

Code: 20BS1105

**I B.Tech - I Semester – Regular / Supplementary
Examinations – APRIL 2022**

**CHEMISTRY OF MATERIALS
(MECHANICAL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

UNIT – I

1. a) Make use of a neat diagram to explain desalination of brackish water by electro dialysis. 7 M
- b) List out various steps involved in determination of hardness of water by EDTA method. 7 M

OR

2. a) Make use of a neat diagram to explain the ion exchange process. 7 M
- b) Distinguish between priming and foaming in boilers. 7 M

UNIT – II

3. a) List the applications and detailed note of electro chemical series. 7 M
- b) Make use of a neat diagram to explain the construction and working of Hydrogen-Oxygen fuel cell. 7 M

OR

4. a) Make use of a neat diagram to explain the construction and working of Calomel electrode. 7 M
- b) List the advantages of lead -acid storage cell and describe its construction and working. 7 M

UNIT-III

5. a) List the various factors that affect the rate of corrosion and explain them. 7 M
- b) Make use of a neat diagram to explain Sacrificial and Impressed current- cathodic protection methods. 7 M

OR

6. a) List out the detailed mechanism of dry corrosion. 7 M
- b) List out different steps involved in galvanizing and tinning. 7 M

UNIT – IV

7. a) List the applications and chemical compositions of alloy steels. 7 M
- b) Distinguish between thermoplastic and thermo setting resins. 7 M

OR

8. a) Make use of a neat diagram to explain the constituents and manufacture of Portland Cement. 7 M
- b) List out the properties, preparation method and uses of polyphosphazines. 7 M

UNIT – V

9. a) List out the various applications of Nano materials in waste water treatment. 7 M
- b) List out different types of smart materials. 7 M

OR

10. a) Make use of a neat diagram to explain the chemical synthesis of Nano materials by Sol-gel method. 7 M
- b) Make use of a neat diagram to explain the characterization of Nano materials by TEM. 7 M