

# ORGANIC CHEMISTRY

NEET

CRASH COURSE

CARBONYL COMPOUND

**SMART ACHIEVERS**  
**JEE | NEET | FOUNDATION**

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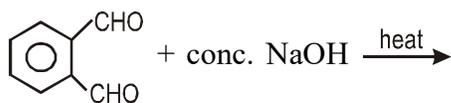
A Unit of SMARTACHIEVERS LEARNING Pvt. Ltd., Delhi

**CARBONYL COMPOUND**

- Q.1 Primary alcohols on first oxidation give  
(1) aldehydes (2) ketones (3) both of the above (4) none of the above
- Q.2 Isopropyl alcohol on oxidation forms  
(1) acetone (2) propionic acid (3) acetic acid (4) propene
- Q.3 Hydrolysis of benzal chloride gives  
(1) benzyl alcohol (2) benzoic acid (3) benzaldehyde (4) benzophenone
- Q.4 When  $\text{CH}_3\text{MgI}$  reacts with  $\text{CH}_3\text{CN}$  and the product is hydrolysed, we get-  
(1) Propanal (2) Acetone (3) Formaldehyde (4) Acetaldehyde
- Q.5 Reaction of ethyl formate with excess of  $\text{CH}_3\text{MgI}$  followed by hydrolysis gives:  
(1) n-Propyl alcohol (2) Ethanal (3) Propanal (4) Isopropyl alcohol
- Q.6 When propyne reacts with 20%  $\text{H}_2\text{SO}_4$  & 1%  $\text{HgSO}_4$ , we get-  
(1) Acetaldehyde (2) Propanaldehyde (3) Acetone (4) Formic acid
- Q.7 Ethylidene chloride ( $\text{CH}_2\text{CHCl}_2$ ) on hydrolysis with  $\text{NaOH}$  gives -  
(1)  $\text{CH}_3\text{CHO}$  (2)  $\text{CH}_3\text{COCH}_3$  (3)  $\text{CH}_3\text{CH}(\text{OH})_2$  (4)  $\text{C}_2\text{H}_5\text{OH}$
- Q.8 Which aldehyde is insoluble in  $\text{H}_2\text{O}$ -  
(1) Propanal (2) Ethanal (3) Butanal (4) Heptanal
- Q.9 In Cannizzaro reaction-  
(1) Aldehyde is converted into alcohol (2) Alcohol is converted into aldehyde  
(3) Primary amine is converted into isocyanide (4) Acid is converted into amine
- Q.10 For Cannizzaro's reaction, which is necessary-  
(1) Presence of  $\alpha\text{-C}$  (2) Absence of  $\alpha\text{-C}$   
(3) Presence of  $\alpha\text{-H}$  (4) Absence of  $\alpha\text{-H}$
- Q.11 Which of the following does not turn schiff's reagent to pink-  
(1) Formaldehyde (2) Benzaldehyde (3) Acetone (4) Acetaldehyde
- Q.12 Phenylglyoxal,  $\text{C}_6\text{H}_5\text{COCHO}$ , on heating with concentrated  $\text{NaOH}$  gives  
(1)  $\text{C}_6\text{H}_5\text{COONa}$  and  $\text{CH}_3\text{OH}$  (2)  $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$  and  $\text{HCOONa}$   
(3)  $\text{C}_6\text{H}_5\text{CHOHCOONa}$  (4)  $\text{C}_6\text{H}_5\text{COONa}$  and  $\text{HCOONa}$
- Q.13 Which of the following will not undergo aldol condensation ?  
(1) Acetaldehyde (2) Propionaldehyde  
(3) Trideuterio acetaldehyde (4) Benzaldehyde

- Q.14 In the Cannizzaro reaction :  $2\text{PhCHO} \xrightarrow{\text{OH}^-} \text{PhCH}_2\text{OH} + \text{PhCOO}^-$  the slowest step is
- (1) The attack of  $\text{OH}^-$  at the carboxyl group
  - (2) The transfer of hydride to the carbonyl group
  - (3) The abstraction of proton from the carboxylic acid
  - (4) The deprotonation of  $\text{PhCH}_2\text{OH}$

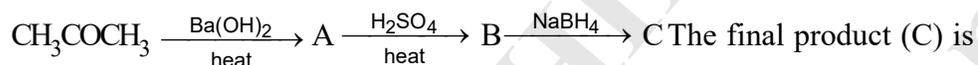
- Q.15 The reaction



produces

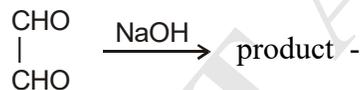


- Q.16 Consider the following sequence of reactions.



