Shree H.N.Shukla Science College-Rajkot

B.Sc. (Sem-4) (CBCS)

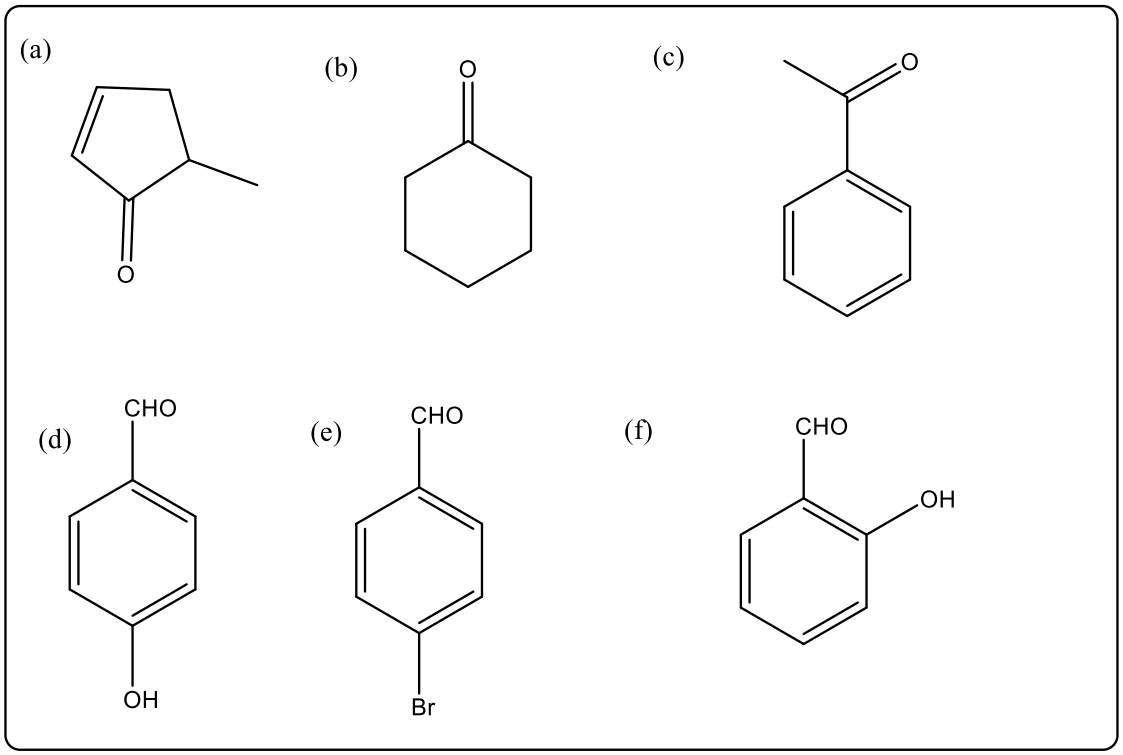
Chemistry [401]

Question bank

Ch-5 Carbonyl Compounds (Aldehydes & Ketones)

Q. (A) Answer the following Questions [1 mark]

(1) Give IUPAC name for the following compounds.



(2) Complete the following reactions

a. Cyclopentanone + NH_2NH_2 ⟶

b. $CH_3CHO + CH_3OH$ ⟶

c. $CH_3CHO + HCN$ ⟶

Q. (B) Answer the following Questions [2 mark]

(1) Give reason aldehyde more reactive then ketone..
(2) Give the synthesis of aldehyde from cyanide compounds.
(3) Explain addition reaction of HCN with acetaldehyde and acetone.

(4) Explain Wolff-Kishner reduction.
(5) Explain reduction of carbonyl compound by using $LiAlH_4$

Q. (C) Answer the following Questions [3 mark]

(1)Describe reaction of $NaHSO_3$ with acetaldehyde and acetone.
(2)Explain reaction ammonia and its derivative with carbonyl compounds
(3)Synthesis of aldehyde: (a) from alcohol, (b) from cyanide.

