

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2018****Subject Code:2141704****Date:01/12/2018****Subject Name:Measurement & Instruments****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

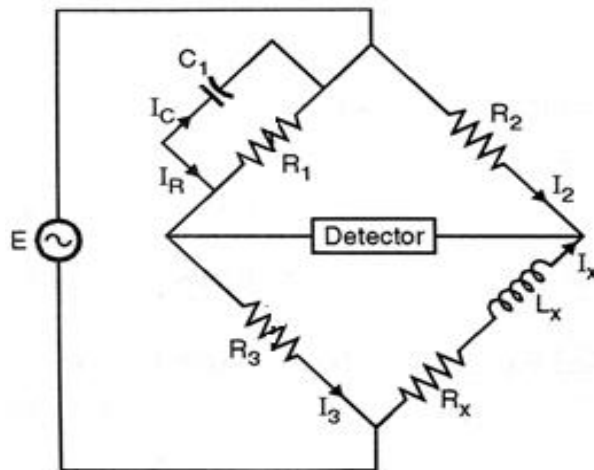
		MARKS
Q.1	(a) Explain Lissajous pattern in oscilloscope in short.	03
	(b) Differentiate indicating and recording instruments with examples.	04
	(c) Explain loading effect and their elimination in AC and DC meters.	07
Q.2	(a) How to minimize the possible errors in measurement of unknown resistance using Voltmeter-Ammeter method?	03
	(b) Explain the PMMC with neat block diagram.	04
	(c) Explain Vector voltmeter with block diagram.	07
	OR	
	(c) Explain Digital storage oscilloscopes with neat block diagram.	07
Q.3	(a) What is harmonic? Explain the importance of harmonic analysis.	03
	(b) Explain the frequency measurement using necessary diagram.	04
	(c) A moving coil ammeter has a fixed shunt of 0.02Ω , with a coil resistance of $R=1000\Omega$ and a potential difference of 500mV across it, full scale deflection is obtained. Calculate,	07
	(a) The shunt current	
	(b) Current through the meter coil to give FSD	
	(c) The meter coil resistance R to give full scale deflection when shunted current is 10A .	
	OR	
Q.3	(a) Explain power measurement in DC circuit.	03
	(b) Explain dual beam oscilloscope in short.	04
	(c) Explain the 3-phase power measurement using 2 watt-meter method with necessary diagrams.	07
Q.4	(a) Derive equation for Wheatstone Bridge.	03
	(b) Explain 7 segment display in short.	04
	(c) Enlist different probes of oscilloscope, explain any two.	07
	OR	
Q.4	(a) Explain conductive coupling interference in short.	03
	(b) Explain Sweep Frequency generators in short.	04
	(c) A Maxwell's capacitance bridge shown in figure 1 (page 2) is used to measure an unknown inductance. The various values at balance are, $R_3=400\Omega$, $R_2=600\Omega$, $R_1=1000\Omega$, $C_1=0.5\mu\text{F}$. Calculate the values of R_x and L_x . Also calculate the storage factor Q of coil if frequency is 1000 Hz .	07
Q.5	(a) Explain elimination of capacitance interference in short.	03

- (b) Explain testing of potential transformer. www.FirstRanker.com 04
(c) Enlist different bridge circuits for inductance measurement. Explain 07
Anderson Bridge with necessary diagram.

OR

- Q.5** (a) Explain speed measurement in short. 03
(b) Explain power factor measurement using analog meter. 04
(c) Explain the Current transformer with necessary diagram, also 07
discuss its applications.

Q-4 (C) (OR) Figure 1



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