| Code No.: EC301PC | R20 | H.T.No. | | | 8 | R | | | | | | |
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**CMR ENGINEERING COLLEGE: : HYDERABAD**
**UGC AUTONOMOUS**
**II–B.TECH–I–Semester End Examinations (Supply) - June- 2025**
**ELECTRONIC DEVICES AND CIRCUITS**
**(ECE)**

**[Time: 3 Hours]** **[Max. Marks: 70]**

**Note:** This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART-A** **(20 Marks)**

| | | |
|---|---|---|
| 1. a) | Define Diffusion and Transition capacitance. | [2M] |
| b) | List out the different types of clipper circuits. | [2M] |
| c) | Draw the symbols of NPN and PNP transistor? | [2M] |
| d) | Define rise time and fall time for a transistor? | [2M] |
| e) | Write the differences between BJT and FET? | [2M] |
| f) | List out the applications of Photo Diode. | [2M] |
| g) | Define an amplifier? List out the applications of amplifier. | [2M] |
| h) | What is the need of coupling and bypass capacitors in CE amplifier? | [2M] |
| i) | Draw the circuit diagram of common source JFET amplifier? | [2M] |
| j) | Write the classification of MOSFET along with their symbols? | [2M] |

**PART-B** **(50 Marks)**

| | | |
|---|---|---|
| 2.a) | Explain about the PN junction diode in forward and reverse bias conditions and draw its V-I characteristics. | [07M] |
| b) | Explain about load line analysis. | [03M] |

**OR**

| | | |
|---|---|---|
| 3. | Construct and explain the operation of Half Wave Rectifier and derive the equation for ripple factor and efficiency. | [10M] |
| 4. | Explain the circuit for a common base configuration with their input and output characteristics. | [10M] |

**OR**

| | | |
|---|---|---|
| 5. | Explain in detail about self – bias and derive its stability factor. | [10M] |
| 6. | What are the types of breakdown mechanisms in a Zener diode? Explain the reverse bias characteristics of Zener diode. | [10M] |

**OR**

| | | |
|---|---|---|
| 7. | Explain the construction and working principle of operation for p-channel JFET with its characteristics. | [10M] |
| 8. | Draw the BJT hybrid models for CE, CB & CC configurations. | [10M] |

**OR**

| | | |
|---|---|---|
| 9. | Draw the circuit diagram of a collector to base bias circuit of a CE amplifier and derive the expression for stability factor. | [10M] |
| 10. | Explain the operation of Enhancement mode MOSFET in detail along with its characteristics. | [10M] |

**OR**

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|---|---|---|
| 11. | Draw the circuit diagram of CS amplifier and explain its working operation. | [10M] |

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