R22 Regulation *Subject code: 4E1AI*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, June 2024

FUNDAMENTALS OF ELECTRICAL ENGINEERING

(ELECTRONICS & COMMUNICATION ENGINEERING)

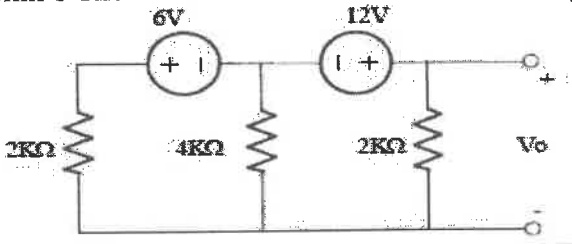
Maximum Marks: 60 Date:27.06.2024 Duration: 3 hours

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 No.	Bloom Tx
1.	a	State Reciprocity theorem.	CO1	BL1
	b	What are the disadvantages of Super position theorem.	CO1	BL1
	c	Draw the response of Series RL circuit for step input.	CO1	BL2
	d	Define phase difference.	CO1	BL1
	e	Why OC Test is conducted on LV side of transformer.	CO2	BL1
	f	What is Hysteresis loss and Eddy current loss?	CO2	BL2
	g	Write Torque Equation of DC Motor.	CO3	BL2
	h	What is the function of commutator in a DC machine.	CO3	BL1
	i	What is ECLB.	CO4	BL1
	j	State the function of MCB.	CO4	BL1

Part-B

Answer All the following questions. (5X10M=50Marks)			CO No.	Bloom Tx
2.		A. State and explain Maximum Power Transfer Theorem. (5M) B. Explain Nodal Analysis with an example. (5M)	CO1 CO1	BL3 BL3
		OR		
3.		A. Illustrate Independent and dependent sources with it's symbols. (3M) B. Use Thevenin's Theorem to find Vo for the circuit in Fig. (7M) 	CO1 CO1	BL2 BL4

4.	Analyze Series RC Circuit for DC input and derive the expressions for voltage and current. (10M)	CO1	BL3
	OR		
5.	Define frequency, peak, average, RMS values and peak factor with formule. (2X5M=10M)	CO1	BL3
6.	Illustrate the conduction of SC test on 1-phase Transformer with its circuit. (10M)	CO2	BL3
	OR		
7.	Explain the operation and working of single phase transformer with neat diagram. (10M)	CO2	BL2
8.	A. Explain the Principle of operation of DC Generator. (5M) B. The armature of a 6-pole DC generator has a wave winding containing 664 conductors. Calculate the generated e.m.f when flux per pole is 60 mWb and speed is 250 r.p.m. (5M)	CO3 CO3	BL2 BL4
	OR		
9.	A. Draw and explain torque-speed characteristics of 3-phase Induction Motor. (5M) B. Illustrate the working principle of Synchronous Generators. (5M)	CO3 CO3	BL3 BL2
10.	A. Describe the types of Wires and Cables. (5M) B. Draw and explain the characteristics for Batteries. (5M)	CO4 CO4	BL2 BL3
	OR		
11.	A. Illustrate Elementary calculations for energy consumption with an example. (5M) B. What is the need of Service Mains, Meter board and Distribution board. (5M)	CO4 CO4	BL3 BL2