**Code No.PC303ME**

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

**B.E. (MECH) III-Semester (AICTE) (Regular) Examination, Feb -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.**

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| **Q.No.** | **Questions** | **Marks** | **CO** | **BTL** |
| **1. a** | **Explain Strain Hardening?** | **2** | **CO1** | **BL2** |
| **b** | **Distinguish Between unit cell and space Lattice** | **2** | **CO1** | **BL4** |
| **c** | **State and explain different types of fracture in metals?** | **2** | **CO2** | **BL1** |
|  |  |  |  |  |
| **d** | **What is fatigue failure?** | **2** | **CO2** | **BL1** |
| **e** | **What is difference between phase and a micro constituent** | **2** | **CO2** | **BL1** |
| **f** | **What are Plain Carbon Steels ?** | **2** | **CO3** | **BL1** |
| **g** | **What is Case hardening?** | **2** | **CO3** | **BL1** |
| **h** | **Distinguish Between Normalizing and Annealing?** | **2** | **CO4** | **BL3** |
| **i** | **Classify The Composite Materials and its Applications?** | **2** | **CO5** | **BL3** |
| **j** | **Define the term Polymers and its applications?** | **2** | **CO5** | **BL1** |

**PTO**

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**PART-B**

**Answer Any Five questions**.

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| **Q.No.** |  |  **Questions** | **Marks** | **CO** | **BTL** |
| **2.** | **a** | **Explain Crystal Imperfections in Detail?** | **8** | **CO1** | **BL2** |
| **b** | **Explain Recovery,Re-crystallization And Grain Growth ?** |  | **CO1** | **BL2** |
| **3.** | **a** | **With Neat Sketch Explain SN Curve For Ferrous and Non Ferrous Materials?** | **8** | **CO2** | **BL2** |
| **b** | **Explain the stages of creep curve.** |  | **CO2** | **BL2** |
| **4.** | **a** | **Explain Iron Iron Carbide Diagram and label all phases? Explain Three Invariant Reactions?** | **8** | **CO3** | **BL2** |
| **b** | **Discuss Various types of Cast Irons and its applications and** **characteristics?** |  | **CO3** | **BL2** |
| **5.** | **a** | **Explain the term Austempering and Martempering?** | **8** | **CO4** | **BL2** |
| **b** | **Draw the TTT Diagram For Eutectoid steel and label various phases in it?** |  | **CO4** | **BL2** |
| **6.** | **a** | **Explain Thermo plastic and Thermo setting in detail?** | **8** | **CO5** | **BL2** |
| **b** | **Explain the term copper and its Properties and applications?** |  | **CO5** | **BL1** |
| **7.** | **a** | **Discuss Effect of Slip and Twinning On Plastic Deformation ?** | **8** | **CO1** | **BL2** |
| **b** | **Explain the term ceramics and its applications?** |  | **CO5** | **BL3** |
| **8.** | **a** | **Distinguish Between Cold Working and Hot Working?** | **8** | **CO1** | **BL2** |
| **b** | **Explain the Mechanism Of Creep Deformation ?** |  | **CO2** | **BL1** |
| **9.** | **a** | **What are different Types of stain steels ?Explain the Properties of stain steels ?** | **8** | **CO3** | **BL2** |
| **b** | **Define the term Age Hardening and Its importance?** |  | **CO4** | **BL2** |
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