Regulation: R20 *Subject code:3B1AK*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, March/April 2023

ELECTRONIC DEVICES

(Electronics and Communication Engineering)

Maximum Marks: 70 Date:06.04.2023 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)

1 Write down the Resistor function?
2 Draw the Zener Diode symbol.
3 What is the function of Transistor.
4 Draw the V-I characteristics of SCR.
5 Write the difference between HWR and FWR
6 Define the Efficiency of a rectifier.
7 Write the early effect in a transistor.
8 Define stability factor.
9 List the advantages of FET over BJT.
10 Define the Pinchoff voltage.

Part-B

Answer All the following questions. (5X10M=50Marks)

11. Explain the V-I characteristics of Diode and Derive the Diode current equation of a PN junction diode. (10M)

OR

12 a) Derive the expression for Dynamic resistance. (5M)
b) Explain the effect of temperature on PN junction diode. (5M)

13 Explain the operation of a Tunnel Diode using Energy band diagrams. (10M)

OR

14 Explain Avalanche Breakdown and Zener Breakdown. (10M)

15 Explain the operation of a Full wave Rectifier. Derive its ripple factor, Efficiency, PIV, and Form Factor. (10M)

OR

16 Explain the Bridge rectifier and derive the Efficiency. (10M)

17 Explain the input and output characteristics of CB configured transistor circuit with a neat

circuit diagram. (10M)

OR

18. a) Explain operating point of a transistor and explain the concept of D.C Load line. (6M)

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)

19 With the help of neat circuit diagram explain the operation of N- channel JFET . (10M)

OR

20 Explain the construction and operation of a Depletion MOSFET and draw its characteristics. (10M)