R22 Regulation *Subject code:4E2AP*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Supplementary Examinations, June 2026

BASIC ELECTRICAL ENGINEERING

(Common to CSE & CSE(AI&ML))

Maximum Marks: 60 Date: 19.06.2026 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	State the Ohm's law.	1M	1	L1
b	Define Node.	1M	2	L1
c	Convert the rectangular quantities into polar for 2+5j.	1M	1	L1
d	Define phase difference.	1M	1	L1
e	List out losses in transformer.	1M	3	L1
f	Define transformer.	1M	3	L1
g	Define Motor.	1M	3	L1
h	What is the function of DC motor.	1M	3	L1
i	What is MCCB?	1M	4	L1
j	List the Types of Batteries?	1M	4	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	State and explain Supper position theorem for DC excitation with an example.	10M	1	L2
	OR			
3	State and explain Reciprocity theorem for DC excitation with an example.	10M	1	L2
4	Estimate the Voltage, current and power equations and draw the phasor diagram of RC series ac circuit	10M	2	L2
	OR			
5	Derive the expressions for RMS value, average value, and form factor for pure sinusoidal wave form.	10M	2	L2
6	Obtain the equivalent circuit of single-phase transformer referred to the primary side	10M	3	L2
	OR			
7	Explain the construction and working principle of single phase transformer.	10M	3	L2
8	a) Explain the constructional features of a DC Machine with neat diagram. b) Derive the EMF Equation for a DC Generator.	5M 5M	3 4	L3 L2
	OR			

9	An 8-pole d.c. generator has 500 armature conductors, and a useful flux of 0.05 Wb per pole. What will be the e.m.f. generated if it is lap-connected and runs at 1200 rpm?	10M	4	L2
10	a) Explain briefly the concept of wiring system and earthing b) Explain the types of wires and cables	5M 5M	5	L2
	OR			
11	a) Explain the important characteristics of batteries. b) What is the importance of power factor improvement and battery backup.	5M 5M	4 4	L2