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

# Question Paper Code : 60407

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

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. Mention the indicator and the buffer solution used in the determination of hardness of water by EDTA method.
2. Name any two coagulants used in water treatment.
3. Define polymerization and degree of polymerization.
4. Name two synthetic polymers used for making textile fibres.
5. Differentiate adsorption and absorption.
6. Mention two adsorbents used in catalysis.
7. Write the electrode reactions of Ni-Cd battery during the discharge process.
8. What is mass defect?
9. Name any four solid lubricants.
10. What is meant by RUL?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the demineralization process of softening of hard water. (10)

(ii) What is break- point chlorination? State its significance. (6)

Or

(b) Explain scale and sludge formation in boilers. How are they prevented by internal treatment methods? (8 + 8)

12. (a) Describe the method of preparation, properties and applications of PVC, Polycarbonates, butyl rubber and SBR. (4 × 4 = 16)

Or

(b) Write a brief note on :

(i) Vulcanization of rubber

(ii) FRP. (9 + 7)

13. (a) (i) Discuss Langmuir's theory of adsorption and derive expression for monolayer Langmuir adsorption isotherm. (12)

(ii) What is an adsorption isobar? How is it used to distinguish between physical and chemical adsorptions? (4)

Or

(b) (i) Discuss the role of adsorption in pollution control. (8)

(ii) Write a brief note on Frendlich adsorption isotherm. (8)

14. (a) (i) What is a breeder reactor? Mention its significance. (8)

(ii) What is a fuel cell? Explain the construction and working of Hydrogen- Oxygen fuel cell. (8)

Or

(b) (i) Distinguish between nuclear fission and nuclear fusion reactions. (6)

(ii) What are batteries? How are they classified? Give a brief account on Lead-Acid battery. (10)

15. (a) (i) What are refractories ? What are the characteristics of a material to be used as refractory material? How is thermal conductivity of a refractory material related to its porosity? (10)

(ii) Discuss the effect of temperature on the viscosity of lubricating oils. (6)

Or

(b) Write a note on :

(i) Carbon nanotubes and their applications. (10)

(ii) Artificial abrasives. (6)

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