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15CHE12/22

First/Second Semester B.E. Degree Examination, June/July 2016 Engineering Chemistry

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. Explain the construction and working of silver-silver chloride electrode. (05 Marks)
 b. What are ion selective electrodes? Discuss the construction and working of a glass electrode. (06 Marks)
 c. Explain the construction and working of Zinc-Air cell. (05 Marks)

OR

- 2 a. Derive Nerst expression for single electrode potential. (05 Marks)
 b. Explain the following battery characteristics : (06 Marks)
 i) Energy efficiency
 ii) Shelf life
 iii) Cycle life
 c. Explain the construction and working of Methanol - Oxygen fuel cell with H_2SO_4 electrolyte. (05 Marks)

Module-2

- 3 a. Explain electrochemical theory of corrosion with an example. (05 Marks)
 b. Discuss the differential metal corrosion with an example. (05 Marks)
 c. What is electroless plating? Mention the differences between electroplating and electroless plating. (06 Marks)

OR

- 4 a. Discuss the following factors influencing nature of electrodeposit. (06 Marks)
 i) Brighteners
 ii) Levellers and
 iii) pH
 b. Explain electroplating of Decorative chromium. (05 Marks)
 c. Discuss the process of Galvanization of Iron sheet. (05 Marks)

Module-3

- 5 a. How Calorific value of a solid fuel is determined using bomb calorimeter? (05 Marks)
 b. What is meant by cracking? Describe with a neat diagram, fluidized bed cracking method. (06 Marks)
 c. Explain the construction and working of a photovoltaic cell. (05 Marks)

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Shasha Hu



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