R20 Regulation *Subject code: 3B1AK*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech I Semester Supplementary Examinations, June 2024

ELECTRONIC DEVICES

(Electronics and Communication Engineering)

Maximum Marks: 70 Date:27.06.2024 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		CO	Bloom Tx
1	Write the applications of P-N diode	1	L1
2	Define space charge region in a PN junction Diode	1	L1
3	Write about carrier multiplication.	2	L1
4	Draw the V-I characteristics of SCR.	2	L1
5	Write the difference between HWR and FWR?	3	L1
6	Define the ripple factor and Efficiency of a rectifier.	3	L1
7	Define early effect in a transistor.	4	L1
8	Define stability factor & derive expression 'S'.	4	L1
9	List the advantages of FET over BJT.	5	L1
10	Draw the symbols of P-Channel JFET and N-Channel JFET.	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)			
11.	a. Derive the Diode current equation of a PN junction diode. (6M) b. The voltage of silicon diode at room temperature at 300K is 0.71V when 2.5mA current flows through it .if the voltage increases to 0.8V calculate the new diode current. (4M)	1	L2
	OR		
12	Explain the operation of a PN diode and draw its characteristics. (10M)	1	L2
13	Explain V-I characteristics of Zener diode with neat diagrams. (10M)	2	L2
	OR		
14	Explain the operation of a Tunnel Diode using Energy band diagrams. (10M)	2	L2
15	Explain the operation of a half wave Rectifier. Derive its ripple factor, Efficiency, PIV, and Form Factor. (10M)	3	L2
	OR		

16	Explain the operation of a Full wave Rectifier. Derive its ripple factor, Efficiency, PIV, and Form Factor. (10M)	3	L2
17.	Explain the input and output characteristics of CB configured transistor circuit with a neat circuit diagram. (10M)	4	L2
	OR		
18	Explain the self - bias technique of a Transistor and derive its stability factor. (10M)	4	L2
19	With the help of neat circuit diagram explain the operation of N- channel JFET. (10M)	5	L2
	OR		
20	Explain the construction and operation of Enhancement MOSFET and draw its characteristics. (10M)	5	L2