R20 Regulation *Subject code:3P3CC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Regular/Supplementary Examinations, March/April 2023

BASIC ELECTRONICS

(MECHANICAL ENGINEERING)

Maximum Marks: 70 Date:01.04.2023 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 Define the terms Conductivity and mobility in a semiconductor.
2 What is a PN Junction?
3 What are the breakdown mechanisms in a semiconductor diode?
4 List the applications of LED.
5 Define the following terms i) Ripple Factor ii) Peak inverse voltage
6 What are the advantages of Full wave Bridge Rectifier?
7 Define the early effect.
8 What is the condition for Thermal stability?
9 Draw the OR gate and verify its truth table.
10 Which gates are called Universal gates? Why?

Part-B

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

11 a) Explain about Diffusion and Transition Capacitance . 5M
b) Explain V-I characteristics of PN Junction Diode with neat diagrams 5M

OR

12 a) Describe the action of PN Junction diode under forward bias and reverse bias. 5M
b) Compare Conductors, Insulators and Semiconductors. 5M

13 Explain the Principle and Working of Photo diode. 5M

OR

14 Draw the operational circuit diagram of SCR and Explain it. 10M

15 Draw the Half Wave Rectifier circuit diagram and explain its operation and derive expression for Ripple factor. 10M

OR

16 a) What are the types of filters used in rectifiers? Explain them briefly. 5M
b) Draw the Bridge Rectifier circuit diagram and explain its operation. 5M

17 Explain the input and output characteristics of CB transistor with neat sketches. 10M

OR

18 a) What is thermal runaway? explain. 5M
b) Draw the Voltage Divider Bias circuit diagram and explain. 5M

19 What are the basic gates in digital systems and verify its truth tables. 10M

OR

20 Explain the Half adder with truth table and also draw the logic diagram. 10M