



R20 Regulation

Subject code:3B1AK

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, July 2025

ELECTRONIC DEVICES

(ECE)

Maximum Marks: 70

Date: 14.07.2025

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	Write the applications of P-N diode?	2M	1	L1
2	Define space charge region in a PN junction Diode	2M	1	L1
3	Write the carrier multiplication.	2M	2	L1
4	Write the applications of Tunnel diode.	2M	2	L1
5	Define PIV, and Ripple factor of a rectifier.	2M	3	L1
6	Draw the circuit of Bridge rectifier withheld filter.	2M	3	L1
7	How transistor works as an amplifier?	2M	4	L1
8	Define Thermal runaway.	2M	4	L1
9	Write the differences between BJT and FET.	2M	5	L1
10	Compare Depletion MOSFET and Enhancement MOSFET.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	a) Explain the formation of N -type and p-type semiconductor. b) Explain Diffusion capacitance and derive its expression.	6M 4M	1	L2
OR				
12	Explain the operation of a Tunnel Diode using Energy band diagrams.	10M	1	L2
13	a) Explain the working of PI Section filter with a neat circuit diagram and derive its ripple factor. b) A 100microfarad capacitor when used as filter has 10V a.c across it with a terminating load resistor of 2.1kohm. If the filter is a full wave and supply frequency is 50Hz, what is the percentage ripple in the output?	6M 4M	2	L2
OR				
14	Explain the input and output characteristics of CB configured transistor circuit with a neat circuit diagram.	10M	2	L2
15	Explain the differences between BJT and MOSFET.	10M	3	L2
OR				
16	a) Explain the working of Half wave rectifier with inductor filter with a neat circuit diagram. b) Explain the PI Section filter with a neat circuit diagram using relevant wave forms.	5M 5M	3	L2

17	Draw the small signal hybrid model of CE amplifier and derive A_i, A_v, Z_i and Z_o .	10M	4	L2
OR				
18	Explain the self - bias technique of a Transistor and derive its stability factor.	10M	4	L2
19	Explain Drain & transfer characteristics of JFET and give the advantages of JFET.	10M	5	L2
OR				
20	Explain the construction and operation of a Depletion MOSFET and draw its characteristics.	10M	5	L2