**ALVAS P.U COLLEGE, MOODBIDRI**

**CRASH COURSE – 2019-2020**

**SUBJECT –CHEMISTRY(Answer key)-C13**

**TOPIC – Aldehydes, Ketones,Carboxylic acids and Compounds containing nitrogen**

1. Which of the following statements regarding aldehydes is not correct?
2. Addition reactions occurring across the C=O bond is electrophilic type
3. The addition reactions occurring across the C=O bond is nucleophilic type
4. Aldehydes undergo addition reactions more readily than ketones
5. The addition reactions shown by CO group is catalyzed by acids

ANS: (1)

1. Which of the following has the most acidic hydrogen?
2. 3-Hexanone 2) 2,4-Hexanedione 3) 2,5-Hexanedione 4) 2,3Hexanedione

Ans: (2), C-3 carbon has most acidic hydrogen

1. Which one of the following will be most easily dehydrated in acidic condition?
2. 4-Hydroxypentan-2-one 3) 3-Hydroxypentan-2-one
3. 2-pentanol 4) 5-Hydroxyhexan-2-one

Ans: (1), a β-keto hydroxyl compounds get easily dehydrated

1. Which of the following will react with water?
2. CHCl3 2) Cl3CCHO 3) CCl4 4) ClCH2CH2Cl

Ans: (2), chloral reacts with water to form chloral hydrate

1. The correct order of reactivity of PhMgBr with PhCOPh, CH3CHO and CH3COCH3 is
2. PhCOPh> CH3CHO > CH3COCH3 3) PhCOPh> CH3COCH3 > CH3CHO
3. CH3CHO > CH3COPh >PhCOPh 4) CH3COCH3 > CH3CHO >PhCOPh

Ans :(2), aldehydes undergo nucleophilic addition reactions more easily than ketones

1. The reduction of CH2=CH-CHO by i) Zn-Hg/HCl and ii) H2NNH2/OH-,respectively yield?
2. CH2=CHCH3 and CH2=CHCH3  3) CH3CH2CH3 and CH2=CHCH3
3. CH3CH2CHO and CH3CH2CH3 4) CH3CH2CHO and CH3CH2CHO

Ans : (3), NH2NH2/OH- reduces only C=O

1. The reagent that can be used to convert butan-2-one to propanoic acid is
2. NaOH, NaI/H+ 2) felhings solution 3) tollens reagent 4) NaOH, I2/H+

Ans: (4), it has COCH3 group which can be converted to COOH group by haloform reaction

1. In the reaction C6H5COC6H5 + NH2OH → A + PCl5 → B, the product B is
2. (C6H5)2C=NHOH 3) (C6H5)2C=NH
3. C6H5CONHC6H5 4) C6H5CH(OH)-NHC6H5

Ans : (2), it forms oxime followed by Beckmann’s rearrangement

1. The cannizaros reaction is not given by
2. Trimethylacetaldehyde 3) acetaldehyde
3. Benzaldehyde 4) formaldehyde

Ans : (3), it has presence of α-hydrogen

1. M-chlorobenzaldehyde on reaction with con.KOH at room temperature gives
2. Potassium m-chlorobenzoate and m-hydroxybenzaldehyde
3. M-hydroxybenzaldehyde and m-chlorobenzyl alcohol
4. M-chlorobenzyl alcohol and m-hydroxybenzyl alcohol
5. Potassium m-chlorobenzoate and m-chlorobenzyl alcohol

Ans : (4), it undergoes cannizaros reaction

1. Which of the following compound does not undergo aldol condensation?
2. C6H5CH2CHO 2) C6H5CHO 3) CH3COCH3 4) CH3CH2CHO

Ans : (2), it does not have presence of α-hydrogen

1. In the reaction PhCH(OH)CH(OH)CH3 + H+ → B, the compound B is
2. Ph(CH3)CH2CH2OH 3) PhCH(OH)CH2CH3
3. PhCH2COCH3 4) PhCOCOCH3

Ans : (2), it is pinnacol-pinnacolone rearrangement

1. The base catalyzed aldol condensation reaction occurs with
2. Propanal 2) benzaldehyde 3) 2,2,2-trichloroethanal 4) 2,2-dimethylpropanal

