Hall Ticket Number :										

R-15

Code: 5G254

III B.Tech. I Semester Supplementary Examinations March/April 2023

Electrical and Electronic Measurements

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	BL
		UNIT–I			
1.	a)	Explain the construction and working of PMMC instrument along with a neat diagram	7M	1	L2
	b)	Explain the possible errors in PMMC instrument along with their corresponding compensation techniques	7M	1	L2
		OR			
2.	a)	Explain the construction and working of MI instrument along with a neat diagram	7M	1	L2
	b)	Explain the possible errors in MI instrument along with their corresponding compensation techniques	7M	1	L2
		UNIT–II			
3.		List and explain the different possible errors in single phase induction type energy meter	14M	2	L2
		OR			
4.		Derive the expression for deflecting and controlling torque for a single phase dynamometer wattmeter with a neat diagram.	14M	2	L6
		UNIT–III			
5.		Define the term Calibration and explain the process of measuring unknown resistance and current using potentiometer	14M	3	L1
		OR			
6.	a)	Explain the construction and working of DC Crompton's Potentiometer along with a neat diagram	10M	3	L2
	b)	What is meant by standardization	4M	3	L1
		UNIT–IV			
7.	a)	Define bridge and classify the bridges based on the nature of supply	4M	4	L4
	b)	Draw Wheatstone bridge and find out the expression for unknown resistance	10M	4	L1
		OR			
8.		Derive the expression for sensitivity of wheatstone bridge with neat diagram. Also mention the advantages of the bridge	14M	4	L6
		UNIT–V			
9.		Explain the operation of Cathode Ray Oscilloscope with a neat labeled sketch	14M	5	L2
		OR			
10.	a)	List out different types of probes in electronic measurements	4M	5	L1
	b)	List and explain all the controls in an oscilloscope in detail	10M	5	L2

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Hall Ticket Number :										

R-15

Code: 5G252

III B.Tech. I Semester Supplementary Examinations March/April 2023

Transmission of Electric Power

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	BL
		UNIT–I			
1.		Derive the mathematical Expression of Inductance per phase of 3-phase double circuit unsymmetrical line which is transposed by using GMD-GMR method	14M	1	3
		OR			
2.		What is the adverse effect of Ground on the transmission lines? Give the mathematical proof to show this effect on the 3- φ lines?	14M	1	2
		UNIT–II			
3.		Derive A, B, C, D constants of Medium Transmission line with Nominal T and Nominal-pi Representation.	14M	2	5
		OR			
4.		Discuss in detail the nominal-π representation with neat circuit diagram and phasor diagram. Derive also its performance specifications.	14M	2	2
		UNIT–III			
5.		A three phase 50 Hz, 250 km long transmission line has three conductors each of 0.75 cm radius spaced at the corners of the sides 2.5 m, 3 m and 3.5 m. the resistance of each conductor is 0.3Ω/km and the line delivers 30 MVA at a lagging power factor of 0.95. Determine ABCD constants, Vs, Is and Regulation by using rigorous solution.	14M	2	5
		OR			
6.		Obtain the equivalent T and π representations of long transmission line using mathematical analysis.	14M	2	2
		UNIT–IV			
7.	a)	Define Critical Disruptive Voltage and Visual Disruptive Voltage.	4M	4	1
	b)	Develop an expression for Critical Disruptive Voltage for 1- φ two wire lines.	10M	4	6
		OR			
8.		What is Sag? Derive the expressions for Sag when the supporting towers are of equal and unequal heights.	14M	4	3
		UNIT–V			
9.		Develop Generalized expression to find the voltage across one disc, if the voltage across another disc is known in suspension type insulators.	14M	4	6
		OR			
10.	a)	Derive an expression for electrostatic stress of an underground cable and also the condition for most economical operation of cable.	7M	5	5
	b)	Develop the mathematical relations of insulation resistance and capacitance of single core cable.	7M	5	6

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