Code No.: R22EC301PC | R22 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–I–Semester End Examinations (Regular) - February- 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)	What is a PN junction? How is it formed?	[1M]
b)	What is meant by Rectifier?	[1M]
c)	Why Transistor is called Current Controlled Device?	[1M]
d)	What is meant by operating point? Explain its significance.	[1M]
e)	State the applications of JFET.	[1M]
f)	Define Zener diode.	[1M]
g)	List Hybrid Parameters of a transistor.	[1M]
h)	Define amplification factor?	[1M]
i)	How FET acts as a Voltage Variable Resistor (VVR).	[1M]
j)	Mention types of MOSFET?	[1M]

PART-B **(50 Marks)**

2.	Explain the operation of PN junction diode and obtain the forward bias and reverse bias Volt – Ampere characteristics.	[10M]
	OR	
3.	Draw the circuit of full-wave rectifier with capacitor filter. Explain its operation with necessary equations.	[10M]
4.	With the help of Input & Output characteristics, explain the operation of a BJT in Common Emitter (CE) Configuration.	[10M]
	OR	
5.	Explain how self biasing can be done in a BJT with relevant sketches and waveforms.	[10M]
6.	Explain about the N-channel JFET Construction & operation with Transfer and Drain characteristics.	[10M]
	OR	
7.	Explain the operation of SCR with neat diagram.	[10M]
8.	The h parameters of a transistor used in CE Amplifier circuit are hie =1.0kΩ, hre =$10*10^{-4}$, hfe=50 , hoe =$25*10^{-6}$. The load resistance for transistor is 1kΩ in the collector circuit determine A_i, Av,R_i and Ro in the amplifier stage (assume Rs=1000Ω).	[10M]
	OR	
9.	Obtain the expression for current gain (A_i), voltage gain (A_v), input impedance (R_i) and output impedance (R_o) for low frequency Common Emitter Amplifier.	[10M]
10.	Explain the principle operation of CS amplifier with the help of circuit diagram. Derive the expression for A_V.	[10M]
	OR	
11.	Explain the operation of N-channel MOSFET in depletion mode along with its characteristics.	[10M]

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