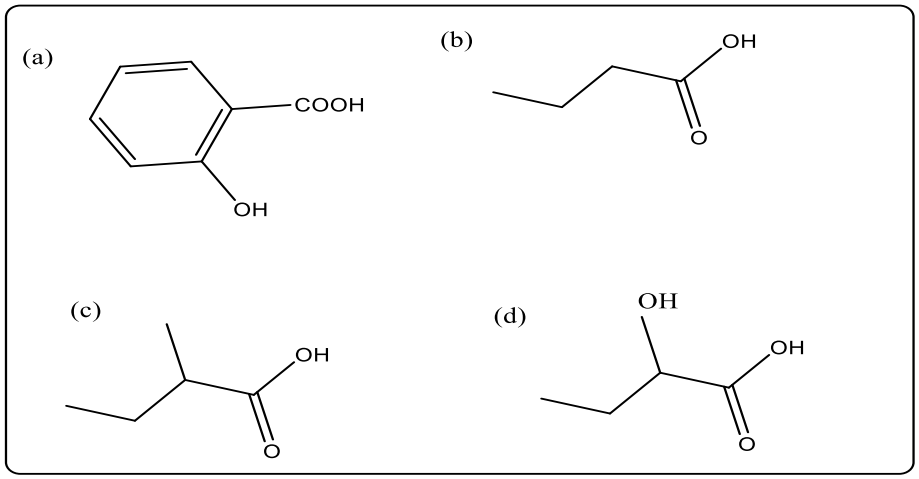
Q. (D) Answer the following Questions [5 mark]

(1) Explain addition reaction of alcohol with cyclic ketones.
(2) Explain chemical properties aldehyde and ketones.

Ch-6 Carboxylic acid & Their Derivatives

Q. (A) Answer the following Questions [1 mark]

(1) Define carboxylic acid compounds.
(2) Give the reaction of carboxylic acid with $NaHCO_3$
(3) Give the name of derivatives of carboxylic acid
(4) Give the reaction between acetic anhydride and NH_3
(5) Give IUPAC name for the following compounds.



Q. (B) Answer the following Questions [2 mark]

(1) Give the IUPAC name of Pthaleic acid.
(2) Give the IUPAC name of formic acid.
(3) Give the reason why p-nitro benzoic acid more acidic then benzoic acid.
(4) Give the Conversion of Amide to amine & write name reactions.

Q. (C) Answer the following Questions [3 mark]

(1) Expalin : Why experimentally determined molecular weight of Acetic acid is double then calculated value.
(2) Expalin : esterification reaction with mechanism.
(3) Expalin : Why carboxylic acid show much higher boiling point then same number alcohol.

Q. (D) Answer the following Questions [5 mark]

(1) Explain the effect of substituents on acidity of carboxylic acid.
(2) Explain reaction mechanism of Hell-Volhard-Zelinsky reactions (HVZ).

Ch-7 Name Reaction & Rearrangements

Q. (A) Answer the following Questions [1 mark]

(1) In Aldol condensation which product is a yield?
(2) Provide reaction Cinnamldehyde from Benzaldehyde
(3) In Perkin condensation which product yield?
(4) Provide reaction Cyclohexanone to Caprolactum.
(5) Give the structure of Benzil.

Q. (B) Answer the following Questions [2 mark

(1) Give reaction and mechanism of Benzil-Benzilic acid rearrangements.
(2) Discuss any two application of Beckmann rearrangements.

Q. (C) Answer the following Questions [3 mark]

(1) Discuss Hofmann reaction and its mechanism.
(2) Discuss Wittig reaction and its mechanism.

Q. (D) Answer the following Questions [5 mark]

(1) Explain Aldol reaction with Principle, reaction mechanism & its application.
(2) Explain Perkin condensation reaction with Principle, reaction mechanism & its application.

Ch-8 Physical properties & Molecular Structure

Q. (A) Answer the following Questions [1 mark]

(1) Molar Volume _____type of physical properties.
(2) What is surface tension?
(3) What is parachor?
(4) State kopps law ?
(5) What is unit of Viscosity?

Q. (B) Answer the following Questions [2 mark]

(1) Define Physical and Chemical properties with example.
(2) Explain Refractive index and refractivity.
(3) Prove that CO_2 has a linearstructure and SO_2 a bent molecules.
(4) Differenciate dextrorotatory(+) and levorotatory(-) substance.

Q. (C) Answer the following Questions [3 mark]

(1) Derive the equation of viscosity $\mathbf{n_1/n_2 = d_1t_1/d_2t_2}$
(2) Explain Paracheor.
(3) Define polar and non-polar molecule with examples.
(4) How dipole moment is useful for orientation in organic molecules.

Q. (D) Answer the following Questions [5 mark]

(1) Describe application of Dipole moment.
(2) What is Paracheor? Prove that $P_1/P_2 = Vm_1/Vm_2$