

Sample Question Paper

Course Name : Diploma in Chemical Engineering

Course Code : CH

Semester : Third

Subject Title : Industrial Chemistry

Marks : 100

17312

Time : 3 Hours

Instructions:

1. All questions are compulsory
2. Illustrate your answers with neat sketches wherever necessary
3. Figures to the right indicate full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

Q1. Attempt any TEN of the following

20 Marks

- a) Define functional group.
- b) Give the structure of following organic compound
 - i. 1- bromobutane.
 - ii. Propionic acid.
- c) Write preparation of ethene from alcohol.
- d) State two uses of acetylene.
- e) Differentiate between cycloalkanes and alkanes with respect to general formula.
- f) Give two examples of heterocyclic compound with structure.
- g) Write classification of aromatic compound.
- h) Write four physical properties of benzene.
- i) Distinguish between alcohol and phenol w. r. t. chemical test.
- j) Define indicator and give any two examples.
- k) State Raoult's law.
- l) State the action of H_2SO_4 on Phenol with chemical reaction.

Q2. Attempt any FOUR of the following

16 Marks

- a) How organic compounds are classified? State example of each.
- b) State four rules of nomenclature of organic compound.
- c) Give two methods of preparation of alkane.
- d) Write action of nitric acid and sulphuric acid on ethane.
- e) Explain structure of benzene
- f) Give the following reaction of ethyl alcohol.

Q3. Attempt any FOUR of the following**16 Marks**

- a) Distinguish between organic and in-organic compound.
- b) Explain the pyrolysis reaction of alkane and give any two uses of alkane.
- c) Explain Wurtz fitting reaction of benzene.
- d) Give the following reaction of benzene.
 - i. Grignard reaction.
 - ii. Fridel craft reaction.
- e) Give the following reaction of ethyl alcohol.
 - i. With hydrogen chloride.
 - ii. With sodium or potassium.
- f) Explain Ostwald's ionization theory with proper example.

Q4. Attempt any FOUR of the following**16 Marks**

- a) Explain the following terms
 - i. Isomerism
 - ii. Polymerisation
- b) What is action of sulphuric acid and water on acetylene.
- c) Distinguish between monohydric dihydric phenols and write two uses phenol
- d) Differentiate between primary , secondary , tertiary alcohol with example.
- e) Explain Quinoid theory of acid base indicator.
- f) How vapour pressure of solvent lowered by addition of non volatile solute ?

Q5. Attempt any FOUR of the following**16 Marks**

- a) Write general formula of alkane and alkyne and state two examples of each.
- b) Write following reaction of phenol
 - i. Halogenations
 - ii. oxidation
- c) State four uses of alcohol.
- d) Distinguish between ideal and non-ideal solutions.
- e) Explain minimum boiling azeotropes mixture with diagram
- f) Define hydrogenation and write chemical reaction of hydrogenation of ethane.

Q6. Attempt any FOUR of following**16 Marks**

- a) Explain Bayer's strain theory of stability of cycloalkane
- b) Write two physical and two chemical properties of ethene
- c) How will you prepare acetylene from
 - i. Calcium carbide
 - ii. Tetrahalides
- d) Define solution and state four types of solution with example.
- e) Explain theory of hydrogen ion indicator with suitable example.
- f) Write two methods of preparation of monohydric phenol.