ORGANIC CHEMISTRY

NEET

CRASH COURSE

CARBOXYLIC ACID & IT'S DERIVATIVES

SMART ACHIEVERS

JEE | NEET | FOUNDATION

587, Nitikhand-1, Indirapuram, Gzb.

7292077839 / 7292047839 | smartachievers.online

A Unit of SMARTACHIEVERS LEARNING Pvt. Ltd., Delhi

CARBOXYLIC ACID & IT'S DERIVATIVES

Q.1 Which of the following compounds gives carbondioxide with $NaHCO_3$?
(1) Acetic acid (2) Hexanol (3) Phenol (4) Acetylene

Q.2 Carboxylic acid group can be detected by -
(1) Sodium bisulphite test (2) Fehling's solution test
(3) Tollen's reagent (4) With $NaHCO_3$

Q.3 Which of the following will undergoes decarboxylation on heating?
(1) Succinic acid (2) Phthalic acid (3) Malonic acid (4) Glutaric acid

Q.4 Reducing property of formic acid is due to the presence of :
(1) – OH (2) $-\overset{\overset{O}{\|}}{C}-H$ (3) $-\overset{\overset{O}{\|}}{C}-OH$ (4) All of these

Q.5 Which acid can be oxidised by Fehling solution:
(1) Malonic acid (2) Acetic acid (3) Oxalic acid (4) formic acid

Q.6 The Hell-Volhard Zelinsky reaction is used for preparing a/an -
(1) β-Haloacid (2) γ-Haloacid (3) Acid halide (4) α-Haloacid

Q.7 Carboxylic acids do not give the characterstic properties of -
(1) R – group (2) – COOH group (3) > C = O group (4) None is correct

Q.8 Which of the following can be detected by carbylamine reaction:
(1) Urea (2) CH_3CONH_2 (3) $C_2H_5NH_2$ (4) All of above

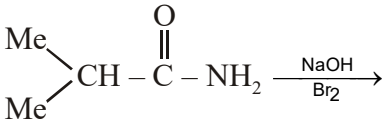
Q.9 Dry distillation of calcium acetate gives -
(1) Acetaldehyde (2) Acetone (3) Ethane (4) Propane

Q.10 Consider the following reaction:

$$CH_3-\overset{\overset{O}{\|}}{C}-OH + CH_3-OH \underset{}{\overset{H^{\oplus}}{\rightleftharpoons}} CH_3-\overset{\overset{O}{\|}}{C}-O-CH_3 + HOH$$

True about the above reaction is:
(1) Product is having smell like Rotten egg
(2) Nucleophilic addition followed by elimination reaction
(3) follows $A_{AC'}$ mechanism (4) it is irriversible reaction

Q.11 Weakest acid among the following :
(1) Acetic acid (2) Phenol (3) Water (4) Acetylene

Q.12  In the above reaction the product is :

(1) $Me_2CH–NH_2$ (2) Me_2CHOH (3) MeCHO (4) Me $CH_2–\overset{\overset{O}{\|}}{C}–NH_2$

Q.13 Amino acids usually exists in the form of Zwitter Ions. This means that it consists of :
(1) The basic group $–NH_3^+$ and the acid group $–CO_2^-$
(2) The basic group $–NH_2$ and the acid group –COOH
(3) No acidic or basic group
(4) The basic group $–COO^-$ and the acidic group NH_3^+

Q.14 Consider the acidity of the carboxylic acids :
[a] PhCOOH [b] $o–NO_2C_6H_4COOH$
[c] $p–NO_2C_6H_4COOH$ [d] $m–NO_2C_6H_4COOH$
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.15 Carboxylic acids on reduction with $LiAlH_4$ gives
(1) Aldehydes (2) Secondary alcohols (3) Ketones (4) Primary alcohols

Q.16 The reduction of benzoyl chloride with Pd and $BaSO_4$ produces
(1) Benzyl chloride (2) Benzaldehyde (3) Benzoic acid (4) Benzene

Q.17 Among the following acids which has the lowest pK_a value ?
(1) $(CH_3)_2CH – COOH$ (2) CH_3CH_2COOH
(3) CH_3COOH (4) HCOOH

Q.18 In the following sequence of reaction A is-

$$A \xrightarrow{PCl_3} B \xrightarrow{KCN} B \xrightarrow{H_2/Ni} CH_3 – CH_2 – NH_2$$

(1) CH_2CH_2Cl (2) CH_3OH (3) CH_3CN (4) CH_3CH_2OH

Q.19 Formic acid on heating gives-
(1) $CO + H_2O$ (2) $CO_2 + H_2$ (3) Formic anhydride (4) Oxalic acid

Q.20 Which one is known as tear gas
(1) H CHO (2) CH_3 COCl (3) $COCl_2$ (4) CCl_3 NO_2

Q.21 Carboxylic acids can not be prepared by the hydrolysis of -
(1) Acid amides (2) Acid chlorides (3) Acid halide (4) Alkyl halides

