**Code No.PC301EC**

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

**B.E. (ECE) III-Semester (AICTE) (Supplementary) Examination, Aug -2023**

**Subject: ELECTRONIC DEVICES**

**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** | What is an ideal diode? How can it be represented as a switch? Draw its characteristics? | **2** | **1** | **2** |
| **b** | Briefly explain effect of temperature on diode characteristics? | **2** | **1** | **2** |
| **c** | Draw positive and negative clippers circuit with output wave forms. | **2** | **2** | **1** |
| **d** | What is a bleeder resistance? Why it is used in L-C filter? | **2** | **2** | **1** |
| **e** | Distinguish between BJT and FET? Explain BJT as an amplifier? | **2** | **3** | **4** |
| **f** | Define three types of stability factors and explain? | **2** | **3** | **1** |
| **g** | Write the applications of SCR. | **2** | **4** | **2** |
| **h** | What are the limitations of h-parameters? | **2** | **4** | **1** |
| **i** | Define the term pinch-off voltage in JFET? | **2** | **5** | **1** |
| **j** | Draw the small signal equivalent model of FET? | **2** | **5** | **1** |

**PTO**

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**PART-B**

**Answer Any Five questions**.

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| **Q.No.** |  | **Questions** | **Marks** | **CO** | **BTL** |
| **2.** | **a** | Discuss various breakdowns of functions in a semiconductor diode? | **4** | **1** | **5** |
| **b** | Draw and explain V-I characteristics of p-n junction diode? | **4** | **1** | **1** |
| **3.** | **a** | Explain the operation of the half wave rectifier with necessary diagrams and waveforms? | **4** | **2** | **4** |
| **b** | A sinusoidal voltage of 40V and frequency 50Hz is applied to a half wave rectifier, RL=200ohm,Vγ=0,Rf=20ohm, Rr=∞, Find Vdc , Idc, Imax , Irms, Pdc, ripple factor,η? | **4** | **2** | **4** |
| **4.** | **a** | Compare CB,CE, and CC configurations with respect to any three parameters. | **4** | **3** | **2** |
| **b** | What is early effect, Explain briefly. | **4** | **3** | **1** |
| **5.** |  | A CE amplifier is driven by voltage source with internal resistance Rs=800Ω. The load impedance RL=2k Ω. The h-parameters are hie=1.1KΩ, hre=2.5\*10-4, hfe=50, hoe=25µA/V. Compute AI, AV, AIs, Ri, and Zo. | **8** | **4** | **4** |
|  |  |  |  |  |
| **6.** | **a** | Show that for a JFET ID=IDSS[1-VGS**/**VPINCH]2? | **4** | **5** | **4** |
| **b** | Define various FET parameters and obtain the relationship between them? | **4** | **5** | **3** |
| **7.** | **a** | Explain the effect of temperature on extrinsic semiconductors? | **3** | **1** | **1** |
| **b** | Explain the operation of the Full wave rectifier with necessary diagrams and waveforms? | **5** | **2** | **2** |
| **8.** | **a** | Explain operation of common base configuration of BJT to obtain input and output characteristics? | **5** | **3** | **2** |
| **b** | Determine h-parameter for the two port network. | **3** | **4** | **2** |
| **9.** | **a** | Explain the operation of a MOSFET in enhancement mode? | **5** | **5** | **2** |
| **b** | Draw the symbols of N-channel, P-channel JFET and MOSFET. | **3** | **1** | **1** |

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