Duration: 3 Hours **[Max Marks:80]**

QP-10066733

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1		Attempt **any FOUR**	**[20]**
	a	Define the following static characteristics of instruments. (i) Sensitivity (ii) Precision (iii)Dead zone (iv)Accuracy	
	b	Draw and explain in brief, resistance measurement using Kelvin's Bridge.	
	c	Explain what you mean by dual trace in cathode ray oscilloscope (CRO).	
	d	Draw a neat circuit diagram of LCR – Q meter and explain its operating principle	
	e	List criteria for selection of transducers and explain any one in detail.	
2	a	Write a short note on digital storage oscilloscope.	**[10]**
	b	Explain the construction and operation of ultrasonic level measurement transducer with a neat diagram.	**[10]**
3	a	What are different types of errors in measuring instruments? State the remedies to eliminate errors in the measurements.	**[10]**
	b	Draw the circuit diagram and explain the operation of bridge used to measure capacitance	**[10]**
4	a	Explain how Lissajous patterns are used for the measurement of an unknown frequency and phase shift using cathode ray oscilloscope (CRO).	**[10]**
	b	With neat labeled block diagram explain the operation of spectrum analyzer.	**[10]**
5	a	Compare RTD, Thermocouple and Thermistor on the basis of the following parameters: 1.Principle of working 2.Characterstics 3.Range 4.Applications 5.Diagram	**[10]**
	b	List types of DC Voltmeters. Hence with neat labeled diagram, describe the operation of any one type in detail.	**[10]**
6	a	Explain the use of potentiometer for calibration of voltmeter	**[10]**
	b	Write a detailed note on Digital Multimeter.	**[10]**