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 2024

BASIC ELECTRICAL ENGINEERING

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

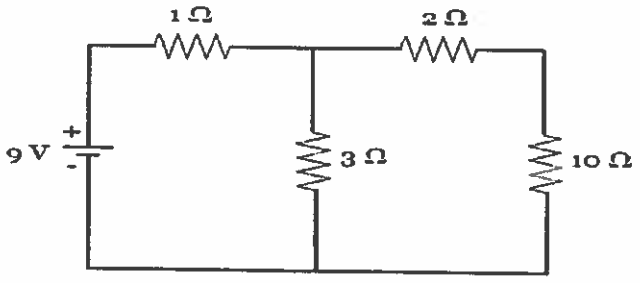
Maximum Marks: 60 Duration: 3 hours

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 (10x1M=10 Marks)	CO	Bloom Tx
1.	a	State Kirchhoff's current and voltage law.	CO1	L1
	b	Write about active elements.	CO1	L1
	c	Examine the power factor, real power and reactive power.	CO2	L1
	d	Discuss the resonance.	CO2	L1
	e	Examine the regulation of the transformer.	CO3	L1
	f	Draw Autotransformer.	CO3	L2
	g	Draw torque and slip characteristics of Induction motor.	CO4	L2
	h	Discuss the methods of speed control of induction motor.	CO4	L2
	i	Categorize various types of wires and cables.	CO5	L1
	j	Examine the purpose of earthing.	CO5	L1

Part-B

		Answer All the following questions. (5X10M=50Marks)		
2		Determine the current flowing through 10ohm resistor using Norton's theorem. [10M] 	CO1	L3
		OR		

3	A. Derive the expression for current, impedence of RC circuit across ac source. [6M] B. Examine the short notes on Electrical circuit elements. [4M]	CO1	L3
4	Explain the peak value, rms value, real power, reactive power, apparent power, power factor, sinusoidal waveform, the purpose of series and parallel connection of RLC circuit. [10M]	CO2	L2
	OR		
5	A. Derive single phase AC circuit consists of series RLC. [5M] B. Examine the three phase balanced circuits. [5M]	CO2	L3
6	A. Discuss the principle and operation of the transformer[6M] B. Explain the various losses associated with the transformer and methods of suppression. [4M]	CO3	L2
	OR		
7	A. Discuss the three phase transformer connections. [7M] B. Compare Ideal and practical transformer. [3M]	CO3	L2
8	A. Examine the construction of three phase induction motor[7M] B. Explain the losses and efficiency of induction motor. [3M]	CO4	L2
	OR		
9	A. Experiment with the working of single-phase induction motor. [5M] B. Derive the expression for generated emf in DC generator. [5M]	CO4	L3
10	A. Elaborate on the various elementary calculations for energy consumption[5M] B. Describe the importance of power factor and battery backup[5M]	CO5	L2
	OR		
11	Explain on the switchgear components- MCB, ELCB, MCCB, types of wires and cables. [10M]	CO5	L2