



B.Tech III Semester Supplementary Examinations, Dec 2024

BASIC ELECTRONICS
(Mechanical Engineering)

Maximum Marks: 70

Date:06.12.2024 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	Define Active and Passive elements.		L1	C1
2	What is diode equation?		L1	C1
3	Draw the Zener diode symbol.		L1	C2
4	Draw the V-I characteristics of SCR.		L1	C2
5	Define RMS.		L1	C3
6	What is meant by filter?		L2	C3
7	Why Transistor is called Current Controlled Device?		L1	C4
8	Derive the relation between α , β and γ .		L2	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)		
11	Explain PN diode forward and reverse bias with neat diagram. (10M)		L2	C1
OR				
12	Explain the current equation of a diode. (10M)		L2	C1
13	Explain the principle of operation of tunnel diode with characteristics diagram. (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 Bridge 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		L2	C3

	with π -section filter. (10M)		
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) $(27.125)_{10} = (\quad)_8$ $(1010100111.111001)_2 = (\quad)_{16}$ $(735.5)_8 = (\quad)_{16}$ $(A9F5.8B)_{16} = (\quad)_2$	L2	C5
	OR		
20	Explain gates? Realization of basic gates from universal gates (10M)	L2	C5