**Code No.PC303ME**

**METHODIST COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution)**

**B.E. (MECH) III-Semester (AICTE) (Supplementary) Examination, Aug -2023**

**Subject: METALLURGY & MATERIAL SCIENCE**

**Time: 3 hours Max.Marks:60**

**Note: Missing data, if any, maybe suitably assumed.**

**PART-A**

**Answer All the questions.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q.No.** | **Questions** | **Marks** | **CO** | **BTL** |
| **1. a** | **Define the term Space lattice and Unit cell .** | **2** | **CO1** | **BL1** |
| **b** | **Define the term point defects.** | **2** | **CO1** | **BL1** |
| **c** | **Distinguish Between Ductile Fracture and Brittle Fracture.** | **2** | **CO2** | **BL3** |
| **d** | **What is Fatigue Failure?** | **2** | **CO2** | **BL1** |
| **e** | **Write the properties of Grey Cast iron.** | **2** | **CO3** | **BL1** |
| **f** | **List out the applications of High Carbon Steels .** | **2** | **CO3** | **BL2** |
| **g** | **What is Tempering?** | **2** | **CO4** | **BL1** |
| **h** | **Explain the Importance of Flame hardening.** | **2** | **CO4** | **BL2** |
| **i** | **Why Copper is suitable for automobile Radiator?** | **2** | **CO5** | **BL2** |
| **j** | **List out the properties of Brass and Bronze.** | **2** | **CO5** | **BL2** |

**PTO**

**Code No.PC303ME**

**PART-B**

**Answer Any Five questions**.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Q.No.** |  |  **Questions** | **Marks** | **CO** | **BTL** |
| **2.** | **a** | **Explain the Influence of Recovery , Recrystallization and Grain Growth on the mechanical Properties of the Material.** | **4** | **CO1** | **BL2** |
| **b** | **Explain Griffith Theory Of Brittle Fracture.** | **4** | **CO1** | **BL2** |
| **3.** | **a** | **Construct and Explain the Creep Curve .** | **4** | **CO2** | **BL3** |
| **b** | **Briefly Explain the Determination of Fatigue strength by RR Moore Test .** | **4** | **CO2** | **BL3** |
| **4.** | **a** | **Explain the construction and Interpretation of Iron- Iron Carbide Diagram.** | **4** | **CO3** | **BL2** |
| **b** | **Define the term Allotrophy and various terms of Allotrophy forms of iron .** | **4** | **CO3** | **BL1** |
| **5.** | **a** | **Explain about Flame hardening and Induction Hardening.** | **4** | **CO4** | **BL2** |
| **b** | **Explain the term Austempering and Martempering.** | **4** | **CO4** | **BL2** |
| **6.** | **a** | **Explain the term copper and its Properties and applications.** | **4** | **CO5** | **BL2** |
| **b** | **Explain the term ceramics and its applications.** | **4** | **CO5** | **BL3** |
| **7.** | **a** | **Briefly Explain the Critical Resolved shear Stress.** | **4** | **CO1** | **BL1** |
| **b** | **Define the term Age Hardening and Its importance.** | **4** | **CO4** | **BL2** |
| **8.** | **a** | **What are different Types of stain steels ?Explain the Properties of stain steels ?** | **4** | **CO3** | **BL2** |
| **b** | **Explain different modes of Fracture.** | **4** | **CO2** | **BL3** |
| **9.** | **a** | **Discuss Various types of Cast Irons and its applications and characteristics.** | **4** | **CO3** | **BL2** |
| **b** | **Explain the classification of Composite materials.** | **4** | **CO5** | **BL2** |

**\*\*\*\*\*\***