[Total No. of Questions - 9]   [Total No. of Printed Pages - 2]

Dec-22-0113

CH-101 (Engineering Chemistry)

B.Tech-2nd (CBCS)

Time : 3 Hours   **Max. Marks : 60**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note: Attempt five questions in all, selecting one question from each from section A, B, C and D. Section E is compulsory.

SECTION A

1. Describe the ion-exchange process for softening of water. What are its advantages and limitations?   [10]

2. Describe the construction, working and applications of Ni-Cd cell.   [10]

SECTION B

3. Discuss various factors influencing corrosion by citing suitable examples. Also explain how rusting of iron is prevented by galvanization.   [10]

4. a) Discuss the effect of conjugation and solvent on electronic transitions of organic molecules.   [10]

   b) A solution of organic sample has an absorbance of 0.54 at 280 nm using a cuvette of 0.5 cm length. The absorbance coefficient of sample is 6.4×10^3 L Mol^{-1} cm^{-1}. What is the concentration of the solution?   [10]

SECTION C

5. Explain proximate analysis of coal. How is it carried out and what is its significance?   [10]

6. What are the prerequisite jobs required in selection of lubricants for cutting edge tools and lubricants for transformers?   [10]

SECTION D

7. What are thermosetting resins? Give the preparation, properties and applications of Bakelite.   [10]

8. What are nanomaterials? Explain the synthesis of nanomaterials by Sol-gel method.   [10]

SECTION E

9. (a) Derive Nernst Equation for calculation of cell emf.   [5]

   (b) Why most of the absorption bands in UV-Visible spectra are broad? Explain.   [5]

   (c) What is octane number and cetane number? Explain their significance.   [5]

   (d) Explain the difference between thermoplastic and thermosetting resins.   [5]