U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Semester End Main Examinations

Programme: B.E. **Semester: IV**
Branch: Electrical and Electronics Engineering **Duration: 3 hrs.**
Course Code: 22EE4PCGTD **Max Marks: 100**
Course: Generation, Transmission and Distribution

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	CO	PO	Marks
1	a)	Draw the typical block schematic diagram for nuclear power plant and explain in brief.	CO1	PO1	**08**
	b)	Give a typical layout of power system. Mention standard voltages for generation, transmission and distribution.	CO1	PO1	**07**
	c)	Mention the advantages of high voltage AC transmission system.	CO1	PO1	**05**
		OR			
2	a)	Define sag? Derive an expression for sag of a line supported between two supports at the same height.	CO2	PO1	**10**
	b)	A synchronous motor improves the power factor of a load of 200kw from 0.8 lagging to 0.9 lagging. Simultaneously the motor carries a load of 80 kw. Find (i) the leading KVAR taken by the motor (ii) KVA rating of the motor and (iii) power factor at which the motor operates.	CO2	PO2	**10**
		UNIT - II			
3	a)	What is string efficiency? Why is it necessary to have high string efficiency? Explain different methods of improving string efficiency.	CO2	PO2	**10**
	b)	Derive the expression for the inductance of unsymmetrical spacing of a three phase line which is completely transposed.	CO2	PO2	**10**
		UNIT - III			
4	a)	Obtain the relation between the sending end and receiving end voltages and currents of a medium line using nominal –π representation.	CO4	PO2	**10**
	b)	A 132KV, 50Hz, three phase transmission line delivers a load of 50MW at 0.8 power factor lagging at the receiving end. The generalized constants of the transmission line are $A = D = 0.95\angle 1.4^0$, B= $96\angle 78^0$, $C = 0.0015\angle 90^0$. Find the regulation of the line.	CO4	PO2	**10**

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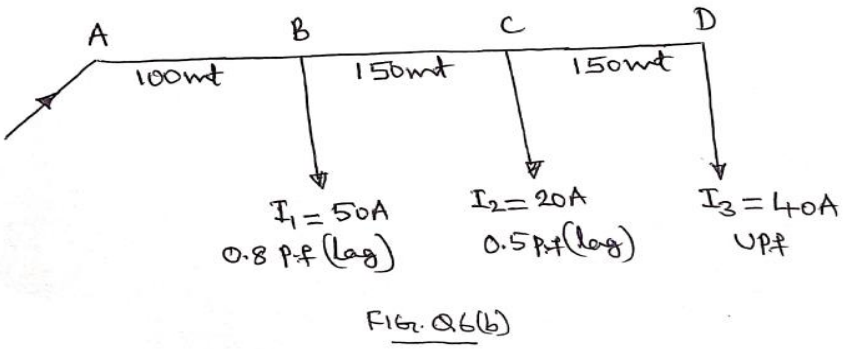
			UNIT - IV			
	5	a)	Derive an expression for the insulation resistance of a single core metal sheathed cable.	*CO2*	*PO1*	**05**
		b)	Derive an expression for capacitance and maximum potential gradients in two dielectrics of a graded cable in terms of dielectric constants and radius of core and overall radius.	*CO2*	*PO1*	**08**
		c)	A 3-phase 220KV, 50Hz transmission line consists of 1.5 cm radius, conductor spaced 2 meters apart in equilateral triangular formation. If the temperature is 40^{o}c and atmospheric pressure is 76 cm. If the dielectric strength of air is 30KV (maximum) per cm. Calculate disruptive critical voltage and corona loss per km of the line. Take m= 0.85.	*CO2*	*PO2*	**07**
			UNIT - V			
	6	a)	Derive an expression for the voltage drop for a uniformly loaded DC distributor fed from both ends at equal voltages.	*CO3*	*PO1*	**10**
		b)	The loading on a distributor is shown in figure Q6 (b). The distributor is a two- core cable for which the resistance and reactance are 0.25Ω and 0.125 Ω per 1000 meters of cable run respectively. What should be the voltage at the points A to maintain 400V at the point D?  FIG. Q6(b)	*CO3*	*PO2*	**10**
			OR			
	7	a)	Explain the following systems for distribution of AC power (i) Radial system (ii) Interconnected system	*CO3*	*PO1*	**08**
		b)	What are the factors considered for site selection of sub-station and also comparison of outdoor sub-station & indoor sub-station?	*CO3*	*PO1*	**08**
		c)	Mention the importance of neutral grounding.	*CO3*	*PO1*	**04**

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