Hall Ticket Number :										

R-11 / R-13

Code: 1G254

III B.Tech. I Semester Supplementary Examinations October 2020

Electrical and Electronics Mearurements

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

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1.	a)	Classify the different types of torques required for satisfactory operation of an instrument and explain in brief	10M
	b)	Explain the different methods of measurements with examples.	4M
2.	a)	Draw a neat diagram of resonance type frequency meter and explain its operation	8M
	b)	Define the terms (i) Nominal ratio (ii) Turns ratio (iii) Ratio Correction factor	6M
3.		Explain how the following adjustments are made in a single phase induction type energy meter (i) Lag adjustment error (ii) Creeping error (iii) Overload error (iv) Temperature compensation (v) Friction compensation	14M
4.	a)	Draw the circuit diagram of a basic slide wire potentiometer and explain its working	10M
	b)	List out the applications of DC Potentiometers	4M
5.	a)	How do you classify the resistances and suggest the different methods of measuring the resistances under each category	10M
	b)	Check whether the bridge is balanced or not for the given data Arm ab: $400\angle -30$ Arm bc: $800\angle 30$ Arm cd: $400\angle -30$ Arm da: $200\angle -30$	4M
6.		What are the different types of tests that are necessary for magnetic measurements	14M
7.	a)	List out the applications of CRO	7M
	b)	Explain the process of measuring the voltage, current and time period using CRO	7M
8.	a)	List out the salient features of Digital Meters	7M
	b)	Draw and explain the circuit of Digital multimeter	7M

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Hall Ticket Number :										

R-11 / R-13

Code: 1G253

III B.Tech. I Semester Supplementary Examinations October 2020

Power Electronics

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **five** questions
All Questions carry equal marks (**14 Marks** each)

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1.		Explain dynamic characteristics of SCR.	14M
2.	a)	Explain the series operation of SCRs.	7M
	b)	SCRs with a rating of 1000V and 200A are available to be used in a string to handle 6kV and 1kA. Find the number of series and parallel units required in case derating factor is 0.1.	7M
3.	a)	Describe the design procedure of a Snubber circuit.	7M
	b)	Explain the semiconductor fuses briefly.	7M
4.	a)	Explain the operation with relevant waveforms of 1-Φ semi-converter.	9M
	b)	List out the advantages of freewheeling diode.	5M
5.		Explain the operation of 3-Φ semi-converter with R-L load with associated waveforms.	14M
6.	a)	Classify various configurations of 3-Φ a.c.voltage regulators.	7M
	b)	Explain the operation of a 1-Φ midpoint cycloconverter with R load.	7M
7.	a)	Express the output voltage in terms of duty-cycle for a step-up and step-down chopper.	7M
	b)	For type-A chopper, dc source voltage=230 V, load resistance=10 Ω. Take a voltage drop of 2 V across chopper when it is on. For a duty cycle of 0.4, Find the (i) Average and rms values of output voltage. (ii) Chopper efficiency.	7M
8.		Draw the waveforms and discuss the performance of following methods of Pulse Width Modulation control used in inverter. i. Single Pulse Width Modulation ii. Multiple Pulse Width Modulation iii. Sinusoidal Pulse Width Modulation.	14M

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Hall Ticket Number :										

R-11 / R-13

Code: 1G252

III B.Tech. I Semester Supplementary Examinations October 2020

Transmission of Electric Power

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

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1. Prove that Inductance/ph of 3-phase hexagonally spaced double circuit line is same with GMD-GMR method and Flux linkage method

2. a) The horizontally placed conductors of a 1- φ line operating at 50Hz are having outside diameter of 1.6cm and the spacing between centers of the conductors is 6m. The permittivity of free space is 8.854×10^{-12} F/m. Determine the capacitance to ground per km of each line.

   b) Determine the total reactive power of the line when the conductors of the line are forming a triangle whose sides are 4,6 and 8m. Assume the diameter of the conductor as 1.2cm and the operating phase voltage is 220KV.

3. a) Derive the approximate voltage regulation expression for short transmission line and also derive the condition for Zero regulation.

   b) Evaluate ABCD constants for Short Transmission line

4. Determine the relation between sending end parameters and receiving end parameters of a long transmission line using rigorous solution.

5. a) Define the following
   i) Reflection ii) Refraction iii) Attenuation iv)Distortion

   b) Explain the phenomenon of wave travelling from sending end to receiving end.

6. What are the various types of insulators used for overhead transmission system? With the help of neat diagrams, explain each of them and their applications.

7. a) Define Critical Disruptive Voltage and Visual Disruptive Voltage.

   b) Develop an expression for Critical Disruptive Voltage for 1- φ two wire lines.

8. a) Derive an expression for electrostatic stress of an underground cable and also the condition for most economical operation of cable.

   b) Develop the mathematical relations of insulation resistance and capacitance of single core cable.

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