



R18 Regulation

Subject code: 2E1AH

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, February 2024

Electronic Devices & Circuits

(Common to ECE & CSE)

Maximum Marks: 70

Date:24.01.2024 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 which carries 10M.
 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)

		CO	Bloom Tx
1	Write the equation of diode current.	CO1	L1
2	List the differences between ideal diode and practical diode?	CO1	L1
3	Draw the V-I characteristics of SCR?	CO2	L1
4	Write the differences between avalanche and zener breakdown mechanisms?	CO2	L1
5	Compare the rectifier and regulator?	CO3	L3
6	What is the need for a filter in rectifier?	CO3	L1
7	What is meant by operating point Q?	CO4	L1
8	Define Transistor.	CO4	L1
9	List the important features of FET?	CO5	L1
10	Draw the characteristics curves of an n-channel JFET?	CO5	L1

Part-B

Answer All the following questions.

(5X10M=50Marks)

11	A. Distinguish between drift and diffusion current in a semiconductor. [5M] B. Explain the temperature dependence of VI characteristics of P-N diode? [5M]	CO1	L4
OR			
12	A. Distinguish between Static and dynamic resistances of a P-N diode. [5M] B. Derive an expression for total diode current starting from Boltzmann relationship in terms of the applied voltage? [5M]	CO1	L4
13	Explain about : A. Varactor diode [5M] B. Zener Diode. [5M]	CO2	L2
OR			
14	Explain the tunneling phenomenon. Explain the characteristics of tunnel diode with the help of necessary energy band diagrams? [10M]	CO2	L2
15	A. Explain about L-section and π -section filters? [5M] B. Explain the relative merits and demerits of all the rectifiers? [5M]	CO3	L2 L2

	OR		
16	Derive the expression for the ripple factor of π -Section filter when used with a Full-wave-rectifier. Make necessary approximations? [10M]	CO3	L3
17	A. Explain the constructional details of Bipolar Junction Transistor? [5M] B. Derive the relation among α , β and γ ? [5M]	CO4	L3
	OR		
18	Justify statement "Potential divider bias is the most commonly used biasing method" for BJT circuits. Explain how bias compensation can be done in such biasing through diodes? [10M]	CO4	L3
19	With the help of neat sketch explain drain and transfer characteristics of FET.	CO5	L4
	OR		
20	Sketch the drain characteristics of MOSFET for different values of V_{GS} & mark different regions of operation. [10M]	CO5	L4