R25 Regulation *Subject code:5ES1AK*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech I Semester Supplementary Examinations, June 2026

INTRODUCTION TO ELECTRICAL ENGINEERING
(ECE)

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 Resistance, Inductance and Capacitance	2M	1	1
b	Define power factor	2M	2	1
c	What is voltage regulation of a transformer?	2M	3	1
d	Define slip in an induction motor.	2M	4	1
e	List any two types of batteries.	2M	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	a) Explain KCL with a simple example. b) State maximum power transfer theorem and derive the condition for maximum power transfer.	5M 5M	1	2
	OR			
3	State and explain Thevenin's theorem for DC excitation with an example.	10M	1	2
4	a) Explain real, reactive and apparent power. b) Explain phasor representation of sinusoidal quantities.	5M 5M	2	2
	OR			
5	a) Derive the condition for resonant frequency in a series RLC circuit b) A resistor of 60Ω is connected in series with a 120μF capacitor across a 230V, 50Hz supply. Determine i) the current through the circuit and ii) the power factor of the circuit	5M 5M	2	2
6	a) Draw and explain equivalent circuit of transformer. b) What are the various types of losses in transformer? Explain.	5M 5M	3	2
	OR			

7	a) Explain condition for maximum efficiency of transformer b) Explain principle and operation of transformer.	5M 5M	3	2
8	Draw a neat sketch of a DC generator and label the parts.	10M	3	2
	OR			
9	a) Explain torque–slip characteristics of an induction motor. b) Explain the principle of operation of synchronous generator	5M 5M	4	2
10	a) Discuss the differences between Primary and Secondary batteries b) Explain the concept of earthing	5M 5M	5	2
	OR			
11	a) A daily load of an industrial concern is as follows: 100KW for 9 hours, 125KW for 6 hours, 50KW for 7 hours and 5KW for 2 hours. The cost of energy is Rs.3 per KWh. Determine the energy consumption per year and yearly bill. b) Explain the working of MCB with a neat sketch.	5M 5M	5	2