



R20 Regulation *Subject code:3P3CC*
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
 (Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Supplementary Examinations, July 2024

BASIC ELECTRONICS
 (Mechanical Engineering)

Maximum Marks: 70

Date:23.07.2024 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)	Blooms Tx
CO			
1	What is a p-n junction? How is it formed?	L1	C1
2	List the diode applications.	L1	C1
3	List the Zener diode applications.	L1	C2
4	Draw the V-I characteristics of SCR.	L1	C2
5	Define peak inverse voltage.	L1	C3
6	What is meant by filter?	L2	C3
7	Why Transistor is called Current Controlled Device?	L6	C4
8	Derive the relation between α , β and γ .	L6	C4
9	What are the types of number systems?	L1	C5
10	Convert the $(10010011110)_2 = (?)_8$	L1	C5
Part-B			
Answer All the following questions.		(5X10M=50Marks)	
C1			
11	Explain the operation of silicon p – n junction diode and obtain the forward bias and reverse bias Volt – Ampere characteristics. (10M)	L2	C1
	OR		
12	Derive current equation of a diode. (10M)	L6	C1
13	Explain the Avalanche and Zener Breakdowns. (10M)	L2	C2
	OR		
14	Explain the V-I characteristics of Zener diode with neat sketches. (10M)	L2	C2
15	Explain the operation of a Half wave Rectifier. Derive its ripple factor, Efficiency, PIV, and Form Factor. (10M)	L2	C3
	OR		

16	What is filter? Derive the expression for Ripple factor for Full Wave Rectifier with L-section filter. (10M)	L2	C3
17	Explain the input and output characteristics of CE configured transistor circuit with a neat circuit diagram. (10M)	L2	C4
	OR		
18	Draw the Fixed bias circuit and derive the stability factor for it along with explanation. (10M)	L2	C4
19	Solve the following the following conversions. (10M) $(27.125)_{10} = (\quad)_8$ $(1010100111.111001)_2 = (\quad)_{16}$ $(237.75)_8 = (\quad)_{10}$ $(735.5)_8 = (\quad)_{16}$ $(A9F5.8B)_{16} = (\quad)_2$	L2	C5
	OR		
20	Define logic gates? Realization of basic gates from universal gates. (10M)	L2	C5