R20 Regulation *Subject code:3B1AK*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, September 2023

ELECTRONIC DEVICES

(Electronics and Communication Engineering)

Maximum Marks: 70 Date:30.09.2023 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 Zener diode and write its applications.

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 Explain early effect in a transistor and Thermal runaway

8 Define stability factor & derive expression 'S'.

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. Derive the Diode current equation of a PN junction diode. (10M)

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)

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

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

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)