

Code No: 07A7EC26

**R07****Set No. 2****IV B.Tech I Semester Examinations November 2010****ELECTRO METALLURGY AND CORROSION****Metallurgy And Material Technology****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) How do inhibitors prevent corrosion?  
(b) Discuss about anodic inhibitors and vapor phase inhibitors. [8+8]
2. What are spontaneous electrochemical effects and nonspontaneous electrochemical effects? Explain their importance. [16]
3. Briefly discuss about the applications of cathodic protection methods. [16]
4. Differentiate between electro winning process of copper and zinc. [16]
5. What is decomposition voltage and what type of factors affecting this voltage and what is its significance in electrolysis process. [16]
6. Distinguish between  
(a) Electrochemical cell and electrolytic cell.  
(b) Electro kinetic phenomenon and electrochemical phenomenon. [8+8]
7. What is dezincification? Discuss about it in detail. [16]
8. (a) Explain how nickel is plated over a brass sheet. Give the bath composition and current details.  
(b) What are the difficulties in the above plating and their remedies? [8+8]

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**R07****Set No. 4****IV B.Tech I Semester Examinations November 2010****ELECTRO METALLURGY AND CORROSION****Metallurgy And Material Technology****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Discuss about anodic protection methods. [16]
2. Explain in detail about the modern electrode kinetic theory. [16]
3. Explain about the electrochemical cells and classify it. [16]
4. Distinguish between the following in electro winning process.
  - (a) Metallic cloud and anode effect.
  - (b) Fused salt electrolyte and aqueous electrolyte.
  - (c) Electrolyte form oxide ore and electrolyte form sulphide ore. [6+5+5]
5. Write short notes ont the following corrosion prevention methods:
  - (a) Hot dipping
  - (b) Diffusion
  - (c) Vapor deposition [16]
6. What is polarization and classify it. How this polarization effects the electrolysis process and what are the factors which effects polarization. [16]
7.
  - (a) Describe how the adherence of electro deposit is tested.
  - (b) Describe the hot water test used in the porosity of electro deposit. [8+8]
8.
  - (a) List the common tests done on e-dep. Describe the tests done to measure thickness and corrosion resistance of e-dep.
  - (b) What are the characteristics of pitting corrosion? What type of alloys are prone to pitting corrosion and explain the effect of halide ion on pitting corrosion? [8+8]

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**R07****Set No. 1****IV B.Tech I Semester Examinations November 2010****ELECTRO METALLURGY AND CORROSION****Metallurgy And Material Technology****Time: 3 hours****Max Marks: 80**

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**All Questions carry equal marks**

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1. (a) Define corrosion. Explain how it occurs.  
(b) Discuss about galvanic series. [8+8]
2. What is electrolytic cell and explain in detail about the cell. [16]
3. Discuss briefly about zinc plating for an acid bath. What is the role of different constituents in the bath? [16]
4. List out the important factors which will affect the electrophoretic effect and electrophoretic force. [16]
5. Explain about the following  
(a) Conductance of aqueous electrolyte  
(b) Conductance of fused salt electrolyte. [8+8]
6. Explain the electro-winning of zinc and what are the factors that affect the efficiency of the process. [16]
7. What are the different types of coatings applied to prevent corrosion? Compare their advantages and disadvantages. [16]
8. Write short notes on the following with respect to corrosion prevention methods:  
(a) Magnesium and Magnesium alloys  
(b) Zinc and zinc alloys.  
(c) Aluminum and aluminum alloys.  
(d) Geometry of anode. [16]

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**R07****Set No. 3****IV B.Tech I Semester Examinations November 2010****ELECTRO METALLURGY AND CORROSION****Metallurgy And Material Technology****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Explain about any two instruments which are used to study the electrochemistry principles. [16]
2. Define over voltage and classify it. How this over voltage effects the electrolysis process. [16]
3. Distinguish between thermodynamics of reversible electro chemical system and irreversible electro chemical system. [16]
4. (a) How will you estimate the amount of deposit by electro chemical means.  
(b) Explain the mechanism of electro deposition. [8+8]
5. Discuss about the various plating systems used for alloy plating. [16]
6. Describe the factors that influence the following:  
(a) Pitting corrosion  
(b) Stress corrosion [16]
7. (a) What are the surface protection methods adopted in corrosion prevention.  
(b) Describe any two of the above methods. [8+8]
8. (a) Discuss about the anode selection for cathodic protection.  
(b) Compare cathodic and anodic protection methods. [8+8]

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