18BCL0111

Final Assessment Test – November 2018

VIT® Vellore Institute of Technology

Course: CHY1701 - Engineering Chemistry

Class NBR(s):6476 / 6481 / 6490 Slot: C2+TC2

Time: Three Hours Max. Marks: 100

PART – A (10 X 4 = 40 Marks)
Answer ALL Questions

1. Justify the following with suitable chemical equations: [2+2]
   a) EDTA is used as a reagent in the determination of hardness of water.
   b) The amount of iodine released in the titration is equivalent to the amount of dissolved oxygen present in the water sample.
2. How does zeolite work? Give any two limitations of this.
3. What is Galvanic corrosion? How it can be prevented?
4. What is the driving force for the electroless plating? Why is this process useful for some selected metals only?
5. "Solar power is not possible without silicon solar cells". Comment on this.
6. What is knocking in IC engines? How is this prevented?
7. Differentiate thermoplastics from thermosetting plastics.
8. How does a photovoltaic cell function? Give any two limitations of photovoltaics.
9. A sample of coal has following composition by mass: C = 70 %, O = 8 %, H = 10 %, N = 3 %, S = 2%, Ash = 7 %. Calculate the H.C.V. and L.C.V.
10. "Reverse osmosis is the best membrane technique amongst the water purification processes". Justify.

HCV = LCV

PART – B (5 X 12 = 60 Marks)
Answer any FIVE Questions

11. a) Discuss the reasons for scale formation and caustic embrittlement. How are these problems minimized in a steam boiler? [6]
    b) Explain different steps involved in the treatment of municipal water for drinking purpose. [6]
12. a) Describe the working principle, regeneration and limitations of ion-exchange resins with suitable chemical equations. [8]
    b) What is the significance and working of candle filtration technique? [4]
13. a) Distinguish electrochemical corrosion from chemical corrosion. [4]
    b) Explain the factors influencing the rate of corrosion with respect to metal and the environment (any four points each). [8]
14. a) What are the factors influencing the electroplating process? Explain the process with a suitable example schematically. [6]
    b) A plastic surface needs to be coated with a shiny brown material. How it can be achieved? Explain the process with a suitable technique. [6]
15. a) Discuss the significance and salient features of Bomb calorimeter with a neat diagram. Write the reasons for the corrections required in this calorimeter. [8]
    b) Differentiate octane number from cetane number. [4]