R20 Regulation *Subject code:3B1AK*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Regular/Supplementary Examinations, April 2022

ELECTRONIC DEVICES

(ECE)

Maximum Marks: 70 Date:02.05.2022 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 Draw the PN Diode and Zener diode symbol.
2 Write temperature dependence of a diode.
3 List out the advantages and disadvantages of a Tunnel Diode.
4 Can an Ordinary rectifier diode be used as a Zener diode? Explain.
5 Define the following terms:
a) Ripple Factor b) Transformer utilization factor
6 What is the need of filter in rectifier
7 Define the early effect and its consequences.
8 Write the need of h-parameters,
9 Why are N-Channel MOSFETs preferred over P- Channel MOSFETs.
10 Compare BJT & FET

Part-B

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

11 a) Explain the Diffusion Capacitance in PN Junction Diode. (7M)
b) The reverse saturation current of a silicon PN junction diode is 20 μA. Calculate the diode current for the forward-bias voltage of 0.65V at 25° C. (3M)

OR

12 a) Distinguish between Avalanche and Zener Mechanisms (5M)
b) Explain the VI characteristics of PN junction diode with a neat sketches (5M)

13 With Energy band diagrams, explain the working principle and V-I Characteristics of Tunnel diode (10M)

OR

14 a) Show that the Zener diode can be used as s voltage regulator. (5M)
b) Explain the principle of varactor diode and list out its applications. (5M)

15 With proper illustrations, explain the working principle of a full wave rectifier and derive the

expressions for average value of voltage, rms value of voltage and ripple factor. (10M)

OR

16 a) Compare the performance of Inductance, L-section and π –section filters. (5M)
b) Explain the significance of the Bleeder resistor in filters. (5M)

17 Explain input and output characteristics of common emitter configuration with neat sketches (10M)

OR

18 Derive the stability factor (S) for self-bias (10M)

19 With the help of suitable diagrams explain the working of N channel enhancement MOSFET (10M)

OR

20 Explain the construction of N-channel JFET. List the relative merits of N-Channel and a P-Channel JFET. (10M)