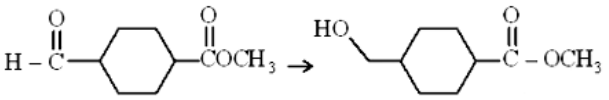
Ultimate KCET Crash Course 2026

CHEMISTRY

DPP: 1

ALDEHYDES, KETONES & CARBOXYLIC ACIDS

Q1 Which reducing agent, would you use to carry out the following transformation?



(A) $LiAlH_4$ (B) $NaBH_4$

(C) Na/NH_3 (D) B_2H_6/THF

Q2 When benzylalcohol is oxidized with $KMnO_4$ followed by acidification, the product obtained is:

(A) Benzaldehyde (B) Benzoic acid

(C) CO_2 and H_2O (D) None of these

Q3 In the following reaction,

$$C_6H_5COOCH_3 \xrightarrow[H_2O^+]{LiAlH_4} A + B$$

A and B are respectively

(A) $C_6H_5CH_2OH$ + HCOOH

(B) $C_6H_5CH_2OH$ + CH_3OH

(C) C_6H_5OH + CH_3COOH

(D) C_6H_5COOH + CH_3OH

Q4 When propionic acid is treated with aqueous sodium bicarbonate, CO_2 is liberated. The C of CO_2 comes from

(A) Methyl group

(B) Carboxylic acid group

(C) Methylene group

(D) Bicarbonate group

Q5 Arrange the following carbonyl compounds in increasing order of their reactivity in nucleophilic addition reaction.

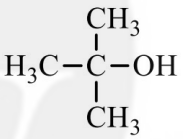
(A) Butanone < propanone < propanal < ethanal

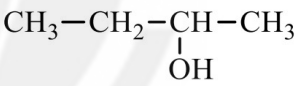
(B) Butanone < propanal < propanone < ethanal

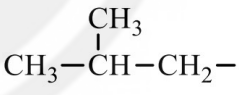
(C) Butanone < ethanal < propanone < propanal

(D) Butanone < ethanal < propanal < propanone

Q6 Reaction of propanone with methyl magnesium bromide followed by hydrolysis gives:

(A) 

(B) 

(C) 

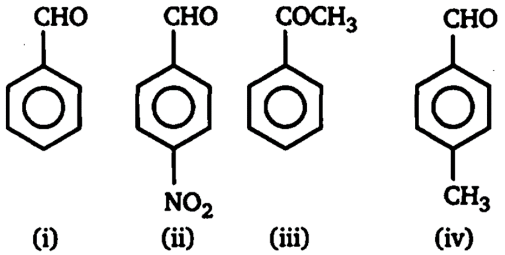
(D) $CH_3-CH_2-CH_2-CH_2-OH$

Q7 Which of the following **cannot** react with Fehling solution?

(A) HCHO (B) C_6H_5CHO

(C) Glucose (D) CH_3CHO

Q8 Arrange the following carbonyl compounds in decreasing order of their reactivity in nucleophilic addition reaction.



(A) ii > iii > i > iv

(B) ii > i > iv > iii

(C) iii > ii > i > iv

(D) iii > i > iv > ii

Q9 which of the following compound can give acetone only on ozonalysis?

(A) $CH_3 - CH = CH - CH_3$

(B) $(CH_3)_2C = C(CH_3)_2$

(C) $CH_3 - \underset{\underset{CH_3}{|}}{C} = CH - CH_3$

(D) $CH_3\,CH = CH_2$

Q10 The reagent used in Gattermann-Koch aldehyde synthesis is:

(A) $Pb/BaSO_4$

(B) alkaline $KMnO_4$

(C) acidic $KMnO_4$

(D) CO + HCl, anhy $AlCl_3$

Q11 The reagent with which both acetaldehyde and acetone react easily is:

(A) Fehling's solution

(B) Grignard reagent

(C) Schiffs reagent

(D) Tollen's reagent

Q12 How will you convert butan-2-one to propanoic acid?