- (1)  $(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}_2\text{COCH}_3$
- (2)  $(\text{CH}_3)_2\text{C} = \text{CHCOCH}_3$
- (3)  $(\text{CH}_3)_2\text{CHCH}_2\text{CHOHCH}_3$
- (4)  $(\text{CH}_3)_2\text{C} = \text{CHCHOHCH}_3$

- Q.17 The product formed in the following reaction will be -



- (1)
- (2)
- (3)
- (4) All of these

- Q.18 Mixture of  $\text{C}_6\text{H}_5\text{CHO}$  and  $\text{HCHO}$  is treated with  $\text{NaOH}$  then cannizzaro's reaction involves -

- (1) Oxidation of  $\text{HCHO}$
- (2) Reduction of  $\text{HCHO}$  and Oxidation of  $\text{C}_6\text{H}_5\text{CHO}$
- (3) Reduction of  $\text{C}_6\text{H}_5\text{CHO}$
- (4) Both 1 & 3

- Q.19 Acetophenone can be obtained by the distillation of:

- (1)  $(\text{C}_6\text{H}_5\text{COO})_2\text{Ca}$
- (2)  $(\text{CH}_3\text{COO})_2\text{Ca}$
- (3)  $(\text{C}_6\text{H}_5\text{COO})_2\text{Ca}$  and  $(\text{CH}_3\text{COO})_2\text{Ca}$
- (4)  $(\text{C}_6\text{H}_5\text{COO})_2\text{Ca}$  and  $(\text{HCOO})_2\text{Ca}$

- Q.20 Gem dihalide on hydrolysis gives:

- (1) Vic diol
- (2) Gem diol
- (3) Carbonyl compound
- (4) Carboxylic acid

- Q.21 Acetone can be converted into pinacol by :

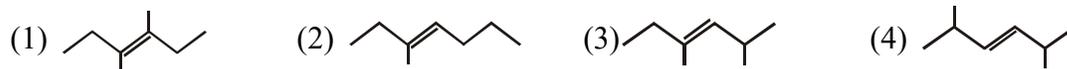
- (1)  $\text{Mg}/\text{Hg}/\text{H}_2\text{O}$
- (2)  $\text{Zn}/\text{Hg}/\text{HCl}$
- (3)  $\text{Na}/\text{Hg}/\text{H}_2\text{SO}_4$
- (4) All of these

- Q.22 Acetal or ketal is:

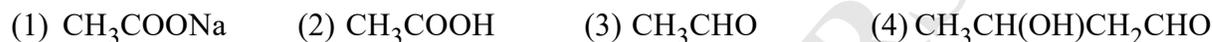
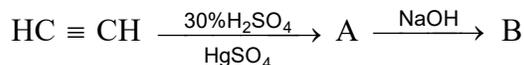
- (1) Vic dialkoxy compound
- (2)  $\alpha, \omega$ -dialkoxy compound
- (3)  $\alpha$ -alkoxy alcohol
- (4) Gem dialkoxy compound

- Q.23 Which will give silver mirror test with Tollens reagent :  
(1)  $C_6H_5CHO$  (2)  $CH_3-CHO$  (3)  $HCOOH$  (4) All of these
- Q.24 Acetaldehyde cannot give:  
(1) Iodoform test (2) Lucas test (3) Benedict test (4) Tollens test
- Q.25  $CH_3-\overset{O}{\parallel}C-H$  and  $CH_3-\overset{O}{\parallel}C-CH_3$  is differentiated by  
(1) Tollen's reagent (2) Lucas test (3) Iodoform (4)  $NaHSO_3$
- Q.26 Isopropyl alcohol on heating with Cu at  $300^\circ C$  forms  
(1) propanone (2) ethanol (3) ethane (4) both (1) and (2)
- Q.27 What is the function of  $BaSO_4$  in Rosenmund reaction -  
(1) To stop further oxidation of aldehyde (2) To stop further reduction of aldehyde  
(3) Act as a poisonous catalyst (4) It checks the reactivity of Pd.
- Q.28 Acetone gives test with-  
(1) 2,4 Dinitro phenyl hydrazine (2) Fehling solution  
(3) Schiff's reagent (4) All
- Q.29 Acetone shows similarity with acetaldehyde in reacting to-  
(1) Schiff's reagent (2) Fehling solution (3) Grignard reagent (4) Tollen's reagent
- Q.30 Aldehydes and ketones can be reduced to corresponding hydrocarbons by-  
(1) Refluxing with strong acids (2) Passing the vapours over  $PbO_2$   
(3) Refluxing with zinc amalgam (4) Refluxing with strong base
- Q.31 Which of the following can be used to differentiate between ethanal and propanal-  
(1) Ammonical  $AgNO_3$  (2) Ammonical  $AgNO_3$  in presence of tartrate ions  
(3)  $I_2$  in presence of base (4) Ammonical  $AgNO_3$  in presence of citrate ions
- Q.32 Fehling's solution -B is-  
(1)  $NH_4OH$  (2)  $Cu(OH)_2$  (3)  $CuO$  (4)  $Cu_2O$
- Q.33 Acetaldehyde on warming with fehling solution gives a red precipitate of:  
(1) Elemental copper (2) Cuprous oxide  
(3) Cupric oxide (4) Mixture of all of the above
- Q.34 Formaldehyde reacts with 50% aqueous alkali to form:  
(1) A mixture of methanol and sodium acetate.  
(2) A mixture of ethanol and sodium formate.  
(3) A mixture of methanol and sodium formate.  
(4) A resinous mass.

