R25 Regulation *Subject code:5ES1AE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, June 2026

ELEMENTS OF ELECTRICAL AND ELECTRONICS ENGINEERING

(CE)

Maximum Marks: 60 Date:27.06.2026 Duration: 3 hours

Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 10 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 (5X2M=10Marks)		Marks	CO	BTL
1.a	Define Passive and Active elements.	2M	1	L2
b	What is RMS value of an AC quantity?	2M	2	L1
c	List any two functions of earthing in electrical installations.	2M	3	L2
d	Define Ripple factor and Efficiency.	2M	4	L2
e	Draw the symbol of BJT.	2M	5	L2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	State and explain Kirchhoff's Current Law (KCL) with an example.	10M	1	L2
	OR			
3	Explain the voltage and current relationships in a three-phase star-connected load. Derive expressions for line and phase voltages.	10M	1	L2
4	a) Explain the importance of Earthing and list two types of Earthing b) Compare the primary and secondary batteries.	5M 5M	2	L2 L2
	OR			
5	a) Calculate the energy consumption in kWh for a load of 2 kW operating 5 hours per day. b) Explain elementary methods for improving power factor in an AC system.	5M 5M	2	L2
6	Explain torque production in a DC motor and derive the torque equation.	10M	3	L2
	OR			
7	Explain the construction and principle of 3 phase induction motor.	10M	3	L2
8	Draw and explain a full-wave bridge rectifier and derive ripple factor and efficiency.	10M	4	L2

	OR			
9	a) Draw and explain a half-wave bridge rectifier with waveforms. b) Explain the role of inductor and capacitor filters in smoothing DC output.	5M 5M	4	L3 L2
10	a) Compare BJT and FET. b) Explain biasing techniques used in FETs.	5M 5M	5	L2 L3
	OR			
11	Draw the input and output characteristics of a CE transistor and explain.	10M	5	L2