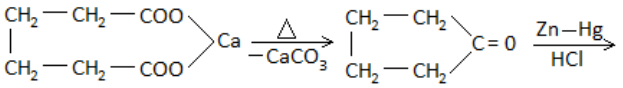
(A) Tollens' reagent

(B) Fehling's solution

(C) (i) NaOH + I_2, (ii) H^+/H_2O

(D) 2,4-Dinitrophenylhydrazine

Q13 Ideratify the product Y in the followimg reaction sequence



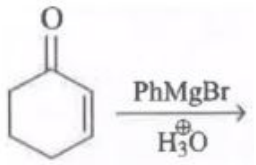
(A) Pentane

(B) Cyclobutane

(C) Cyclopentane

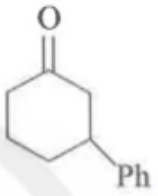
(D) Cyclopentanone

Q14

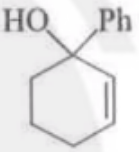


Product

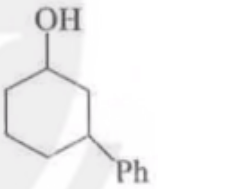
(A)



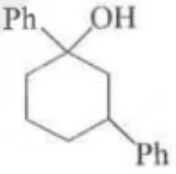
(B)



(C)



(D)



Q15 The increasing order of the reactivity of the following compounds in nucleophilic addition reaction is:

Propanal, Benzaldehyde, Propanone, Butanone

(A) Benzaldehyde < Propanal< Propanone < Butanone

(B) Butanone < Propanone < Benzaldehyde < Propanal

(C) Propanal< Propanone < Butanone <Benzaldehyde

(D) Benzaldehyde < Butanone < Propanone < Propanal

Q16 The reducing agent used in the Stephen reduction is:

(A) Sn/HCl

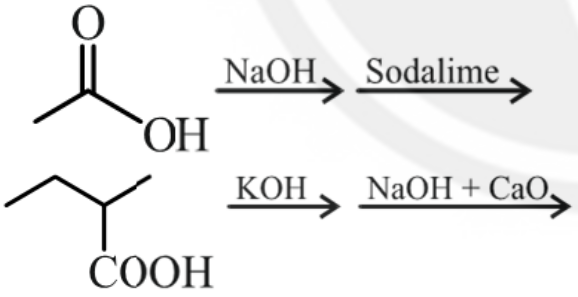
(B) Zn/HCl

(C) $SnCl_2$/HCl

(D) Na−Hg/alcohol

Q17 Which of the following reaction will produce an alkane which have two monochlorinated structural derivatives, on halogenation?

(i) $C_4H_{10} \xrightarrow{Cl_2/hv}$ (minor) $\xrightarrow{Zn/H^+}$



(A) (i), (ii) and (iii)

(B) (i) and (ii) only

(C) (ii) and (iii) only

(D) (i) and (iii) only

Q18 Consider the reaction sequence:

$PhCOCl + H_2$, $Pd/BaSO_4$ (quinoline) x;

$X + CH_3MgBr \rightarrow y;$

$y + H_3O^+ \rightarrow z$

Z is

(A) Benzylalcohol

(B) Aceteophenone

(C) 1-phenyl ethanol

(D) 2-phenyl ethanol

Q19 Ketonic form of Acetone contains:

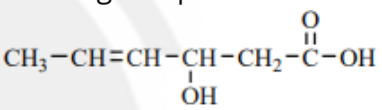
(A) 8-σ bonds and 2-π bonds

(B) 9-σ bonds and 1-π bond

(C) 7-σ bonds and 3-π bonds

(D) 4-σ bonds and 5-π bonds

Q20 What is the correct IUPAC name of the following compound?



