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

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

**B.E. (EEE) II-Semester (AICTE) (Regular) Examination, September - 2023**

**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 an inductance? | **2** | **1** | **1** |
| **b** | Relate voltage and current of capacitance.  | **2** | **1** | **2** |
| **c** | Outline the procedure of nodal analysis. | **2** | **2** | **2** |
| **d** | Find the total current flowing through a circuit with two resistors in parallel with resistances of 2 Ω and 5 Ω supplied by a battery with voltage difference of 10 V?  | **2** | **2** | **1** |
| **e** | Show the true condition for maximum power transfer from source to load. | **2** | **3** | **2** |
| **f** | List the limitations of superposition theorem. | **2** | **3** | **2** |
| **g** | Why is it called a diode? | **2** | **4** | **1** |
| **h** | Classify diode rectifiers. | **2** | **4** | **4** |
| **i** | Label the terminals of a BJT. | **2** | **5** | **2** |
| **j** | Where is a UJT used? | **2** | **5** | **2** |

**PTO**

**PART-B**

**Answer Any Five questions**.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Q.No.** |  |  **Questions** | **Marks** | **CO** | **BTL** |
| **2.** | **a** | Determine the voltage Vacross 20 Ωin the circuit shown below using source transformation? | **5** | **1** | **4** |
| **b** | State and explain Kirchoff’s Voltage Law?  | **3** | **1** | **2** |
| **3.** | **a** | Determine the equivalent resistance between the terminals A and B using star – delta transformation for the bridge network shown below?  | **5** | **2** | **4** |
|  | **b** | List the characteristics of a series circuit. | **3** | **2** | **2** |
| **4.** |  | Using Thevenin’s theorem, determine the current flowing through the 4 Ω resistor in the network shown below?  | **8** | **3** | **4** |
| **5.** | **a** | With a neat circuit explain the voltage regulation using Zener diode? | **5** | **4** | **2** |
|  | **b** | Show the forward and reverse characteristics of a p-n junction diode. | **3** | **4** | **2** |
| **6.** | **a** | Discuss the NPN transistor structure and action. | **5** | **5** | **6** |
|  | **b** | Outline the MOSFET construction. | **3** | **5** | **2** |
| **7.** | **a** | Discuss about independent sources. | **3** | **1** | **6** |
| **b** | Determine V0 in the circuit shown below using nodal analysis? | **5** | **2** | **5** |
| **8.** | **a** | Determine **I**in the network shown below using Millman’s theorem? | **5** | **3** | **5** |
| **b** | Show the rectifier circuits. | **3** | **4** | **2** |
| **9.** | **a** | Show the common emitter configuration of npn and pnp transistors. | **4** | **5** | **2** |
| **b** | Illustrate maximum power transfer theorem with an example. | **4** | **4** | **2** |

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