Ans : (1), rest do not have α-hydrogen

1. Among the following compounds which will not react with acetone to give a product containing C=N group?
2. C6H5NH2 2) (CH3)3N 3) NH2OH 4) C6H5NHNH2

Ans :(2), N does not have H for elimination

1. Which of the following compounds exhibit Felhing’s test – a) Acetaldehyde b) Benzaldehyde c) acetone d) Formaldehyde
2. A,b 2) b,c 3) c,d 4) a,d

Ans : (4)

1. Which of the following statements is not correct?
2. Acetamide on heating with P2O5 produces methanenitrile
3. Structural formula of meta formaldehyde is (CH2O)3
4. Benzaldehyde undergoes cannizaros reaction where as acetaldehyde does not
5. The reaction of formaldehyde with ammonia produces hexamethylenetetramine

Ans : (1), acetamide on heating with P2O5 gives ethanenitrile

1. Which of the following statements are correct?
2. Benzaldehyde undergoes aldol condensation in an alkaline medium
3. Hydrazone of aldehydes and ketones are prepared in highly alkaline medium
4. The reaction of CH3MgI with acetone followed by hydrolysis gives secondary butanol
5. The part of aldehyde or a ketone immediately surrounding carbonyl carbon is flat

Ans : (4), carbonyl carbon is sp2 hybridised and is planar

1. Which of the following statements is correct?
2. The –CHO group in benzaldehyde is ortho-para directing
3. The IUPAC name of C6H5CH=CH-CHO is 3-phenylpropanal
4. The complete balanced equation of RCHO with tollen’s reagent is

RCHO + 2Ag(NH3)2+ + 3OH- → RCOO- + 2H2O + 4NH3 + 2Ag

1. The formation of oximes and other ammonia derivative requires slightly basic media for maximum rate

Ans : (3)

1. Haloform reaction may be depicted as follows RCOCH3 + A → intermediate → RCOO- + B, product B is
2. CH3X 2) CH2X2 3) CHX3 4) CX3

Ans : (3)

1. Which of the following orders of acidic strength is correct?
2. RCOOH > ROH > HOH > C2H2 3) RCOOH > HOH > C2H2 > ROH
3. RCOOH > HOH > ROH > C2H2 4) RCOOH > C2H2 > HOH > ROH

Ans : (2)

1. Acetic acid differs from formic acid in that
2. Acetic acid is stable to heat 3) acetic acid acts as a reducing agent
3. Formic acid is stable to heat 4) acetic acid shows positive test with tollen’s reagent

Ans: (1)

1. Which of the following reagent or solution can be used to distinguish between methanoic acid and ethanoic acid
2. Tollen’s reagent 3) NaOH solution
3. FeCl3 solution 4) Na2CO3 solution

Ans : (1)

1. The relative order of esterification of alcohols is
2. 30> 20> 10 2) 10> 20> 30  3) 10> 30> 20 4) 20> 30> 10

Ans : (1)

1. The treatment of CH3CH2COOH with chlorine in presence of phosphorous gives
2. CH3CH2COCl 2) CH2CH2CH2Cl 3) CH3CH(Cl)COOH 4) ClCH2CH2COOH

Ans : (3), Hell-Volhard-Zeilensky reaction

1. The reaction of formic acid with con. H2SO4 gives
2. CH3COOH 2) CO2 + H2O 3) CO + H2O 4) HCHO

Ans: (3)

1. When propanoic acid is treated with aaq.NaHCO3 solution CO2 is liberated. The C of CO2 comes from?
2. Methyl group 2) carboxylic acid group 3) methylene group 4) bicarbonate

Ans : (4)

1. Which of the following reducing agents can be used to reduce RCOOH to RCH2OH?
2. H2/catalyst 2) NaBH4 3) Na/EtOH 4) BF3/THF followed by H3O+

Ans : (4)

1. Which of the following dicarboxylic acids gives cyclic ketone on heating?
2. CH2(COOH)2 3) HOOC(CH2)2COOH
3. HOOC(CH2)3COOH 4) HOOC(CH2)4COOH

