**Code No.:** **ES202EE**

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

**B.E. (EEE) II-Semester (Supplementary) Examination, FEB - 2024**

**Subject: PRINCIPLES OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**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** | What is the basic property of a capacitance? | **2** | **1** | **1** |
| **b** | Relate Voltage and Current of inductance. | **2** | **1** | **2** |
| **c** | Outline the procedure of mesh analysis. | **2** | **2** | **1** |
| **d** | Find the current flowing through each resistor of a series circuit consisting of four 20 Ω and one 10 Ω resistors all in series supplied with a battery voltage of 90 V.  | **2** | **2** | **1** |
| **e** | List the limitations of the maximum power transfer theorem. | **2** | **3** | **2** |
| **f** | Summarize the reciprocity theorem. | **2** | **3** | **2** |
| **g** | How is PN junction formed? | **2** | **4** | **1** |
| **h** | Show the diode symbol and label the electrodes. | **2** | **4** | **2** |
| **i** | Classify BJT. | **2** | **5** | **2** |
| **j** | Where is a MOSFET used? | **2** | **5** | **3** |

**PTO**

**PART-B**

**Answer Any Five questions**.

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| **Q.No.** |  |  **Questions** | **Marks** | **CO** | **BTL** |
| **2.** | **a** | Determine the voltage VO in the circuit shown below using source transformation? | **4** | **1** | **4** |
| **b** | Classify the circuit elements. State Ohm’s law and list its limitations? | **3** | **1** | **2** |
| **3.** | **a** | Derive condition for STAR-DELTA and DELTA - STAR transformations | **4** | **2** | **2** |
|  | **b** | List the characteristics of a parallel resistances circuit. | **3** | **2** | **2** |
| **4.** |  | Determine the current in resistor 6 Ω by superposition theorem in the circuit shown below? | **8** | **3** | **4** |
| **5.** | **a** | With a neat circuit explain the operation of full wave bridge rectifier? | **5** | **4** | **2** |
|  | **b** | Show the Zener diode characteristics. | **3** | **4** | **2** |
| **6.** | **a** | Discuss the operation of transistor as an amplifier. | **5** | **5** | **6** |
|  | **b** | List the BJT Specifications | **3** | **5** | **4** |
| **7.** | **a** | Discuss about dependent sources. | **3** | **1** | **6** |
| **b** | Determine I in the 2 ohms resistor shown below using mesh analysis? | **5** | **2** | **5** |
| **8.** | **a** | Derive the condition for the Maximum power Transfer theorem ?  | **4** | **3** | **5** |
| **b** | Outline transition and diffusion capacitances. | **4** | **3** | **2** |
| **9.** | **a** | Illustrate Thevenin’s theorem. | **4** | **3** | **2** |
| **b** | Show the common base configuration of npn and pnp transistors. | **4** | **5** | **2** |

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