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मक्षिका - 007

Engineering Chemistry - I (101102)

P. Pages : 2

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any two** subquestions from each unit.
5. Assume suitable data if necessary.
6. Figures to the right indicate full marks.

UNIT - I

1. a) Describe in brief ion exchange process of hard water with labelled diagram. Give the reactions in the regeneration and also explain there advantages and disadvantages. 8
b) Calculate the amount of lime (85% pure) and soda (90% pure) for the treatment of 40,000 lit. of water having the analysis as follows. 8
 $\text{MgCH}(\text{O}_3)_2 = 365\text{ppm}$, $\text{MgSO}_4 = 300\text{ppm}$, $\text{CaCH}(\text{O}_3)_2 = 405\text{ppm}$
 $\text{CaCl}_2 = 111\text{ppm}$, $\text{CaSO}_4 = 340\text{ppm}$ and $\text{NaCl} = 10\text{ppm}$
c) i) Explain the disadvantages of priming and foaming. 4
ii) A water sample was not alkaline to phenolphthalein however 50 ml of sample on titrating with N/50 HCl required 18.7 ml to obtained the and point using methyl orange as a indicator. What are the type and amount of alkalinity present. 4

UNIT - II

2. a) Describe the vulcanisation of rubber. Give the preparation properties and uses of neoprene rubber. 8
b) Define polymer. Explain the classification of polymer on the basis of chemical composition and synthesis. 8

- c) Give the preparation, properties and uses of
- i) Polytetrafluoroethylene. 4
 - ii) Polystyrene. 4

UNIT - III

3. a) Define portland cement. Describe the manufacturing of cement by dry process. 8
- b) Give the chemical composition of cement. Explain the heat of hydration of cement. 8
- c) i) Write a note on setting and hardening of cement. 4
- ii) Explain the basic raw materials required for the preparation of portland cement. 4

UNIT - IV

4. a) Explain electrical and thermal properties of ceramics. 8
- b) What are the steps involved in the manufacturing of ceramics. Explain drying and firing of ceramic wares. 8
- c) i) Describe the various raw materials used for the preparation of ceramics. 4
- ii) Give the various applications of ceramics. 4

UNIT - V

5. a) Describe the following methods used for the preparation of alloy. 8
- i) Fusion method.
 - ii) Electrodeposition method.
- b) Explain the necessity conditions for making alloy. 8
- c) Give composition properties and uses of following.
- i) Brass. 4
 - ii) Nichrome. 4