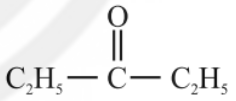
(A) 3-Hydroxyhex-4-en-1-oic acid

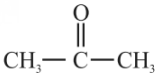
(B) 2-Hydroxyhex-5-en-1-oic acid

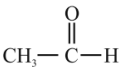
(C) 4-Hydroxyhex-2-en-6-oic acid

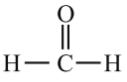
(D) 4-Hydroxyhex-3-en-5-oic acid

Q21 Which of the following carbonyl compounds carbonyl group is least hindered?

(A) 

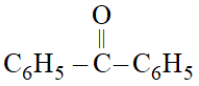
(B) 

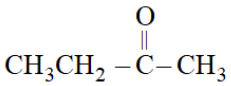
(C) 

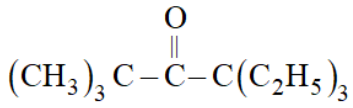
(D) 

Q22 Which of the following gives aldol condensation reaction?

(A) C_6H_5OH

(B) 

(C) 

(D) 

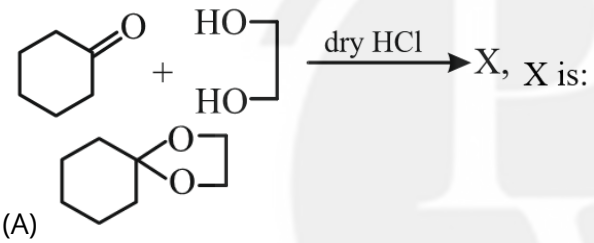
Q23 $HCHO \xrightarrow[(2)\ H^+/H_2O]{(1)\ RMgX} A$, Product (A) contain:

(A) An aldehyde

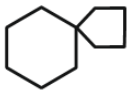
(B) A ketone

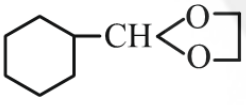
(C) A carboxylic acid

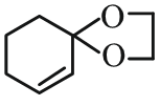
(D) A primary alcohol

Q24  X, X is:

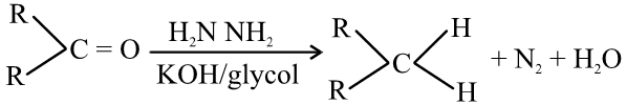
(A)

(B) 

(C) 

(D) 

Q25 Reaction



is called:

(A) Wolff-Kishner reaction

(B) Clemmenson reduction

(C) Reformatsky reaction

(D) Gattermann reaction

Q26 The positive result with 2,4-DNP test indicates the presence of:

(A) Aldehyde group (B) Ketone group

(C) Carbonyl group (D) Hydroxyl group

Q27 Trichloroacetaldehyde was subjected to Cannizzaro's reaction by using NaOH. The mixture of the products sodium trichloroacetate ion and another compound. The other compound is:

(A) 2,2,2-Trichloroethanol

(B) Trichloromethanol

(C) 2,2,2-Trichloropropanol

(D) Chloroform

Q28 A mixture of benzaldehyde and formaldehyde on heating with aqueous NaOH solution gives

(A) benzyl alcohol and sodium formate

(B) sodium benzoate and methyl alcohol

(C) sodium benzoate and sodium formate

(D) benzyl alcohol and methyl alcohol

Q29 Formation of acetal from acetaldehyde is an example of _____ reaction.

(A) electrophilic addition

(B) nucleophilic substitution

(C) electrophilic substitution

(D) nucleophilic addition

Q30 The compound B is:

$CH_3\ CH_2\ COOH \xrightarrow[red\ P]{Cl_2} A \xrightarrow{Alc.\ KOH} B$

(A) CH_3 – CHCl – COOH

(B) CH_2 = CHCOOH

(C) $CH_3\ CH_2$ OH

(D) $CH_3\ CH_2$ COCl

Answer Key

Q1	B
Q2	B
Q3	B
Q4	D
Q5	A
Q6	A
Q7	B
Q8	B
Q9	B
Q10	D
Q11	B
Q12	C
Q13	C
Q14	B
Q15	B
Q16	C
Q17	D
Q18	C
Q19	B
Q20	A
Q21	D
Q22	C
Q23	D
Q24	A
Q25	A
Q26	C
Q27	A
Q28	A
Q29	D
Q30	B

