R22 Regulation *Subject code:4E2AJ*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Supplementary Examinations, June 2026

ELECTRONIC DEVICES AND CIRCUITS

(Common to ECE & IT)

Maximum Marks: 60 Date: 22.06.2026 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 (10X1M=10 Marks)		Marks	CO	BTL
1.a	Define Doping.	1M	1	L1
b	Define Zener Breakdown.	1M	1	L2
c	Write the expression for Voltage regulation.	1M	2	L1
d	What is the need for Filter?	1M	2	L1
e	Define the amplifier.	1M	3	L2
f	Define active region in BJT transistor.	1M	3	L2
g	Define transistor biasing.	1M	4	L1
h	Write the expression for the stability factor of fixed bias circuit.	1M	4	L1
i	What are the advantages of JFET?	1M	5	L1
j	Expand MOSFET.	1M	5	L2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	Derive the Diode current equation of a PN junction diode.	10M	1	L2
	OR			
3	Explain V-I characteristics of Zener diode with neat diagrams and list the applications.	10M	1	L3
4	Explain the operation of a Full wave Rectifier. Derive its ripple factor and efficiency.	10M	2	L2
	OR			
5	Explain the operation of Bridge rectifier and find out the ripple factor and efficiency.	10M	2	L3
6	Explain the input and output characteristics of CE configuration with neat diagrams.	10M	3	L2
	OR			
7	Explain the input and output characteristics of CC transistor configuration.	10M	3	L2
8	Draw the collector to base bias circuit diagram and derive an expression for stability factor.	10M	4	L2

	OR			
9	Explain the Voltage divider biasing technique of a Transistor and derive its stability factor.	10M	4	L3
10	Explain the FET parameters. Write the relation between Drain resistance, Transconductance and amplification factor.	10M	5	L2
	OR			
11	Explain the construction and operation of an Enhancement MOSFET and draw its characteristics.	10M	5	L2