Regulation R20 *Subject code: 3B1AK*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, January 2024

ELECTRONIC DEVICES

(Electronics and Communication Engineering)

Maximum Marks: 70 Date:20.01.2024 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	Define Diffusion and drift current.	CO1	L1
2	Differentiate between ideal and practical diode.	CO1	L2
3	Write about zener breakdown mechanism.	CO2	L1
4	Write the applications of Tunnel diode.	CO2	L1
5	Define PIV, and Ripple factor of a rectifier.	CO3	L1
6	Define the ripple factor and Efficiency of a rectifier.	CO3	L1
7	Explain early effect in a transistor.	CO4	L2
8	Define stability factor & derive expression 'S'.	CO4	L1
9	List the advantages of FET over BJT.	CO5	L1
10	Draw the symbols of P-Channel JFET and N-Channel JFET.	CO5	L1
	Part-B		
Answer All the following questions. (5X10M=50Marks)			
11.a	Derive the Diode current equation of a PN junction diode. (6M)	CO1	L3
11.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)	CO1	L3
	OR		
12.a.	Derive the expression for Dynamic resistance. (5M)	CO1	L3
12.b.	Explain the effect of temperature on PN junction diode. (5M)	CO1	L2
13.	Explain the operation of a Tunnel Diode using Energy band diagrams. (10M)	CO2	L2

	OR		
14.	Explain V-I characteristics of Zener diode with neat diagrams. (10M)	CO2	L2
15.	Explain the operation of a Bridge wave Rectifier. Derive its ripple factor, Efficiency, PIV, and Form Factor. (10M)	CO3	L2
	OR		
16.	Draw and explain the Full wave rectifier with neat diagrams. Derive its ripple factor, Efficiency, PIV, and Form Factor. (10M)	CO3	L2
17.	Explain the input and output characteristics of CB configured transistor circuit with a neat circuit diagram. (10M)	CO4	L2
	OR		
18.a.	Explain operating point of a transistor and explain the concept of D.C Load line. (6M)	CO4	L2
18.b.	Determine the operating point for a fixed bias circuit whose V_{cc}=10V, R_c=2KΩ, R_b=930KΩ, β=50 for a silicon transistor. (4M)	CO4	L3
19.	With the help of neat circuit diagram explain the operation of N- channel JFET. (10M)	CO5	L2
	OR		
20.	Explain the construction and operation of a Enhancement MOSFET and draw its characteristics. (10M)	CO5	L2