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EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY
An Autonomous Institution Affiliated to Visvesvaraya Technological University (VTU) Belagavi

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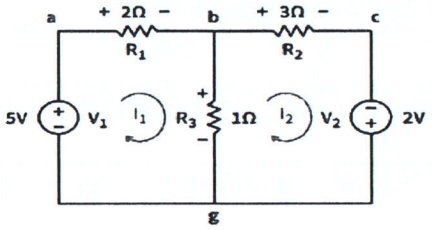
EPESK104B/EPESK204B

First/Second Semester B.E. Degree Examination, May 2026
INTRODUCTION TO ELECTRICAL ENGINEERING

TIME:3 hrs. Max.Marks:100

Note: 1. Answer any FIVE full questions, choosing ONE question from each MODULE
2. Formula Hand Books Permitted
3. M: Marks, L: Bloom's level, C: Course outcomes.

		Module-1	M	L	C
Q.1	a	Compare conventional and non-conventional sources of energy.	6	L2	CO1
	b	Draw and describe the single line diagram of a typical electrical power system.	6	L2	CO1
	c	Draw the layout and explain the working of nuclear power plant?	8	L2	CO1
		OR			
Q.2	a	Draw the layout and explain the working of hydro electric power plant.	6	L2	CO1
	b	State Kirchhoff's laws for DC circuits. Illustrate with examples.	6	L2	CO1
	c	Consider the following circuit with two loops. There are two voltagesources $V_1 = 5V$ and $V_2 = 2V$. Currents I_1 and I_2 pass through loops 1 and 2 respectively with resistances $R_1 = 2$ ohms, $R_2 = 3$ ohms and $R_3 = 1$ ohms. Using KVL, find currents I_1 and I_2. 	8	L3	CO1
		Module–2			
Q.3	a	List any advantages and limitations of a three-phase system over a single-phase system.	6	L2	CO2
	b	A capacitor of 200μF is connected across a 220 V, 50Hz supply. Calculate(i) the reactance of capacitor (ii) rms value of current and (iii) the maximum current	6	L3	CO2
	c	Analyze series L-C series circuit to derive the expressions for voltage and current and draw the phasor diagram.	8	L3	CO2
		OR			
Q.4	a	A 10 ohms resistor and a 0.1H inductor are connected in series across 220V supply. Find Impedance, Current, and Power Factor.	8	L3	CO2
	b	Define impedance, active power, apparent power, reactive power and power factor of an alternating quantity?	6	L2	CO2

	c	Analyze series R-Cseries circuit to derive the expressions for voltage and current and draw the phasor diagram.	6	L3	CO2
		Module–3			
Q.5	a	Explain the working principle of operation of a D.C Motor.	6	L2	CO3
	b	What emf will be generated in a 8 pole ,lap wound generator if it is rotated at 400 rpm. The flux per pole is 0.05 Wb and the number of armature conductors is 900.	8	L3	CO3
	c	Derive an equation for torque developed in the armature.	6	L3	CO3
		OR			
Q.6	a	Describe the constructional details of a d.c generator with neat sketches.	8	L2	CO3
	b	A 30KW,300V, DC shunt generator has armature and field resistance of 0.05 and 100 ohms respectively. Calculate the generated emf and power delivered by the armature.	6	L3	CO3
	c	Mention the applications of DC Motor	6	L2	CO3
		Module–4			
Q.7	a	Explain the basic principle of operation od single phase transformer.	6	L2	CO4
	b	What are the applications of 3-phase Induction Motor.	6	L2	CO4
	c	The frequency of the rotor induced emf of a 400 V, 3 phase, 50 Hz, 8 pole Induction motor is 2Hz. Calculate the percentage slip and the rotor speed.	8	L3	CO4
		OR			
Q.8	a	Explain torque slip characteristics of 3-phase Induction Motor.	6	L2	CO4
	b	Enumerate various kinds of transformer.	6	L2	CO4
	c	Discuss the constructional details of single phase transformer.	8	L3	CO4
		Module–5			
Q.9	a	Draw and explain the block diagram of an Electric Vehicle.	8	L2	CO5
	b	Explain the function fuse? List out its merits and demerits?	6	L2	CO5
	c	Discuss the role of power electronics in EVs.	6	L2	CO5
		OR			
Q.10	a	Define earthing and explain plate type of earthing in detail with neat diagram.	8	L2	CO5
	b	Compare BLDC and PMSM motors based on working principle and efficiency.	6	L2	CO5
	c	Explain the function MCB? List out its merits and demerits?	6	L2	CO5

PROFT

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