Hints & Solutions

Note: scan the QR code to watch video solution

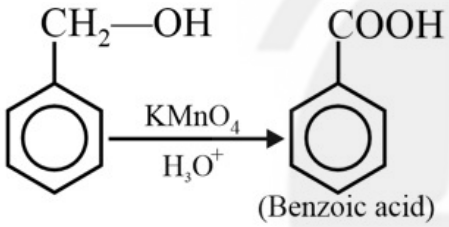
Q1 Text Solution:

$NaBH_4$ is mild reducing agent that will only reduce aldehydes, ketones, and acid chlorides into alcohols. It cannot reduce acid, ester and amides.

Video Solution:

Q2 Text Solution:

(B)



Video Solution:

Q3 Text Solution:

reduction of ester produces two moles alcohol.

Video Solution:

Q4 Text Solution:

bicarbonate group

Video Solution:

Q5 Text Solution:

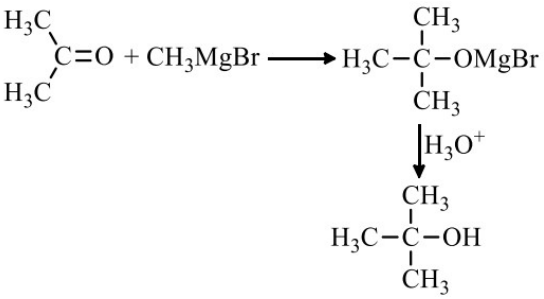
(A)

More the electron density on carbonyl group, lesser will be the reactivity towards nucleophilic addition reaction.

Video Solution:

Q6 Text Solution:

(1)



Video Solution:

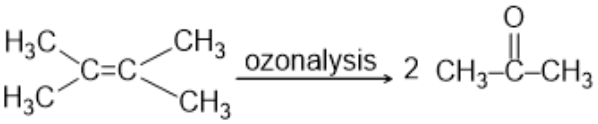
Q7 Text Solution:

C_6H_5CHO is aromatic. Aromatic aldehydes do not give Fehling test.

Video Solution:

Q8 Video Solution:

Q9 Text Solution:



Video Solution:

Q10 Text Solution:

The reagent used in Gattermann-Koch aldehyde synthesis is CO + HCl.

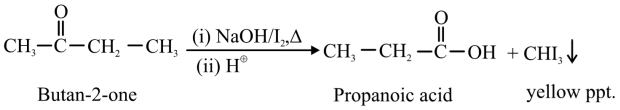
Video Solution:

Q11 Text Solution:

Both aldehydes and ketones undergo nucleophilic addition with **RMgX** (Grignard) to give alcohols, whereas Fehling's, Tollens' and Schiff's tests are selective for aldehydes (ketones like acetone generally don't react).

Video Solution:

Q12 Text Solution:



Video Solution:

Q13 Text Solution:

1. On heating $CaCO_3$ group will be removed from the compound.
2. The reagent for clemmensen reduction is $Zn - Hg$ in acidic media (conc. HCl).
3. Clemmenson reagent only reacts with aldehydes and ketones.
4. It will reduce $C = O$ group to CH_2 group.

Hence the correct option is (C).

Video Solution:

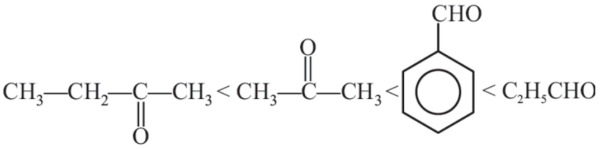
Q14 Text Solution:

Option B – PhMgBr adds to the C=O of the enone, leaving the C=C untouched, so the product is 1-phenyl-3-cyclohexen-1-ol (Ph and OH on the same carbon).

