

16/12

Code No.: R22EC301PC

R22

H.T.No.

		8	R						
--	--	---	---	--	--	--	--	--	--

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II-B.TECH-I-Semester End Examinations (Regular) - December- 2024
ELECTRONIC DEVICES AND CIRCUITS
(ECE)

[Time: 3 Hours]

[Max. Marks: 60]

Note: This question paper contains two parts A and B.
 Part A is compulsory which carries 10 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

(10 Marks)

1. a) Explain how the reverse saturation current of a P-N junction diode varies with temperature. [1M]
- b) Give the expressions for ripple factor and efficiency for full wave rectifier. [1M]
- c) Define Early Effect. [1M]
- d) Mention the advantages and disadvantages of self-bias method. [1M]
- e) Mention the working principle of varactor diode. [1M]
- f) List out the differences between JFET and MOSFET. [1M]
- g) Write the expressions for the h-parameters of a transistor under CE configuration. [1M]
- h) List out Comparison of transistor amplifiers of CE, CB and CC. [1M]
- i) What are the different types of FETs? [1M]
- j) Why the input impedance of FET is higher than BJT? [1M]

PART-B

(50 Marks)

2. Explain PN junction diode in forward and reverse bias conditions with suitable diagrams. [10M]
- OR**
3. Derive the expressions for ripple factor and efficiency of a Half wave rectifier. [10M]
 4. Draw the circuit diagram of an NPN junction transistor in CE configuration and explain the input and output characteristics. [10M]
- OR**
- 5.a) What is the need for biasing? Explain self biasing method in BJT. [7M]
 - b) Write about Thermal runaway. [3M]
 6. Illustrate the construction and operation of n-channel JFET with neat diagrams. [10M]
- OR**
7. Explain the working of Zener diode and its V-I characteristics. What is the sufficient condition for regulation? [10M]
 8. Draw the circuit diagram of Common Emitter (CE) amplifier and derive expression for voltage gain, current gain, input impedance and output admittance using approximate model. [10M]
- OR**
9. Explain the determination of H-parameters of a two port network. [10M]
 10. Draw the circuit diagram of common source (CS) amplifier and derive expression for voltage gain input impedance and output impedance. [10M]
- OR**
11. Explain the operation and draw drain and transfer characteristics of depletion type MOSFET. [10M]
