**Code No.6PC5204ME**

**METHODIST COLLEGE OF ENGINEERING & TECHNOLOGY**

**(An Autonomous Institution)**

**M.EII-Semester (Regular) Examination, September-2023**

**Subject: ADVANCED MATERIALS TECHNOLOGY**

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

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

**PART-A**

**Answer All the questions. (05X2M=10M)**

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| **Q.No** | **Questions** | **Marks** | **CO** | **BTL** |
| **1 a** | What is the difference between wear resistance and corrosion resistance? | **2** | **CO1** | **BL1** |
| **b** | What is the difference between a perfect crystal and a real crystal? | **2** | **CO2** | **BL1** |
| **c** | How does temperature affect fracture? | **2** | **CO3** | **BL1** |
| **d** | Explain the properties of high strength low alloy HSLA? | **2** | **CO4** | **BL2** |
| **e** | Why is CBN preferred over diamond? | **2** | **CO5** | **BL1** |

**PART-B**

**Answer Any Five questions. (05X10M=50M)**

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| **Q.No.** |  | **Questions** | **Marks** | **CO** | **BTL** |
| **2** | **a** | Explain the Fatigue testing procedure with SN Curve. | **10** | **CO1** | **BL3** |
| **b** | What is strength and toughness of metal? What is the unit of toughness? |  | **CO1** | **BL1** |
| **3** | **a** | What is the relationship between plastic stress and strain? Explain. | **10** | **CO2** | **BL1** |
| **b** | How does plastic deformation occur in non-crystalline ceramics? |  | **CO2** | **BL1** |
| **4** | **a** | Explain the Larson-Miller parameter for creep life? What is the Larson Miller approach? | **10** | **CO3** | **BL3** |
| **b** | What are the common failure modes and mechanisms in low cycle and high cycle fatigue scenarios? |  | **CO3** | **BL1** |
| **5** | **a** | Illustrate the advantages of dual phase steel? What is an example of a dual phase steel? | **10** | **CO4** | **BL2** |
| **b** | What do you mean by biomaterials? What are common types of biomaterials? |  | **CO4** | **BL1** |
| **6** | **a** | Differentiate thermo setting polymer and thermo plastic polymers. Explain characteristics of Thermosetting Materials? | **10** | **CO5** | **BL2** |
| **b** | What are advanced structural ceramics? Write the applications of advanced structural ceramic material? |  | **CO5** | **BL1** |
| **7** | **a** | How do you select materials for Aerospace Systems? Explain. | **10** | **CO1** | **BL3** |
| **b** | Explain Poly phase mixtures and any one process of their preparation? |  | **CO2** | **BL2** |
| **8** | **a** | What is Paris law? Explain. | **10** | **CO3** | **BL1** |
| **b** | What is meant by smart materials? Mention examples and its properties? |  | **CO4** | **BL1** |
| **9** | **a** | Explain the Nano crystalline materials. What is the difference between nano-crystalline and polycrystalline material? | **10** | **CO4** | **BL2** |
| **b** | How does plastic behavior change with strain rate and temperature? |  | **CO2** | **BL1** |

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