

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

*Third Semester**Biomedical Engineering*

BM3353- Fundamentals of Electronic Devices and Circuits

*Regulations - 2021**Duration : 3 Hrs**Maximum : 100 Marks**PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Define the term drift current.	RE	1	2
2.	Compare P-type and n-type semiconductor.	UN	1	2
3.	Define early effect of the transistor.	RE	2	2
4.	Obtain the relationship between α and β .	UN	2	2
5.	Compare BJT and JFET.	UN	3	2
6.	What is the application of MOSFET?	RE	3	2
7.	Define CNTFET.	RE	4	2
8.	Compare LED and LASER diode.	UN	4	2
9.	Why SCR cannot be used as a bidirectional switch?	RE	5	2
10.	Outline the V-I characteristics of Triac.	UN	5	2

*PART - B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)*

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i Explain the working of PN Junction diode in forward bias condition.	UN	1	7
	ii Explain the switching characteristic of PN Junction diode.	UN	1	6
	Or			
	b Explain and derive the PN Junction diode current equation with neat diagram.	UN	1	13
12.	a Describe in detail about NPN transistor common emitter configuration and show the circuit for determining its input and output characteristics?	UN	2	13
	Or			
	b Obtain the expression of Ebers moll model for a NPN transistor with neat diagram.	UN	2	13
13.	a Explain the working principle and operation of the n-channel enhancement mode MOSFET.	UN	3	13
	Or			
	b Describe the working mechanism of JET drain and transfer characteristics with necessary diagram.	UN	3	13

14.	a	Construct how Zener diode is used as voltage regulation and show its V-I characteristics.	AP	4	13	
		Or				
	b	Explain how the choice of semiconductor materials affect the construction and performance of a laser diode.	AP	4	13	
15.	a	i	Illustrate the construction, symbol and characteristics of photovoltaic cell.	UN	5	7
		ii	Explain the working principle of SCR with V-I characteristics.	UN	5	6
		Or				
	b	i	Illustrate the working principle of opto-couplers.	UN	5	8
		ii	Explain the significance of Charged coupled devices.	UN	5	5

*PART - C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	Construct the principle of tunnel diode with necessary band diagrams. Also illustrate the V-I characteristics and the negative resistance Phenomenon	AP	4	15
		Or			
	b	Explain the working principle of DIAC and also how temperature variations influence the V-I characteristics of a DIAC. How would this temperature affects its performance?	AP	5	15