R22 Regulation *Subject code:4E2AP*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Supplementary Examinations, January 2026

BASIC ELECTRICAL ENGINEERING

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

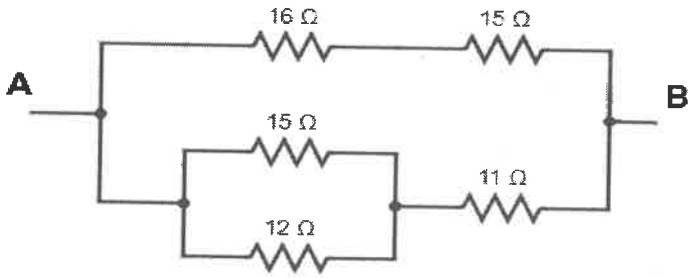
Maximum Marks: 60 Date: 22.01.2026 Duration: 3 hours

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	What are Passive Elements?	1M	1	L1
b	State the Superposition theorem?	1M	2	L1
c	Define form factor of a sine wave	1M	1	L1
d	Define frequency	1M	1	L1
e	Explain why the transformer rating will be in KVA?	1M	3	L4
f	Define Efficiency of a transformer?	1M	3	L1
g	Why single-phase induction motor is not self-starting?	1M	3	L4
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	a) Explain about active elements with examples. b) Find the resistance between points A and B. 	5M 5M	1 1	L2 L3
	OR			
3	a) Explain the different types of sources with their symbols. b) State and explain Thevenin's theorem with an example.	5M 5M	1 2	L2 L2
4	a) Derive the equation for RMS value of voltage of a sine wave.	5M	1	L2

	b) An alternating voltage is given by V=230sin314t. Calculate: i) frequency ii) maximum value iii) average value iv) RMS value	5M	1	L3
	OR			
5	a) Derive an expression for the current in RC Series circuit with sinusoidal input. b) Derive the relation between phase and line values in a balanced Delta connected three phase system.	5M 5M	1 1	L3 L3
6	a) Explain the construction details of a transformer b) Explain the working principle of Auto transformer.	5M 5M	3 3	L2 L2
	OR			
7	a) Draw and explain equivalent circuit of a transformer b) Explain SC test on single phase transformer?	5M 5M	3 3	L3 L2
8	a) Derive the EMF equation of a dc generator b) Explain the torque slip characteristics of three phase induction motor.	5M 5M	3 3	L3 L2
	OR			
9	a) Explain the Principle of operation of DC Generator. b) Explain constructional details of three phase induction motor.	5M 5M	3 3	L2 L2
10	a) Explain the concept of earthing. b) Differentiate between ELCB and MCCB.	5M 5M	4 4	L2 L3
	OR			
11	a) Explain the concept of wiring systems. b) Compare between Meter board and Distribution board.	5M 5M	4 4	L2 L3