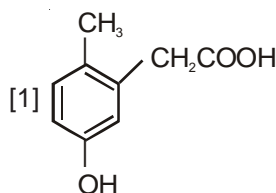
[2] OCOR

[3] Cl

[4] NH_2

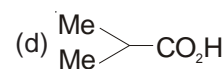
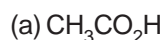
Q.89 p-cresol reacts with chloroform in alkaline medium to give the compound A which adds hydrogen cyanide to form, the compound B. The latter on acidic hydrolysis gives chiral carboxylic acid. The structure of the carboxylic acid is

[AIEEE 2005]



Q.90 The correct order of increasing acid strength of the compounds is

[AIEEE 2006]



[1] $d < a < c < b$

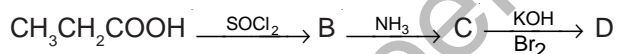
[2] $d < a < b < c$

[3] $a < d < c < b$

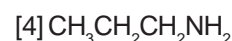
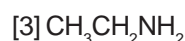
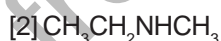
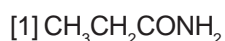
[4] $b < d < a < c$

Q.91 In a set of reactions propionic acid yielded a compound D.

[CPMT 2006]



The structure of D would be



Answer Key

Qus.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	3	2	4	1	4	1	1	3	1	2	2	2	2	1	2	4	1	3	1	2
Qus.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	4	4	1	2	1	4	3	1	1	4	1	1	2	3	1	1	3	1	1	2
Qus.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	1	3	4	2	4	2	3	1	1	2	2	2	1	4	3	2	2	3	4	1
Qus.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Ans.	3	2	4	3	3	1	3	1	2	3	1	2	2	1	1	3	2	2	4	2
Qus.	81	82	83	84	85	86	87	88	89	90	91									
Ans.	3	1	4	2	3	4	1	3	4	2	3									