Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Third Semester

Biomedical Engineering

BM3353 / UBMT24301- Fundamentals of Electronic Devices and Circuits

Regulations – 2021 & 2024

Duration : 3 Hrs *Maximum : 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BTL*	*CO*	*Marks*
1.	State transition capacitance.	L1	1	2
2.	Draw the energy band diagram of PN diode.	L1	1	2
3.	Define thermal runway.	L2	2	2
4.	What is meant by biasing a transistor?	L2	2	2
5.	Explain how MOSFET can act as Switch.	L2	3	2
6.	Define amplification factor of JFET?	L2	3	2
7.	List the application of LASER diode.	L1	4	2
8.	Write the use of LDR.	L1	4	2
9.	Write the difference between MOSFET and power MOSFET.	L2	5	2
10.	What is CCD, write the purpose of CCD.	L2	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)*

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a		With a neat diagram, explain the working of PN junction diode. Also draw and explain the characteristics of PN junction diode. Briefly explain about breakdown in PN junction diode.	L4	1	16
			Or			
	b		Derive the expression of Space Charge Capacitance of PN Junction diode under Reverse Bias Condition.	L4	1	16
12.	a		Illustrate the construction and working of NPN transistor with necessary diagrams.	L4	2	16
			Or			
	b	i	Draw and explain the h-parameter equivalent circuit of a transistor in CB configuration.	L4	2	8
		ii	Derive the expressions for input impedance, output impedance, voltage gain and current gain of CB configuration.	L4	2	8
13.	a		With a neat construction of n-channel JFET, describe the working of it.	L2	3	16
			Or			
	b		Illustrate the working of MOSFET in terms of enhancement and depletion mode.	L2	3	16

14.	a	i	Discuss the operation of Photo diode with a neat diagram.	L4	4	8
		ii	Describe how Zener diode act as Voltage regulator with neat graphical representation.	L4	4	8
			Or			
	b	i	Draw and explain the characteristics of varactor diode.	L4	4	8
		ii	Discuss in detail about working of Tunnel Diode and draw its voltage current characteristics.	L4	4	8
15.	a		Explain the construction and working of Uni Junction Transistor with necessary diagrams.	L2	5	16
			Or			
	b	i	What is opto coupler and what is the significance of it?	L2	5	8
		ii	Write short note on solar cell with its applications.	L2	5	8