

CBCS SCHEME

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BESCKB204/BESCK204B



Second Semester B.E/B.Tech. Degree Examination, Dec.2023/Jan.2024 Introduction to Electrical Engineering

Time: 3 hrs.

Max. Marks:100

- Note:** 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
1	a.	State the ohm's law and its limitations? Also define KVL and KCL.	6	L1	CO1
	b.	With block diagram explain solar power generations.	6	L1	CO1
	c.	A circuit of two parallel resistor having resistance of 15Ω and 95Ω connected in series with 10Ω . If the current through 10Ω resistor is 2A. Find : i) Current in 15Ω and 25Ω resistors ii) Voltage across the whole circuit iii) The total power and power consumed in all resistors.	8	L3	CO2
OR					
2	a.	With block diagram, explain nuclear power generations.	6	L1	CO1
	b.	With neat single line diagram explain the various steps of electrical power transmission and distribution system.	6	L1	CO1
	c.	For the circuit shown in Fig.Q2(c). Find the current in 5Ω resistor.	8	L3	CO2
<div style="text-align: center;"> <p style="margin-top: 10px;">Fig.Q2(c)</p> </div>					
Module – 2					
3	a.	Write a short note on power triangle?	6	L2	CO1
	b.	A series circuit with a resistor of 100ohms, capacitor of 25 microfarad and inductance of 0.15H is connected across 250V, 50Hz supply. Calculate impedance, current, power and power factor of circuit.	8	L3	CO2
	c.	Define the terms : i) RMS value ii) Average value iii) Form factor iv) Peak factor v) Amplitude vi) Frequency.	6	L2	CO2
OR					
4	a.	Obtain the relationship for STAR connection with circuit diagram.	6	L2	CO2
	b.	Obtain the expression for voltage, current and power with phasor diagram for R – C circuit series.	8	L4	CO2
	c.	Write the advantage of 3 phase power system over single phase power system.	6	L1	CO2

Module – 3

5	a.	With neat diagram explain any 5 parts of DC machine.	8	L3	CO3
	b.	Derive torque equation for DC motor.	6	L2	CO3
	c.	An 8 pole generator has 500 armature and cross and has a useful five per pole of 0.65Wb, what will be the emf generated if it is lap connected and rms at 1000rpm? What must be the speed at which it is to be driven to produce the same emf if is in wave wound.	6	L1	CO3

OR

6	a.	Explain the various methods used to control the speed of DC motor.	8	L2	CO3
	b.	With usual notation derive an emf equations of DC generator.	4	L1	CO3
	c.	A 6 pole DC shunt motor take 20A form a 220V supply. The armature and field resistances. The wave wound armature has 30 slots and each slot containing 10 conductors. If the flux per pole is 0.02wb, Calculate : i) Speed ii) torque developed iii) power developed.	8	L3	CO3

Module – 4

7	a.	A transformer is rated at 100KVA, at full load its copper loss is 1000W and its iron loss is 900W. Calculate : i) The efficiency at fall load UPF ii) Efficiency at half load, 0.8pf iii) The maximum efficiency at 0.85pf.	8	L3	CO3
	b.	With neat diagram explain he types of 3 – phase induction motor.	6	L2	CO3
	c.	Explain the working principle of single phase transformers.	6	L1	CO3

OR

8	a.	Explain the various losses in a transformer and how to minimize them.	6	L2	CO4
	b.	With diagram explain the concept of rotation magnetic field.	6	L2	CO4
	c.	A three phase induction motor with 4 poles is supplied form the alternator having 6 poles running at 1000rpm. Calculate synchronous speech, rotor speed of the induction motor when slip is 0.04 and frequency of the rotor emf when the speed is 600rpm.	8	L3	CO4

Module – 5

9	a.	Define 'unit' used for consumption of electrical energy and explain the two part tariff with its advantages and disadvantages.	8	L2	CO5
	b.	What is electric shock? Give the lists of preventive measures against the shock?	6	L1	CO5
	c.	What is the difference between fuse and MCTS?	6	L2	CO5

OR

10	a.	What is earthing? With neat diagram explain plate earthing.	8	L2	CO5
	b.	With neat circuit diagram and switching table explain two very and three way control of lamp.	6	L2	CO5
	c.	Explain coning and copping types of wiring with its merits and demerits.	6	L1	CO5

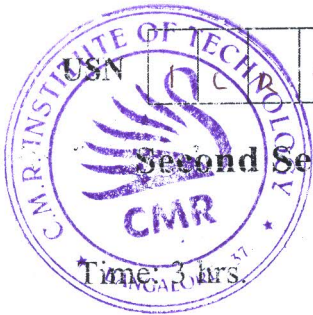
Date : 7/02/2024

Time : 2.00 pm to 5.00 pm

Following Highlighted corrections to be made in respective Questions

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Introduction to Electrical Engineering

Max. Marks:100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M : Marks , L: Bloom's level , C: Course outcomes.

3. Use of VTU Hand book is permitted.

Module – 1			M	L	C
1	c.	A circuit of two parallel resistor having resistance of 15Ω and 25Ω connected in series with 10Ω . If the current through 10Ω resistor is 2A. Find : i) Current in 15Ω and 25Ω resistors ii) Voltage across the whole circuit iii) The total power and power consumed in all resistors.	8	L3	CO2
Module – 3					
5	c.	An 8 pole generator has 500 armature conductors and has a useful flux per pole of 0.065Wb , what will be the emf generated if it is lap connected and rms at 1000rpm? What must be the speed at which it is to be driven to produce the same emf if it is in wave wound.	6	L1	CO3
OR					
6	c.	A 6 pole DC shunt motor take 20A from a 220V supply. The armature and field resistances are 0.4Ω and 110Ω respectively. The wave wound armature has 30 slots and each slot containing 10 conductors. If the flux per pole is 0.02wb , Calculate : i) Speed ii) torque developed iii) power developed.	8	L3	CO3
Module – 5					
9	c.	What is the difference between fuse and MCB?	6	L2	CO5
OR					
10	c.	Explain casing and capping types of wiring with its merits and demerits.	6	L1	CO5

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