

Set No - 1

ENGINEERING CHEMISTRY

Max. Marks: 70

Question Paper Consists of **Part-A** and **Part-B**
 Answering the question in **Part-A** is Compulsory,
 Three Questions should be answered from **Part-B**

PART-A

1. (a) Differentiate between octane and cetane number.
- (b) Calculate the temporary and permanent hardness of water, which on analysis is found to contain the following: $\text{Ca}(\text{HCO}_3)_2 = 14.6 \text{ mg/L}$, $\text{MgCl}_2 = 9.5 \text{ mg/L}$, $\text{CaSO}_4 = 27.2 \text{ mg/L}$.
- (c) Write brief notes on (i) glass electrode (ii) stereoregular polymers
(iii) electroplating (iv) properties of fullerenes.

[3+3+16]

PART-B

2. (a) Explain zeolite process of softening of hard water. Give the merits and demerits of zeolite process.
(b) What are the different types of hard water and mention their units.
(c) What are green house gases? Explain the construction and working of PV cell. [6+5+5]
3. (a) Explain the determination of single electrode potential.
(b) What is primary reference electrode? Explain the working of it.
(c) Write notes on refining of petroleum. [6+5+5]
4. (a) Explain how proper selection and design of materials minimize corrosion..
(b) What is corrosion? Explain electrochemical theory of corrosion.
(c) Write the differences between thermoplastics and thermosetting plastics. [6+5+5]
5. (a) Write any two moulding techniques of plastics.
(b) What are the drawbacks of natural rubber? Explain how to overcome these drawbacks.
(c) What is disinfection of water? Explain the importance of break-point chlorination. [6+5+5]
6. (a) What is calorific value? Calculate the weight and volume of air required for combustion of 2 Kg of carbon.
(b) Explain proximate analysis of coal.
(c) Derive Nernst equation for electro chemical cell. [6+5+5]
7. (a) Explain setting and hardening of cement.
(b) What are nanomaterials? Explain preparations of CNT's by arc-discharge method.
(c) Write the environmental factors affecting the rate of corrosion.

[6+5+5]
