R20 Regulation *Subject code: 3P3CC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, December 2025

BASIC ELECTRONICS

(ME)

Maximum Marks: 70 Date: 19.12.2025 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	Draw the Diode Equivalent Circuit.	2M	1	L1
2	What is semiconductor	2M	1	L1
3	Draw Tunnel diode Characteristics.	2M	2	L1
4	Write the applications of Tunnel Diode	2M	2	L1
5	Write the difference between HWR and FWR.	2M	3	L1
6	Draw the circuit diagram of Bridge Rectifier using pi filter.	2M	3	L1
7	Compare CB, CE and CC configurations.	2M	4	L1
8	Draw PNP & NPN transistor symbols.	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	a) Derive the Diode current equation of a PN junction diode. b) Write some applications of PN junction diode.	8M 2M	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	What is filter? Derive the expression for Ripple factor for Full Wave Rectifier with L-section filter.	10M	2	L2
15	Explain input and output characteristics of CB 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 and full adder with logic diagrams.	10M	5	L2