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**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**B.E. (CBCS) IV-Semester Advanced Supplementary Examinations, July-2019**

**Corrosion Science and Technology**  
 (Open Elective-III)

Time: 3 hours

Max. Marks: 60

*Note: Answer ALL questions in Part-A and any FIVE from Part-B*

**Part-A (10 × 2 = 20 Marks)**

1. Define corrosion and mention the types of mechanism of wet corrosion.
2. State Pilling Bedworth rule and its significance.
3. List the types of metal coatings and give an example.
4. Define metal cladding and give an example.
5. Suggest a method to protect the metals which are always in corrosive environment and write the principle involved in it.
6. What are super hydrophobic coatings?
7. What is carburizing and what is its significance?
8. Differentiate sacrificial anodic protection method and anodic coating.
9. Iron although placed below Al in the electrochemical series, suffers more corrosion than Aluminum. Explain.
10. Mention the principle involved in impressed current Cathodic protection.

**Part-B (5 × 8 = 40 Marks)**

- 11.a) Explain the effect of the corrosion product on rate of corrosion. [4]
- b) Mention the conditions under which electrochemical corrosion takes place and also list the types of wet corrosion. [4]
- 12.a) Discuss the principle involved in nickel coating on insulators. [5]
- b) Discuss the need of pretreatment methods for metal coatings. [3]
- 13.a) List the different constituents of paint and discuss their functions. [4]
- b) Mention the types of inhibitors and their role in corrosion control/prevention. [4]
- 14.a) Illustrate sacrificial anodic protection method with a well labeled diagram. [5]
- b) What is the significance of nitriding and how is it carried out? [3]
- 15.a) Discuss how the nature of a metal affects rate of corrosion. [4]
- b) Differentiate between electroplating and electroless plating. [4]
- 16.a) Discuss the importance of the Self healing coatings in corrosion control. [4]
- b) To protect the marine structures, which Cathodic protection is preferred –justify. [4]
17. Answer any *two* of the following:
  - a) Discuss passivation and induced passivity. [4]
  - b) Discuss Epoxy coating of RCC steel bars. [4]
  - c) What are the constituents of an oil varnish and write their functions. [4]