Ans: (4), it gives cyclopentanone on heating

1. Benzoyl chloride is prepared from benzoic acid by
2. Cl2, h√ 2) SO2Cl2 3) SOCl2 4) Cl2, H2O

Ans : (3)

1. Which of the following acids has the smallest dissociation constant?
2. CH3CHFCOOH 2) FCH2CH2COOH 3) BrCH2CH2COOH 4) CH3CHBrCOOH

Ans : (3)

1. Chlorobenzene can be prepared by reacting aniline with
2. Hydrochloric acid 3) chlorine in the presence of anhydrous AlCl3
3. Cuprous chloride 4) nitrous acid followed by heating with cuprous CuCl

Ans : (4), diazotization followed by sandmeyers reaction

1. Amongst the following, the most basic compound is
2. Benzylamine 2) aniline 3) acetanilide 4) p-nitroaniline

Ans : (1), it is arylalkyl amine

1. Which of the following statements is not correct?
2. Aliphatic amines are stronger bases than ammonia
3. Aromatic amines are stronger bases than ammonia
4. The alkyl group in alkyl ammonium ion more stabilizes the ion relative to the amine
5. The aryl group in aryl ammonium ion less stabilizes the ion relative to the amine

Ans : (2)

1. Activation of benzene ring by –NH2 in aniline can be reduced by treating with
2. Dil.HCl 2) ethyl alcohol 3) acetic acid 4) acetyl chloride

Ans : (4), it undergoes actylation reaction

1. The number of resonating structures of arylammonium ion is
2. 2 2) 3 4) 4 5) 5

Ans : (1)

1. The correct sequence regarding the base strength of aliphatic amines in gaseous phase is
2. R3N > R2NH > RNH2 > NH2 3) R3N > RNH2 > R2NH > NH3
3. R2NH > R3N > RNH2 > NH3 4) R2NH > RNH2 > R3N > NH3

Ans : (1)

1. Decreasing the order of basicity of the three isomers of nitroaniline is
2. P-nitroaniline>o-nitroaniline>m-nitroaniline 3) m-nitroaniline>p-nitroaniline>o-nitroaniline
3. P-nitroaniline>m-nitroaniline>o-nitroaniline 4) m-nitroaniline>o-nitroaniline>p-niroaniline

Ans : (3)

1. Acetamide is treated separately with the following reagents. Which one of these would give methylamine?
2. PCl5 2) sodalime 3) NaOH + Br2 4) hot conc. H2SO4

Ans : (3), hoffmann’sbromaamide reaction

1. Carbylamines test is in alcoholic KOH by heating a mixture of
2. Chloroform and silver powder 3) trihalogenated methane and a primary amine
3. An alkyl halide and a primary amine 4) an alkyl cynide and a primary amine

Ans : (3)

1. Which of the following reagents can convert benzene diazonium chloride into benzene?
2. Water 2) acid 3) hypophosphorous acid 4) HCl

Ans : (3), it is a reducing agent

1. Benzene diazoniuim chloride on reaction with phenol in weakly basic medium gives
2. Diphenyl ether 2) p-hydroxyazobenzene 3) chlorobenzene 4) benzene

Ans : (2), coupling reaction

1. Hisenberg’s reagent is
2. Phenyl isocynide 3) benzenesulphonyl chloride
3. p-toluenesulphonic acid 4) o-dichlorobenzene

Ans : (3)

1. A positive carbylamines test is given by
2. N,N-dimethylaniline 3) N-methyl-o-methylaniline
3. 2,4-dimethyl-N-methylaniline 4) p-methylbenzylamine

Ans : (4)

1. P-chloroaniline and anilinium hydrochloride can be distinguished by
2. Sandmeyer reaction 2) NaHCO3 3) AgNO3 4) carbylamines test

Ans : (3), anilinium hydrochloride has labile halogen

1. The bromination of aniline produces
2. 2-bromoaniline 2) 4-bromoaniline
3. 2,4,6-tribromoaniline 4) 2,6-dibromoaniline

Ans : (2)