

End Semester Examinations - 2015-16 Even Semester - May 2016

14CH1001 Applied Chemistry

Set B

Time : 3 hrs
Total Marks: 100

1. a) Explain zeolite process of softening hard water with neat diagram. Give its limitations, advantages and disadvantages. (15)
b) How will you purify seawater by reverse osmosis? (5)

OR
2. a) Discuss electrodialysis method of purifying sea water. (9)
b) Write note on break point chlorination. (6)
c) Calculate the carbonate and non carbonate hardness of a sample water having the following compositions
 $\text{Mg}(\text{HCO}_3)_2 = 72 \text{ mg/l}$, $\text{Ca}(\text{HCO}_3)_2 = 12 \text{ mg/l}$, $\text{MgCl}_2 = 5 \text{ mg/l}$, $\text{CaSO}_4 = 12 \text{ mg/l}$ (5)
3. a) How is epoxy resin synthesised? Give the properties and uses of epoxy resin. (10)
b) Write note on atactic, isotactic and syndiotactic polymers with one example each. (6)
c) Define biopolymers. Give any two examples of biopolymers. (4)

OR
4. a) Write short note on fibre reinforced plastics. (5)
b) Differentiate thermoplastic and thermosetting polymers. (5)
d) Discuss the synthesis and uses of poly ethylene and poly vinyl chloride. (10)
5. a) How will you improve the antiknocking value of gasoline? (5)
b) Explain the manufacturing of water gas with neat diagram. Write the composition and uses of water gas. (10)
c) Calculate the gross and net calorific value of a coal sample having the following composition C = 84 %, H = 5.5 %, O = 8.4 %, S = 1.5 %, N = 0.6 % (5)

OR
6. a) Explain the proximate analysis of coal and its significances. (15)
b) Calculate the minimum weight of air required for the complete combustion of 1 Kg of fuel containing C = 90%, H = 3.5%, O = 3%, S = 0.5%, N = 0.5% remaining ash. (5)
7. a) Discuss the stable, unstable, volatile and porous oxide layers in oxidation corrosion with examples. (12)
b) Calculate the emf of a concentration cell at 25 °C consisting of two Zn electrodes immersed in solutions of Zn^{2+} ions of 0.1 M and 0.01 M concentrations. (3)
c) How is corrosion controlled by sacrificial anodic protection method? (5)

OR
8. a) Discuss the construction and working of $\text{H}_2 - \text{O}_2$ fuel cell with neat diagram. Write the advantages and disadvantages of the cell. (12)
b) Write note on the significances of electrochemical series. (8)
9. a) Write short notes on silica bricks and graphite as lubricant. (10)

b) Discuss insulating materials. (10)

Wishing you All the Best