Q.22 The name of the following rection is associated with the following scientists-

$$CH_3CH_2COOH + Br_2 \xrightarrow[P_4/Br_2]{} CH_3\underset{\underset{Br}{|}}{CH} – COOH$$

(1) Hoffmann (2) Friedel & Crafts
(3) Wurtz and Fitting (4) Hell, Volhard and Zelinski

Q.23 In reaction $HCOOH + CH_3COOH \xrightarrow[\Delta]{MnO}$ X product X is :

(1) HCHO (2) $CH_3-\overset{\overset{O}{\|}}{C}-H$ (3) $CH-\overset{\overset{O}{\|}}{C}-O-C_2H_5$ (4) $H-\overset{\overset{O}{\|}}{C}-O-C_2H_5$

Q.24 In a set of the given reactions, acetic acid yielded a product C

$CH_3COOH + PCl_5 \rightarrow A \xrightarrow[\text{anh. } AlCl_3]{C_6H_5} B \xrightarrow[\text{ether}]{C_2H_5MgBr} C.$

Product C would be :

(1) $CH_3-\overset{\overset{C_2H_5}{|}}{C}(OH)C_6H_5$ (2) $CH_3CH(OH)C_2H_5$ (3) $CH_3COC_6H_5$ (4) $CH_3CH(OH)C_6H_5$

Q.25 Which of the following acids has the smallest dissociation constant :

(1) $CH_3CHFCOOH$ (2) FCH_2CH_2COOH (3) $BrCH_2CH_2COOH$ (4) $CH_3CHBrCOOH$

Q.26 When CH_2=CH–COOH is reduced with $LiAlH_4$, the compound obtained will be :

(1) CH_3–CH_2–COOH (2) CH_2=CH–CH_2OH

(3) CH_3–CH_2–CH_2OH (4) CH_3–CH_2–CHO

Q.27 On mixing ethyl acetate with aqueous sodium chloride, the composition of the resultant solution is :

(1) $CH_3Cl + C_2H_5COONa$ (2) $CH_3COONa + C_2H_5OH$

(3) $CH_3COCl + C_2H_5OH + NaOH$ (4) $CH_3COOC_2H_5 + NaCl$

Q.28 Which of the following will not undergo Hell-Volhard Zelinsky (HVZ) reaction ?

(1) HCOOH (2) CH_3 COOH (3) CH_3 CH_2 COOH (4) CH_3 CHBrCOOH.

Q.29 Identify Z in the following reaction sequence

$$CH_3I \xrightarrow[\text{Ether}]{Mg} X \xrightarrow[(ii)\ H_3O^+]{(i)\ \text{Dry ice}} Y \xrightarrow[\text{Red P}]{Cl_2} Z$$

(1) CH_3COOH (2) CH_3MgI (3) CH_3COCl (4) $ClCH_2COOH$.

Q.30 The reaction : $RCOOAg + Br_2 \xrightarrow{CCl_4, \text{Reflux}} R–Br + AgBr + CO_2$ is called

(1) Wurtz reaction (2) Hunsdiecker reaction

(3) Friedel-Crafts reaction (4) Kolbe's reaction

Q.31 The reaction, $CH_3COOH + CH_3OH \xrightarrow{H^+} CH_3COOCH_3 + H_2O$ is called

(1) Acidification reaction (2) Dehydration reaction

(3) Dehydrogenation reaction (4) Esterification reaction

Q.32 A fruity smell is produced by the reaction of C_2H_5OH with :

(1) CH_3COCH_3 (2) CH_3COOH (3) PCl_5 (4) CH_3CHO

Q.33 Benzoyl chloride on treatment with ammonia gives

(1) Benzamide (2) Acetamide (3) Benzylamine (4) Benzoic acid

Q.34 The decreasing order of reactivity towards nucleophilic acyl substitution is
(i) CH_3COCl (ii) $CH_3COOC_2H_5$, (iii) CH_3CONH_2 (iv) $(CH_3CO)_2O$

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

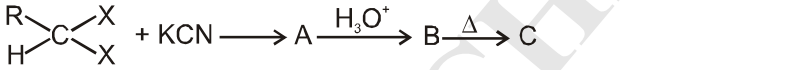
Q.35 An anhydride R′COOCOR on reduction with $LiAlH_4$ will give
(1) RCH_2OH and R′OH (2) $R'CH_2OH$ and ROH
(3) $R'CH_2OH$ and RCH_2OH (4) R′OH and ROH.

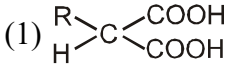
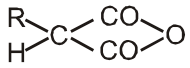
Q.36 The product formed by the reaction of acetamide with Br_2 in presence of NaOH is :
(1) CH_3CN (2) CH_3CHO (3) CH_3CH_2OH (4) CH_3NH_2

Q.37 $Ph - CO - NH_2 \xrightarrow[\Delta]{KOBr}$ Product is :
(1) Ph–CH_3 (2) Ph–CHO (3) Ph–CH_2–NH_2 (4) Ph–NH_2

Q.38 Hydrolysis of hydrogen cyanide results in the formation of
(1) Formic acid (2) Acetic acid (3) Formaldehyde (4) Acetaldehyde.

