

Time: 03Hours

Marks:80 Marks

- (i) Question No. 1 is **compulsory** & attempt any **three** out of the remaining **five** questions.
- (ii) Assume suitable data if required but justify it logically wherever applicable.
- (iii) Figures to the right indicate full marks & every sub-question from Q.2 to Q.6 has equal weightage.

Q. No.	Attempt any <b>four</b>	<b>Marks</b>
Q1.(a)	The expected value of the voltage across a resistor is 80v. However the measurement gives a value of 79v. Calculate (i) absolute error, (ii) %error, (iii) relative accuracy, and (iv) %accuracy.	<b>5</b>
Q1.(b)	Explain Megger Bridge (Mega Ohmmeter) for high resistance measurement with diagram.	<b>5</b>
Q1.(c)	Draw block diagram of Dual trace and dual beam CRO.	<b>5</b>
Q1.(d)	Define Transducers. List selection criteria of Transducers.	<b>5</b>
Q1.(e)	With a neat labelled diagram explain Digital frequency meter.	<b>5</b>
Q1.(f)	List various types of Elastic Pressure Transducers and explain any one.	<b>5</b>
Q2.(a)	What are the different types of errors in measuring instruments? State the remedies to eliminate errors in the measurements.	<b>10</b>
Q2.(b)	Explain the measurement of unknown resistance using Kelvin Double Bridge.	<b>10</b>
Q3.(a)	Explain how Lissajous figures are used for measurements of unknown frequency and phase shift using cathode ray oscilloscope.	<b>10</b>
Q3.(b)	Draw and Explain the block diagram of Digital storage oscilloscope. List any 4 applications of DSO.	<b>10</b>
Q4.(a)	Describe the operation of Successive Approximation type digital voltmeter with a neat block diagram.	<b>10</b>
Q4.(b)	With neat labelled block diagram explain the operation of spectrum analyzer	<b>10</b>
Q5.(a)	Draw and explain construction and working of Linear Variable Differential Transducer and comment on Residual voltage	<b>10</b>

- Q5.(b) Draw and explain the construction and working of Dead Weight Tester with labeled diagram. **10**
- Q6. (a) Compare RTD, Thermocouple and Thermistor on the basis of the following parameters: **10**
- 1.Principle of working
  - 2.Characteristics
  - 3.Range
  - 4.Applications
  - 5.Diagram
- Q6.(b) You are asked to measure the flow rate in a network of pipes that carry brine (a salt water solution). At first, it seems an easy task to use electromagnetic flow meters since the brine solution being highly conductive, the output signal obtained is proportional to the flow rate. However, on close inspection, you find that due to several issues: including the storage of space and the myriad of piping the flow transducer and only installed in vertical position. The plant supervisor also tells you “it should be such that” simply by looking at flowrate directly on its scale, he can adjust the valve manually and quickly so as to control it. Which flow transducer will you select for such an application? Explain with a neat diagram. **10**

-----*BEST OF LUCK*-----