Hall Ticket Number :										

R-19

Code: 19A252T

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

Power Electronics

(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.		What is meant by commutation of SCR and Explain any two commutation methods of SCR.	14M	1	4
		OR			
2.	a)	With neat circuit diagram and waveforms explain the operation of RC firing circuit.	7M	1	2
	b)	Explain about the Dynamic turn on Characteristics of SCR with wave forms	7M	1	2
		UNIT–II			
3.		Discuss causes of over voltages and over currents its protection methods.	14M	2	4
		OR			
4.		Describe the design procedure of a Snubber circuit.	14M	2	6
		UNIT–III			
5.		Describe the operation of three phase semi converter with R load and also draw the output voltage waveforms	14M	3	2
		OR			
6.		A single phase bridge converter is utilized to produce regulated DC output voltage. The input voltage is 230 V and the load current is 8A for a firing angle of 30°. (a) Calculate the dc output voltage. (b) Calculate the dc output voltage and current if a freewheeling diode is used at the output for the same firing angle.	14M	3	3
		UNIT–IV			
7.		Explain with neat circuit diagram and waveforms the working of two quadrant chopper for current reversal.	14M	4	3
		OR			
8.		Explain the control strategies of a chopper operation.	14M	4	2
		UNIT–V			
9.		Draw and explain single phase full wave regulator for RL load with neat circuit diagram and necessary waveforms.	14M	5	3
		OR			
10.		Design a single phase to single phase step down cyclo converter with centre – tapped transformer configuration and also explain the operation with output voltage waveforms.	14M	5	6

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Hall Ticket Number :										

R-19

Code: 19A253T

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

Power System Analysis

(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)	What are the different elements in the power system network?	7M	CO1	L2
	b)	What is partial network explain with an example.	7M	CO1	L2
		OR			
2.	a)	Write the mathematical modelling of different power system elements.	7M	CO1	L2
	b)	Consider a power system network with at least 3 bus and find Y_{bus} matrix using singular transformation.	7M	CO1	L2
		UNIT–II			
3.		Derive and explain static load flow equations	14M	CO2	L2
		OR			
4.	a)	Compare different load flow studies.	7M	CO2	L2
	b)	Write the algorithm for load flow solution using NR method in rectangular coordinates	7M		L2
		UNIT–III			
5.	a)	Define per unit system and write an equation for new base impedance.	7M	CO3	L1
	b)	Draw the per unit equivalent network of a three-phase power system consisting of a generator. transmission line, transformer and motor.	7M	CO3	L1
		OR			
6.		A 11 kV,30 MVA alternator has $X''=X_2=0.2$ pu and X_o =0.1 p.u.its neutral is grounded through a reactor of 0.5 ohms. The alternator is operating at rated voltage without load and is disconnected from the system when a single line to ground fault occurs at its terminals. Find the sub transient current in the faulty phase.	14M	CO3	L3
		UNIT–IV			
7.	a)	What is stability? Explain different types of stabilities.	7M	CO4	L1
	b)	Describe the concept of steady state stability power limit and synchronizing power coefficient.	7M	CO4	L1
		OR			
8.		The general circuit constants of nominal π network representing a 3-phase transmission line are $A=D=0.97\angle 0.6^0$ $B=60\angle 70^0$ ohms $C=0.001\angle 91^0$ mho (i) Find the steady state stability of the line if the sending end and receiving end voltages are held constant at 132 kV. (ii) What is the steady state stability limit, if the shunt admittance is assumed as zero? (iii) What is the steady state stability limit of the shunt admittance and series resistance are neglected.	14M	CO4	L3
		UNIT–V			
9.		A 4-pole, 50 Hz, 11 kV alternator has a rating of 50 MW, power factor 0.8 lagging. Its rotor has a moment of inertia of 8000 kg-m^2. Determine inertia constant in M Joules-MVA and its momentum in M joules-s/electrical degree.	14M	CO5	L3
		OR			
10.		Derive swing equation and discuss its application in the study of power system stability.	14M	CO5	L2

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Hall Ticket Number :										

R-19

Code: 19A251T

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

Electrical and Electronics 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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