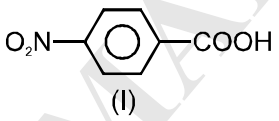
Q.39 The final product in the following reaction is :

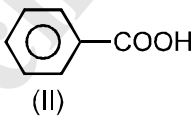


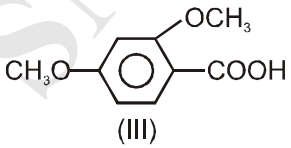
(1)  (2) R–CH_2–COOH (3)  (4) 1 and 2 both

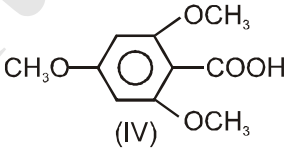
Q.40 In Hunsdiecker reaction
(1) Number of carbon atoms decreased. (2) Number of carbon atoms increased
(3) Number of carbon atoms remains same (4) May be increase or decrease

Q.41 Give the order of ease of the esterification of the following acid


(I)


(II)

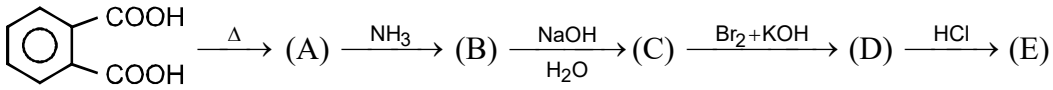

(III)


(IV)

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

Q.42 Starting from propanoic acid, the following reactions were carried out
Propanoic acid $\xrightarrow{SOCl_2}$ X $\xrightarrow{NH_3}$ Y $\xrightarrow{Br_2+KOH}$ Z (the compound Z is)

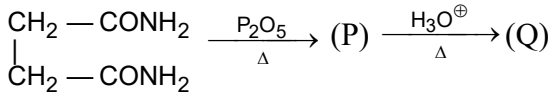
(1) CH_3–CH_2–Br (2) CH_3–CH_2–NH_2 (3) CH_3–CH_2–C(=O)–Br (4) CH_3–CH_2–CH_2–NH_2

Q.43 

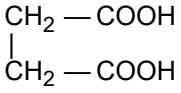
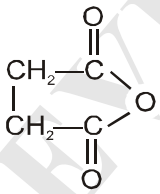
In this reaction the product (E) is :

(1) o-nitrobenzoic acid (2) Salicylic acid

(3) anthranilic acid (4) Crotonic acid

Q.44 

The product (Q) is

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

ASSERTION AND REASON

Directions : Each of these questions contains an Assertion followed by reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements.

(1) If both assertion and reason are true and reason is the correct explanation of assertion.

(2) If both assertion and reason are true but reason is not the correct explanation of assertion.

(3) If Assertion is true but reason is false.

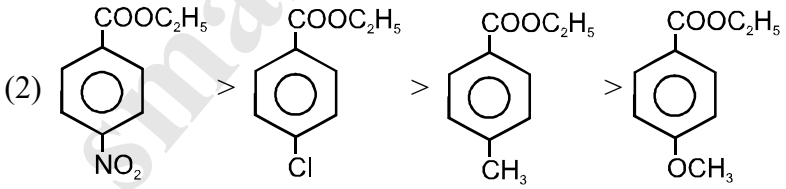
(4) If both assertion and reason are false.

Q.45 **Assertion :** Acetic acid does not give haloform reaction.
Reason : Acetic acid has no α-hydrogen.

Q.46 **Assertion :** Carboxylic acids have a carbonyl group but they do not give the test of carbonyl group.
Reason : Due to resonance, the double bond character of carbonyl group is greatly reduced.

Q.47 **Assertion :** The order of base catalysed hydrolysis of ester is

(1) $CH_3–COOCH_3 > CH_3–COOC_2H_5 > CH_3–COOCH(CH_3)_2$.

(2) 

Reason : S_N2 Th reaction is sterically as well as electronically controlled reaction.

Q.48 **Assertion :** Acid catalysed hydrolysis of ester is reversible while base catalysed hydrolysis is irreversible.
Reason : In acid catalysed ester hydrolysis carboxylic acid is formed on which nucleophilic attack of alcohol is possible but in base catalysed ester hydrolysis carboxylate anion is formed on which nucleophilic attack is not possible.

Q.49 **Assertion :** p-Hydroxybenzoic acid has a lower boiling point than o-hydroxybenzoic acid.
Reason : o-Hydroxybenzoic acid has intermolecular hydrogen bonding.

PREVIOUS YEAR QUESTIONS

(3) acetyl chloride (4) carbon dioxide

ANSWER KEY

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