**Code No.BS104HS**

**METHODIST COLLEGE OF ENGINEERING & TECHNOLOGY**

**(An Autonomous Institution)**

**B.E. (CSE/AI&DS) I-Semester (Supplementary) Examination, September-2023**

**Subject: APPLIED PHYSICS**

**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** | List any four applications of Hall Effect. | **2** |  **1** |  **1** |
|  **b** | Explain the assumptions of classical free electron theory. | **2** |  **1** |  **2** |
|  **c** | What are the different types of polarizations that occur in dielectric materials? | **2** |  **2** |  **1** |
| **d** | Define magnetic flux and electric susceptibility. | **2** |  **2** |  **1** |
| **e** | Explain Meissner effect. | **2** | **3** |  **2** |
| **f** | What are Intrinsic and Extrinsic semiconductors. | **2** | **3** |  **2** |
| **g** | Explain the working principle of semiconductor laser. | **2** | **4** |  **5** |
| **h** | Define numerical aperture and acceptance angle. | **2** | **4** |  **1** |
| **i** | List any four applications of thin films. | **2** | **5** |  **1** |
| **j** | Explain the physical properties of materials at Nano size. | **2** | **5** |  **2** |

**PTO**

**PART-B**

**Answer Any Five questions**.

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| --- | --- | --- | --- | --- | --- |
| **Q.No.** |  | **Questions** | **Marks** | **CO** | **BTL** |
| **2.** | **a** | Distinguish conductors, semiconductors and insulators. | **4** | **1** |  **4** |
| **b** | Explain the construction and working of a thermistor. | **4** | **1** |  **2** |
| **3.** | **a** | Explain capacitance bridge method for determination of dielectric constant. | **5** | **2** |  **2** |
| **b** | Analyze magnetic hysteresis in Ferro magnetic materials. | **3** | **2** |  **4** |
| **4.** | **a** | Explain BCS theory for superconductivity in materials | **3** | **3** |  **2** |
| **b** | Develop expressions for energy and wave function associated with a particle in 1D box. | **5** | **3** |  **3** |
| **5.** | **a** | Explain the construction and working of He-Ne laser. | **6** | **4** |  **2** |
| **b** | Write any four applications of optical fibers. | **2** | **4** |  **1** |
| **6.** | **a** | Explain the construction and working of Solar cell. | **5** | **5** |  **2**  |
| **b** | Explain the physical and chemical properties of materials at reduced (Nano) size. | **3** | **5** |  **5** |
| **7.** | **a** | Analyze energy band formation in solids using Kronig- penny model. | **4** | **1** |  **4** |
| **b** | Write a short note on ferrites. | **4** | **2** |  **1** |
| **8.** | **a** | Build Schrodinger’s time independent wave equation. | **4** | **3** |  **3** |
| **b** | Explain Double crucible method to prepare fiber materials. | **4** | **4** |  **2** |
| **9.** | **a** | Explain sol-gel method to prepare Nano films. | **5** | **5** |  **2** |
| **b** | Develop an expression for electronic polarizability. | **3** | **2** |  **3** |

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