

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV(NEW) – EXAMINATION – SUMMER 2019

Subject Code:2141704

Date:15/05/2019

Subject Name: Measurement & Instruments

Time:02:30 PM TO 05:00 PM

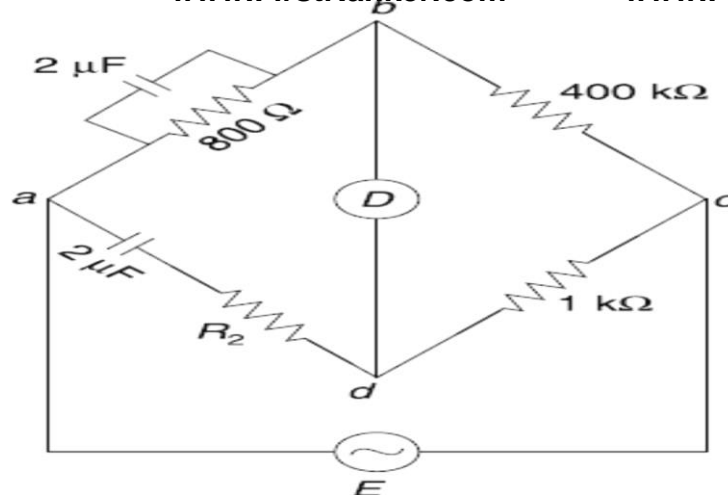
Total Marks: 70

Instructions:

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

		MARKS
Q.1	(a) Difference between inductance and capacitance.	03
	(b) Define 'indicating' and 'recording' types of instruments. Give an example for each.	04
	(c) Discuss Whetstone bridge to find out unknown resistance with circuit diagram.	07
Q.2	(a) What is a Lissajous pattern in oscilloscope? Explain its applications.	03
	(b) Explain Zero-beat Frequency Meter in brief.	04
	(c) With neat block diagram explain Vertical deflection subsystem of oscilloscope.	07
	OR	
	(c) What is full form of 'PMMC'? Discuss working of PMMC meter with diagram.	07
Q.3	(a) What is transformer? Write down types and applications of transformers.	03
	(b) Explain special purpose analog meter.	04
	(c) Draw and explain Analog to Digital converter.	07
	OR	
Q.3	(a) Discuss about types of 'resistors'.	03
	(b) A moving coil instrument gives a full scale deflection for a current of 20 mA with a potential difference of 200 mV across it. Calculate: i) Shunt required to use it as an ammeter to get a range of 0-200 A ii) Multiplier required to use it as a voltmeter of a range 0 -500 V.	04
	(c) Explain Digital Voltmeter.	07
Q.4	(a) Explain weighted Binary Resistive type DAC.	03
	(b) With block diagram explain working of Digital Multi-meters.	04
	(c) What are Universal Time-Counters? Explain with Block diagram.	07
	OR	
Q.4	(a) How Voltmeter- Ammeter method can be used to measure unknown resistance? Explain in detail.	03
	(b) What is inductive interference? Explain how it can be reduced.	04
	(c) Explain Schering bridge method to measure unknown capacitance.	07
Q.5	(a) Give the differences between current transformer and potential transformer.	03
	(b) The arms of a four-arm wien bridge a , b , c and d supplied with sinusoidal voltage have the following values. arm ab : A resistance of $800\ \Omega$ in parallel with a capacitance of $2\ \mu\text{F}$ arm bc : $400\ \text{k}\Omega$ resistance arm cd : $1\ \text{k}\Omega$ resistance arm da : A resistance R_2 in series with $2\ \mu\text{F}$ capacitance	04

Determine the value of R_2 and frequency at which the bridge will balance.



(c) Draw & explain block diagram of CRO.

07

OR

Q.5 (a) Define Hall effect coefficient.

03

(b) Describe how to use dynamometer to measure power quantity.

04

(c) Explain Poly-Phase measurements in detail.

07

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