

2E3202

Roll No. _____

Total No. of Pages: **2****2E3202****B. Tech. II - Sem. (Main / Back) Exam. - 2026**
2FY2-03 Engineering Chemistry**Maximum Marks: 70****Time: 3 Hours***Instructions to Candidates:**Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.**Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.**Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*1. NIL2. NIL**PART - A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 ✓ Why ammonia buffer is added in EDTA based complexometric titration?
Q.2 Write the name and chemical formula of any two coagulants.
Q.3 Define Octane number.
Q.4 ✓ Write qualities of good fuel.
Q.5 ✓ Write any four functions of lubricating oils.
Q.6 Define viscosity index.
Q.7 ✓ What are the basic constituents of cement?
Q.8 What is Pilling-Bedworth rule?
Q.9 ✓ Write down chemical reaction for the preparation of Aspirin.
Q.10 ✓ What is annealing of glass?

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 Calculate the quantity of Lime and Soda required for softening 50,000 litres of water containing $\text{Ca}(\text{HCO}_3)_2 = 8.1 \text{ mg/L}$; $\text{Mg}(\text{HCO}_3)_2 = 7.5 \text{ mg/L}$; $\text{CaSO}_4 = 13.6 \text{ mg/L}$; $\text{MgSO}_4 = 12.0 \text{ mg/L}$; $\text{MgCl}_2 = 2.0 \text{ mg/L}$ and $\text{NaCl} = 4.7 \text{ mg/L}$.
- Q.2 The ultimate analysis of coal gives: C = 84% ; S = 1.5% ; N = 0.6% ; H = 5.5% ; O = 8.4%. Calculate the gross and net calorific values of the sample.
- Q.3 Explain the preparation, properties and uses of a coal gas with diagram.
- Q.4 Explain thick layer mechanism of lubrication.
- Q.5 Discuss the property of setting and hardening of cement.
- Q.6 Differentiate between SN^1 and SN^2 reactions.
- Q.7 Explain the sacrificial anodic method to minimize corrosion.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

- Q.1 What is softening of water? Describe softening of water by Zeolite process with diagram. <https://www.pyqonline.com> [2+8=10]
- Q.2 What is carbonization of coal? Describe the Otto-Hoffman's by product oven method of coke manufacturing with diagram. [2+8=10]
- Q.3 What do you mean by viscosity of lubricating oil? Describe the determination of viscosity of lubricating oil using Redwood Viscometer No 1 also draw the labelled diagram of viscometer. [2+8=10]
- Q.4 What is Paracetamol drug? Describe the synthesis, properties and uses of Paracetamol. [2+8=10]
- Q.5 What is corrosion? Describe the mechanism of dry corrosion by taking suitable example. [2+8=10]