



R18 Regulation

Subject code: 2E1AH

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, July 2025

ELECTRONIC DEVICES AND CIRCUITS

(Common to ECE & CSE)

Maximum Marks: 70

Date: 18.07.2025

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	Define diffusion capacitance?	2M	1	L1
2	Explain the load line analysis of diode?	2M	1	L1
3	List the applications of varactor diode?	2M	2	L1
4	Draw V-I characteristics of SCR.	2M	2	L1
5	Define PIV, Peak factor and Ripple factor of a rectifier.	2M	3	L1
6	Draw the circuit of Bridge rectifier with inductor filter.	2M	3	L1
7	Define Early effect.	2M	4	L1
8	Explain Thermal runaway.	2M	4	L1
9	Draw the symbols of (i) N-channel JFET (ii) N-channel depletion MOSFET.	2M	5	L1
10	Compare depletion and enhancement MOSFET.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Draw and explain forward and reverse bias characteristics of P-N junction diode.	10M	1	L2
OR				
12	Explain the current components in a PN junction diode.	10M	1	L2
13	Explain the dependency of temperature on PN junction diode.	10M	2	L2
OR				
14	A sinusoidal voltage whose $V_m=20V$ is applied to Fullwave Rectifier. The diode may be considered to be ideal and $R_L=1K\Omega$ is connected as load. Find out the peak current, Dc current, RMS current and ripple factor.	10M	2	L2
15	Draw and explain the circuit diagram of full wave rectifier with L-section filter.	10M	3	L2
OR				
16	Explain the input and output characteristics of CE configured transistor circuit with a neat circuit diagram.	10M	3	L2

17	Explain the Voltage divider biasing technique of a Transistor and derive its stability factor.	10M	4	L2
	OR			
18	Find the co-ordinates of the operating point for a CE amplifier which uses self bias method $V_{CC} = 12\text{ V}$ $R_1 = 10\text{k}\Omega$ $R_2 = 5\text{ k}\Omega$ $R_C = 1\text{k}\Omega$ $R_E = 2\text{k}\Omega$ and $\beta = 100$.	10M	4	L2
19	With the help of neat sketches and characteristic curves explain the construction & operation of a JFET and mark the regions of operation on the characteristics?	10M	5	L2
	OR			
20	Explain the construction & operation of a P-channel MOSFET in enhancement and depletion modes with the help of static drain characteristics and transfer characteristics?	10M	5	L2