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

Question Paper Code : 21325

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

First Semester

Civil Engineering

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

(Common to all branches, (except Marine Engineering))

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is alkalinity? What are its types?

2. What is reverse osmosis?

3. What is vulcanization? What is its use?

4. Give the structures of (a) nylon 6,6 and (b) butyl rubber.

5. What is an isotherm? What are its types?

6. What is an adsorbent?

7. What is a fuel cell? What are its advantages?

8. What is a breeder reactor?

9. Define refractoriness.

10. Differentiate SWNT and MWNT.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Define hardness. How is it determined? (10)

(ii) Give a brief note on the disadvantages of using hard water in boilers. (6)

Or

(b) (i) What is internal conditioning? What are the various methods of internal conditioning? Explain. (10)

(ii) Write a note on demineralization process. (6)

12. (a) (i) What is polymerization? Distinguish between addition and condensation polymerization. (10)

(ii) What are composites? Explain its various types. (6)

Or

(b) (i) What is free radical polymerization? Explain the mechanism in detail. (12)

(ii) Write a note on polyurethanes. (4)

13. (a) (i) Explain the Langmuir Hinshelwood mechanism and explain the isotherm and cases in detail. (12)

(ii) Write a note on Freundlich isotherm. (4)

Or

(b) (i) Discuss the role of adsorbents in catalysis. (10)

(ii) Write about ion-exchange adsorption process. (6)

14. (a) (i) What is a nuclear reactor? Explain the process of power generation using a neat diagram. (12)

(ii) Write a note on lithium batteries. (4)

Or

(b) (i) What are solar cells? What are the challenges involved in the conversion of solar energy into useful energy? (10)

(ii) Explain the mechanism of hydrogen oxygen fuel cell. (6)

15. (a) Explain the following :

(i) Natural and synthetic abrasives (8)

(ii) Refractories and their properties. (8)

Or

(b) Write a note on the following :

(i) Mechanism of lubrication. (8)

(ii) Applications of nanomaterials. (8)
