R20 Regulation *Subject code: 3P3CC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, June 2026

BASIC ELECTRONICS

(ME)

Maximum Marks: 70 Date: 16.06.2026 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)		Marks	CO	BTL
1	What is a p-n junction? How is it formed?	2M	1	L1
2	Write the diode equation.	2M	1	L1
3	Write about Zener break down mechanism.	2M	2	L1
4	Draw the V-I characteristics of SCR.	2M	2	L1
5	Define peak inverse voltage.	2M	3	L1
6	What is meant by filter?	2M	3	L1
7	Why Transistor is called Current Controlled Device?	2M	4	L1
8	Derive the relation between α, β and Υ.	2M	4	L1
9	What are the types of number systems?	2M	5	L1
10	Convert the $(10010011110)_2 = (?)_8$	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Explain the operation of silicon p – n junction diode and obtain the forward bias and reverse bias Volt – Ampere characteristics.	10M	1	L2
	OR			
12	Explain the operation of a SCR and draw its characteristics.	10M	1	L2
13	Explain the operation of Varactor diode and draw its characteristics. List the applications of varactor diode.	10M	2	L2
	OR			
14	Derive the expression for Ripple factor & efficiency for Half-Wave Rectifier.	10M	2	L2
15	Explain input and output characteristics of CE configured transistor circuit with a neat circuit diagram.	10M	3	L2
	OR			
16	Draw the collector to base bias circuit and derive the stability factor for it along with explanation	10M	3	L2

17	Compare the characteristics of a BJT in CB, CE and CC configurations	10M	4	L2
	OR			
18	Draw the Fixed bias circuit and derive the stability factor for it along with explanation	10M	4	L2
19	Convert the following a) $(567.4)_8 = (?)_2$ b) $(101101.10101)_2 = (?)_{16}$ c) $(AC569)_{16} = (?)_8$ d) $(198.23)_{10} = (?)_2$ e) $(12654)_8 = (?)_{16}$	10M	5	L2
	OR			
20	Explain in detail half adder with truth table.	10M	5	L2