Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 21407

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

First Semester

Civil Engineering

CY 2111/CY 14/080010001 — ENGINEERING CHEMISTRY — I

(Common to all Branches)

(Regulations 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the differences between temporary and permanent hardness of water.
2. Name the chemicals used in internal conditioning methods.
3. Write the preparation of Styrene-Butadiene rubber.
4. What are the advantages of composites?
5. Differentiate between adsorption and absorption.
6. What is contact theory?
7. What is nuclear fission reaction?
8. Write the cell reaction of lead-acid storage cell.
9. Define porosity of a refractory.
10. Mention the functions of a lubricant.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the various steps in domestic water treatment. (8)

(ii) With a neat sketch discuss the Reverse Osmosis method. (8)

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(b) (i) Discuss the Ion exchange method of softening of water. (8)

(ii) Explain the causes, disadvantages and prevention of sludge, scales, priming and foaming in boilers. (8)

12. (a) (i) Explain addition, condensation and co polymerization with egs. (8)

(ii) State the differences between Thermoplastics and Thermosetting plastics. (8)

Or

(b) (i) Write the free radical mechanism of addition polymerization. (10)

(ii) Write the preparation, properties and uses of Teflon. (6)

13. (a) (i) Derive Langmuir adsorption isotherm. (10)

(ii) Enumerate the differences between physisorption and chemisorptions. (6)

Or

(b) (i) What are the applications of adsorption? (8)

(ii) Derive Freundlich adsorption isotherm and write the limitations. (8)

14. (a) (i) With a neat diagram explain the parts of a nuclear reactor. (10)

(ii) Write the principle of solar cell. (6)

Or

(b) (i) Explain the construction and working of Hydrogen-oxygen fuel cell. (10)

(ii) How is wind energy harnessed in a wind mill? (6)

15. (a) Explain the synthesis, properties and applications of carbon nano tubes. (16)

Or

(b) (i) What are abrasives? Classify abrasives and write notes on any two Abrasives. (8)

(ii) Explain refractoriness, flash and fire point, cloud and pour point. (8)

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