Visit **www.brpaper.com** for downloading previous years question papers of 10th and 12th (PSEB and CBSE), B-Tech, Diploma, BBA, BCA, MBA, MCA, M-Tech, PGDCA, B-Com, BSC-IT, MSC-IT.

Roll No. Total No. of Pages: 02

Total No. of Questions: 09

B.Tech. (2009-2010 Batches) (Sem.-1,2) ENGINEERING CHEMISTRY Subject Code: CH-101

Subject Code:CH-10[,] Paper ID:[A0110]

Time: 3 Hrs. Max. Marks: 60

INSTRUCTION TO CANDIDATES:

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION B & C. have FOUR questions each.
- 3. Attempt any FIVE questions from SECTION-B & C carrying EIGHT marks each.
- 4. Select atleast TWO questions from SECTION-B & C.

SECTION-A

1. Write briefly:

- a) Explain temporary and permanent hardness of water.
- b) Describe reason for cracking
- c) What is partition chromatography?
- d) What is the difference electrode potential and cell e. m. f.?
- e) Explain photosen itization.
- f) Write the definition of Eutectic point.
- g) In IR spectroscopy why the region below 1500 cm⁻¹ is called as fingerprint region?
- h) Explain the selection rules of UV-vis Spectroscopy.
- i) What is metastable state?
- j) Which of the following will absorb at higher wave number for C=O stretching?

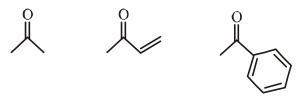


Fig.

1 | M - 5 4 0 0 3 (S 1) - 7 2 9

Visit **www.brpaper.com** for downloading previous years question papers of 10th and 12th (PSEB and CBSE), B-Tech, Diploma, BBA, BCA, MBA, MCA, M-Tech, PGDCA, B-Com, BSC-IT, MSC-IT.

SECTION-B

- 2. a) Describe the methods for the treatment of municipal water.
 - b) Calculate the amount of lime and soda required for softening 90,000 liters of water containing the following salts per liter: Ca(HCO₃)₂ = 162 mg, CaSO₄ = 136 mg and NaCl = 56.1 mg. Purity of lime is 92 % and soda is 99%.
- 3. a) Explain the electrochemical mechanism of rusting of iron in humid atmosphere.
 - b) Discuss protective measure for controlling corrosion.
- 4. a) Explain the need of chromatogram. Discuss various methods used for development and visualization of chromatogram.
 - b) What is the significance of R_f ? How it can be calculated experimentally?
- 5. a) What is over voltage? Discuss the factors affecting the overvoltage value.
 - b) Discuss the conductometric titration involving a HCl and a KOH.

SECTION-C

- 6. Draw a well labeled Jablonski diagram and explain.
 - a) Intersystem crossing
 - b) Phosphorescence
- 7. a) Explain Principles of UV-Vis Spectroscopy.
 - b) On the basis of IR spectroscopy, how can you distinguish between the following:
 - (i) Alkane, alkene and alkyne
 - (ii) Aldehyde and ketone
- 8. a) Discuss spin-spin relaxation in NMR spectroscopy
 - b) Draw and explain the splitting pattern observed in the ¹H NMR of CHCl₂ CH₂Cl
- 9. State and explain phase rule, Describe phase diagram of:
 - a) Potassium iodide-water system
 - b) Nicotine-water system

2 | M - 5 4 0 0 3 (S 1) - 7 2 9