Regulation: R18 *Subject code:2E1AH*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, September 2023

Electronics Devices and Circuits

(Common to ECE & CSE)

Maximum Marks: 70 Date:05.10.2023 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 the applications of P-N diode.

2 Define Diffusion current and Drift current.

3 Draw the symbol of Tunnel diode.

4 Mention the applications of Tunnel Diode and Varactor diode.

5 Write the differences between HWR and FWR

6 Define the Terms PIV, Ripple factor and Efficiency of a rectifier.

7 What is Thermal runaway?

8 Define stability factor.

9 List the advantages of FET over BJT.

10 Draw the symbols of P-Channel JFET and N-Channel JFET.

Part-B

Answer All the following questions. (10M X 5=50Marks)

11. Explain forward and reverse bias characteristics of P-N junction diode. (10M)

OR

12.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)

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

OR

14.a Explain V-I characteristics of Zener diode with neat diagrams. (5M)

b Explain how Zener diode works as a Voltage regulator (5M)

15.a. Explain the operation of a Full wave Rectifier. Derive its ripple factor, Efficiency, PIV.

(6M)

b. A.C voltage of 230 V is applied to a Full wave rectifier through a transformer of turn ratio 10:1. The load resistor value is 1Kohm and diode resistance is 20ohm. Determine efficiency and PIV.

(4M)

OR

16. Explain the operation of a half wave Rectifier. Derive its ripple factor, Efficiency, PIV, and Form Factor.

(10M)

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

(10M)

OR

18. Explain the self - bias technique of a Transistor and derive its stability factor. (10M)

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)