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Question Paper Code : 21408

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

Second Semester

Civil Engineering

CY 2161/CY 24/080010002 – ENGINEERING CHEMISTRY – II

(Common to all Branches – Except Marine Engineering)

(Regulations 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are reversible and irreversible cells?
2. What are ion selective electrodes?
3. Differentiate between electroplating and electroless plating.
4. List out the factors influencing corrosion.
5. Define cetane number.
6. Write the composition of producer gas.
7. What is a condensed phase rule?
8. What is meant by a component with respect to phase rule?
9. What is flame photometry?
10. What is the function of monochromator?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Derive Nernst equation. (8)
(ii) Describe the construction of glass electrode and explain how the pH of a solution is determined using it. (8)

Or

- (b) (i) Draw and explain the conductometric titration curve for strong acid and strong base. (8)
(ii) What are reference electrodes? Describe the construction of calomel electrode. (8)
12. (a) (i) Name the chief constituents of paints and explain their functions. (8)
(ii) Explain the sacrificial anode and impressed current cathodic techniques for the prevention of corrosion. (8)

Or

- (b) (i) What is meant by electro less plating? With a neat sketch explain the electro less plating of nickel. (8)
(ii) Write a note on
(1) Galvanic corrosion
(2) Differential aerated corrosion. (8)

13. (a) (i) Describe the Otto Hoffman's process for preparing coal. (8)
(ii) With a neat diagram discuss the production of water gas. (8)

Or

- (b) (i) Write a note on Bergius process. (8)
(ii) Describe the determination of flue gas analysis and discuss its significance. (8)
14. (a) (i) Apply the phase rule to lead - silver system. (8)
(ii) Write a note on :
(1) Non-ferrous alloy
(2) Heat treatment of steel. (8)

Or

- (b) (i) Explain the salient feature involved in the phase diagram of water. (8)
(ii) Explain the construction of phase diagram by thermal analysis. (8)
15. (a) (i) Write about the principle of UV-Vis spectroscopy. (8)
(ii) Explain how iron is estimated by colorimeter. (8)

Or

- (b) (i) Derive Beer's - Lamberts Law. (8)
(ii) With a neat block diagram explain the principle of atomic absorption spectrometer. (8)