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2E3202

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B.Tech. II-Sem. (Main/Back) Examination, May/June - 2025
2FY2-03/Engineering Chemistry

Time : 3 Hours **Maximum Marks : 70**

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).

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory. **(10×2=20)**

1. Define Scale and Sludge.
2. What is Zeolite?
3. What is Coke?
4. What is meant by calorific value of a fuel?
5. What is steam emulsion number of a lubricant?
6. Define cement with its composition.
7. What is annealing of glass?
8. What is the chemical formula of rust?
9. Define Flash and Fire point of a lubricant.
10. Define Drugs and give its uses.

PART - B

(Analytical / Problem Solving Questions)

Attempt any Five questions. **(5×4=20)**

1. A Sample of water was analysed and found to contain temporary magnesium hardness 25 mg/l, permanent magnesium chloride hardness 15 mg/l and permanent calcium sulphate hardness 20 mg/l, SiO_2 = 200 mg/l. Calculate the lime and soda required for softening 30,000 litre hard water.
2. Calculate the gross and net calorific value of a coal sample having the following composition: C = 80%, H = 7%, O = 3%, S = 3.5%, N = 2.1% and ash = 4.4%.

3. Explain thick layer mechanism of Lubrication.
4. Explain the sacrifical anodic method to minimize corrosion.
5. Describe Fisher-Tropsch method of preparing synthetic petrol.
6. Explain the mechanism of free-radical substitution reaction with suitable example.
7. What is glass? How is it manufactured? **(1+3=4)**

PART - C

(Descriptive / Analytical / Problem Solving / Design Questions)

Attempt any Three questions. **(3×10=30)**

1. What is water softening? Describe water softening by De-mineralization process with diagram. **(2+8=10)**
2. What is carbonization of coal? Describe Otto-Hoffmann by product oven method of carbonization for the manufacturing of coke. **(2+8=10)**
3. What is cement? Describe cement manufacturing by rotatory Kiln technology with diagram and reaction involved in the process. **(2+8=10)**
4. What is corrosion? Describe the mechanism of electrochemical corrosion by hydrogen evolution and oxygen absorption. **(2+8=10)**
5. What is paracetamol drug? Describe the synthesis, properties and uses of paracetamol. **(2+8=10)**