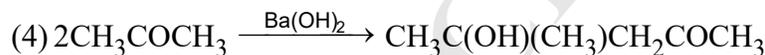
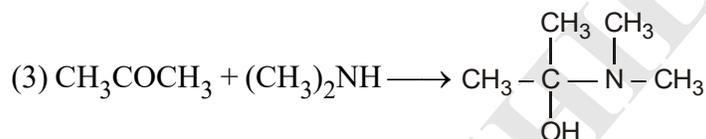
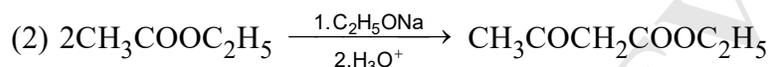
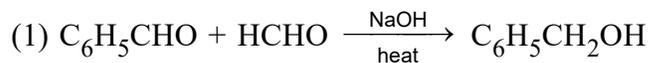
Q.35 Which of the following alkenes is most suitable for the preparation butanone by ozonolysis -



Q.36 Predict the product 'B' in the sequence of reaction



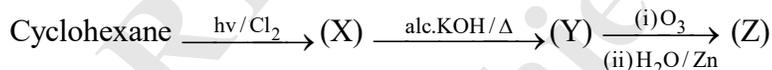
Q.37 Which of the following is an example of aldol condensation ?



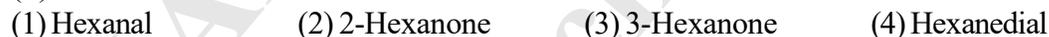
Q.38 A cyanohydrin of a compound (X) on hydrolysis gives an  $\alpha$ -hydroxy acid which shows optical activity after resolution. The compound (X) is



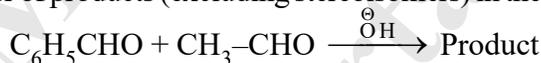
Q.39 In the reaction sequence:



(Z) will be :



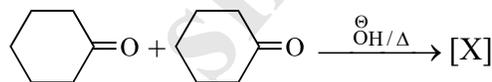
Q.40 Number of products (excluding stereoisomers) in the given reaction :



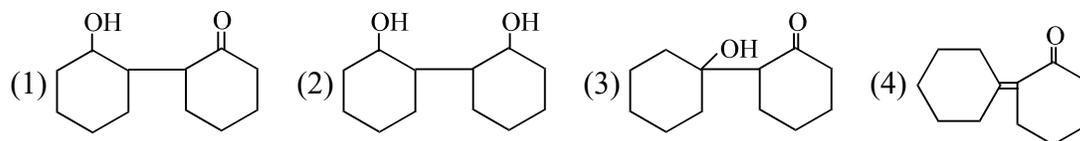
will be

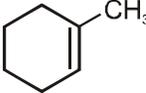


Q.41 In the reaction :

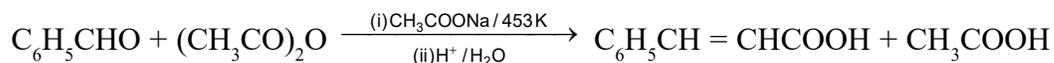


[X] will be :