Video Solution:

Q15 Text Solution:

Increasing hindrence and electron releasing group (ERG) attached on carboxyl group decrease the reactivity. Correct order of nucleophilic addition reaction is:



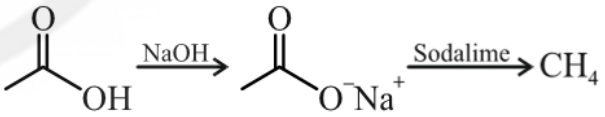
Video Solution:

Q16 Text Solution:

$SnCl_2/HCl$ is used in Stephen's reaction.

Video Solution:

Q17 Text Solution:



Rest, all produce either propane or butane.

Video Solution:

Q18 Text Solution:

Option (c) is the right answer.

$$PhCOCl_2 \xrightarrow[\text{quinoline}]{H_2,\ Pd/BaSO_4} \underset{(x)}{PhCHO}$$

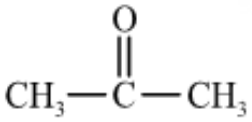
$$\xrightarrow{CH_3MgBr} \underset{(y)}{PhCH(OMgBr)CH_3}$$

$$\xrightarrow{H_3O^+} \underset{\substack{(z)\\ 1-\text{phenylethanol}}}{C_6H_5(CH)CH_3}$$

Video Solution:

Q19 Text Solution:

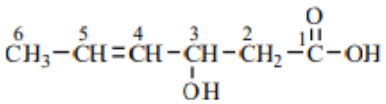
(B)



(9-σ bonds, 1-π bond)

Video Solution:

Q20 Text Solution:



3-Hydroxyhex-4-en-1-oic acid

Video Solution:

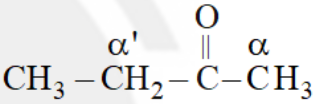
Q21 Text Solution:

Formaldehyde's carbonyl carbon is bonded only to hydrogen atoms, making it the **least sterically hindered** among the options. Other compounds have at least one alkyl substituent, increasing steric hindrance around the carbonyl center.

Video Solution:

Q22 Text Solution:

For aldol condensation, hydrogen must be present on alpha carbon.



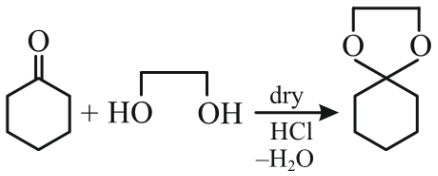
Video Solution:

Q23 Text Solution:

Grignard reagent adds RMgX to formaldehyde, giving after acid work-up R-CH_2-OH, which is a 1° alcohol.

Video Solution:

Q24 Text Solution:



Video Solution:

Q25 Text Solution:

Reduction of aldehyde/Ketone in Alkane by $NH_2 - NH_2/^-OH$ in the presence of high boiling solvent such as ethylene glycol is known as wolff kishner reduction reaction.

Video Solution:

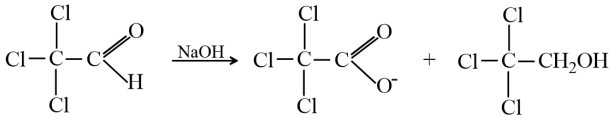
Q26 Text Solution:

Carbonyl group reacts with 2,4 DNP

Video Solution:

Q27 Text Solution:

The cannizzaro product of given reaction yields 2,2,2-trichloroethanol.



Video Solution:

Q28 Text Solution:

It is an example of cross Cannizzaro reaction where aromatic aldehyde gets reduced to alcohol and aliphatic aldehyde gets oxidised to its sodium salt (both aldehydes must not contain any a-hydrogen).

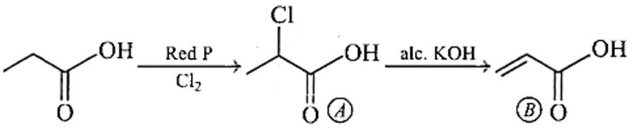
Video Solution:

Q29 Text Solution:

nucleophilic addition.

Video Solution:

Q30 Text Solution:



Video Solution: