Code No: **R31022**





III B.Tech I Semester Supplementary Examinations, May - 2016

ELECTRICAL MEASUREMENT

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

Answer any FIVE Questions All Questions carry equal marks

1	a) b)	Write about various errors and compensation in measuring instruments. Describe the constructional details and working of a moving iron repulsion type meter.	[7] [8]
2	a)	A 100/5A, 50 Hz current transformer has a bar primary and a rated secondary burden of 12.5VA. The secondary winding has 196 turns and a leakage inductance of 0.96mH. With a purely resistive burden at rated full load, the magnetizing mmf is 16AT and the loss excitation required 12A. Find ratio and phase angle errors.	[7]
	b)	Describe the working principle of an electro dynamic type power factor meter with the help of a suitable diagram.	[8]
3	a) b)	How active and reactive powers in balanced and unbalanced systems are measured? Explain how the following adjustments are made in induction type single-phase energy meter: (i) lag adjustment (ii) overload compensation (iii) creep (iv) voltage compensation	[7] [8]
4	a)	Explain standardizing of A.C. potentiometers and use of transfer instruments in case of AC potentiometer	[7]
	b)	Explain with the help of suitable diagrams, how a D.C. Potentiometer can be used for: (i) Calibration of Ammeter (ii) Determination of an unknown Resistance.	[8]
5	a)	Draw the circuit diagram of a Wheatstone bridge and derive the conditions for balance.	[7]
	b)	The following results were obtained by loss of charge method of testing cable: discharged immediately after charging the deflection = 200 divisions; discharged 30 seconds after charging the deflection = 125 divisions; discharged 30 seconds after charging, when in parallel with a resistance of $10M\Omega$, the deflection = 100 divisions. Calculate the insulation resistance of the cable.	[8]
6	a)	Explain the working of Wien's bridge for measurement of capacitance with a circuit diagram	[7]
	b)	The four arms of Hay's bridge are arranged as follows: AB is a coil of unknown impedance; BC is a non-reactive resistor of 100Ω ; CD is a non-reactive resistor of 833Ω in series with a standard capacitor of 0.38μ F; DA is non-reactive resistor of 16800Ω . If the supply frequency is 50 Hz, determine the inductance and the resistance at the balanced conditions.	[8]
7	a)	Explain the working of flux meter with a neat diagram.	[7]
	b)	Explain the working principle of a ballistic galvanometer with a neat sketch.	[8]
8		Write short notes on the following: i) Digital Tachometer ii) Digital multimeter.	[15]

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