- Q.42 Cyanohydrin of which compound on hydrolysis will give lactic acid?  
 (1)  $C_6H_5CHO$  (2)  $HCHO$  (3)  $CH_3CHO$  (4)  $CH_3-CH_2-CHO$
- Q.43 On heating calcium propionate, the product formed is  
 (1) 3-Pentanone (2) 2-Pentanone  
 (3) 3-Methyl-2-butanone (4) Propanone
- Q.44  On reductive ozonolysis yields  
 (1) 6-oxoheptanal (2) 6-oxoheptanoic acid  
 (3) 6-hydroxyheptanal (4) 3-hydroxypentanal
- Q.45 Ketones are less reactive than aldehydes because  
 (1) the + I-effect of the alkyl groups increases the electron deficiency of the carbonyl carbon  
 (2) the + I-effect of the alkyl groups decreases the electron deficiency of the carbonyl carbon  
 (3) of steric hindrance to the attacking nucleophile  
 (4) both (2) and (3) options are correct
- Q.46 Which of the following is most reactive towards nucleophilic addition reactions?  
 (1)  $CH_3COCH_3$  (2)  $CH_3CH_2COCH_2CH_3$  (3)  $Ph-\overset{\overset{O}{\parallel}}{C}-CH_3$  (4)  $Ph-\overset{\overset{O}{\parallel}}{C}-Ph$
- Q.47 The structure of the addition product formed when acetone reacts with a concentrated aqueous solution of sodium bisulphite is :  
 (1)  $\begin{matrix} CH_3 & & OSO_2Na \\ & \diagdown & / \\ & C & \\ & / & \diagdown \\ CH_3 & & OH \end{matrix}$  (2)  $\begin{matrix} CH_3 & & OSO_2H \\ & \diagdown & / \\ & C & \\ & / & \diagdown \\ CH_3 & & ONa \end{matrix}$  (3)  $\begin{matrix} CH_3 & & SO_3H \\ & \diagdown & / \\ & C & \\ & / & \diagdown \\ CH_3 & & ONa \end{matrix}$  (4)  $\begin{matrix} CH_3 & & OH \\ & \diagdown & / \\ & C & \\ & / & \diagdown \\ CH_3 & & SO_3Na \end{matrix}$
- Q.48 Oximes are formed by the reaction of aldehydes and ketones with :  
 (1)  $NH_3$  (2)  $NH_2NH_2$  (3)  $NH_2OH$  (4)  $NH_2CONHNH_2$
- Q.49 The compound which does not react with hydroxylamine is  
 (1)  $CH_3COOH$  (2)  $CH_3COCH_3$  (3)  $CH_3CHO$  (4)  $HCHO$ .
- Q.50 The structure for acetaldehyde semicarbazone is  
 (1)  $CH_3CH = NCONHNH_2$  (2)  $CH_3CH = NNHCONH_2$   
 (3)  $CH_3CH = NOH$  (4)  $CH_3CH = NNH_2$
- Q.51 Aldehyde with  $NH_2-NH_2$  forms :  
 (1) hydrazones (2) aniline (3) nitrobenzene (4) none of these
- Q.52 Treatment of propionaldehyde with dilute  $NaOH$  solution gives  
 (1)  $CH_3CH_2COOCH_2CH_2CH_3$  (2)  $CH_3CH_2CHOHCH(CH_3)CHO$   
 (3)  $CH_3CH_2CHOHCH_2CH_2CHO$  (4)  $CH_3CH_2COCH_2CH_2CHO$

Q.53 The reaction,



is called

- (1) Benzoin condensation (2) Aldol condensation  
(3) Etard reaction (4) Perkin's reaction

Q.54 Tollen's reagent is

- (1) Ammonical cuprous chloride (2) Ammonical cuprous oxide  
(3) Ammonical silver bromide (4) Ammonical silver nitrate

Q.55 Aldehydes can be oxidised by

- (1) Tollen's reagent (2) Fehling solution (3) Benedict solution (4) All.

Q.56 When  $\text{C}_6\text{H}_5\text{NH}_2$  heated with  $\text{C}_6\text{H}_5\text{CHO}$  the product is :-

- (1) Schiff's base (2) Benzoin (3) Azoxy benzene (4) Unsaturated acid

Q.57 A compound gives a yellow precipitate on warming with iodine and aq. solution of NaOH. Its vapour density is 29. the compound is :

- (1)  $\text{CH}_3\text{CH}_2\text{CHO}$  (2)  $\text{CH}_3\text{COCH}_3$  (3)  $\text{CH}_3\text{CHOHCH}_3$  (4)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

### 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.58 **Assertion :** Hydroxyketones are not directly used in Grignard reaction.

**Reason :** Grignard reagents react with hydroxyl group.

Q.59 **Assertion :** Isobutanal does not give iodoform tests.

**Reason :** It does not have  $\alpha$ -hydrogen

Q.60 **Assertion :** 2-butenal lacks enolisable H-atom,  $\alpha$  to carbonyl group, still it has sufficient acidic character.

**Reason :** The conjugate base of 2-butenal is stabilised by resonance.

Q.61 **Assertion :** Carbonyl compounds take part in nucleophilic addition reactions.

**Reason :** These reactions are initiated by nucleophilic attack at the electron deficient carbon atom.

