

S<sub>142</sub> (0) 12/05/2014 (FN)

G 604

(Pages : 2)

Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, MAY 2014**

**First and Second Semesters**

**ENGINEERING CHEMISTRY**

(Old Scheme—Prior to 2010 admissions)

[Supplementary/Mercy Chance]

[Common for all Branches]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 4 marks.*

1. Define galvanic cell. For the cell  $Zn/Zn^{2+} // Ag^+/Ag$  calculate the e.m.f. of the cell at 298 K if standard electrode potentials of Zn and silver electrodes are  $-0.76$  V and  $0.8$  V respectively.
2. Briefly explain the construction and working of a salt bridge.
3. Briefly explain glass reinforced plastic.
4. Write a note on silicon rubber.
5. Explain the process of cladding for corrosion protection.
6. Explain the corrosion of iron in alkaline medium.
7. How does priming occur in boilers? How it can be eliminated?
8. Explain temporary and permanent hardness.
9. What is knocking of petrol? How is it reduced?
10. Explain the electrostatic precipitator method for the control of air-pollution.

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.*

*Each full question carries 12 marks.*

11. (a) Define e.m.f. of an electrochemical cell and explain the potentiometric determination of e.m.f.  
(b) Explain the construction and working of (i)  $H_2-O_2$  fuel cell; (ii) Calomel electrode.

Or

12. (a) Define Conductance. Write a note on the experimental determination of conductance.  
(b) What are concentration cells? Derive the expression for the e.m.f. of a concentration cell.

**Turn over**

13. (a) Differentiate thermoplastics and thermosetting plastics. Give the preparation, properties and applications of any *two* of each.  
(b) Explain the different moulding ingredients of plastics.

*Or*

14. (a) Describe the addition and condensation polymerization with suitable examples.  
(b) Explain the chemical structure, properties and processing of natural rubber. How is crepe rubber and smoked rubber produced from rubber latex ?
15. (a) Give a detailed account on dry corrosion.  
(b) Explain metal spraying and anodisation for the corrosion control.

*Or*

16. (a) Explain how the nature of metal influences corrosion.  
(b) Explain sacrificial anodic protection and impressed current cathodic protection.
17. (a) Explain boiler corrosion due to various agents. How can they be avoided ?  
(b) Describe carbonate conditioning and phosphate conditioning.

*Or*

18. (a) Write a note on caustic embrittlement occurring to boiler. How can we eliminate it ?  
(b) Explain Zeolite process for the treatment of boiler feed water.
19. (a) Write a note on different air pollutants.  
(b) Write a note on solid lubricants.

*Or*

20. (a) Explain the manufacture and properties of lubricating oils.  
(b) Explain (i) photochemical smog ; (ii) ozone depletion.

(5 × 12 = 60 marks)