Time :- 03 Hours **Max. Marks :- 80**

(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 have equal weightage and have 10 marks each.

Q.1 **ATTEMPT ANY FOUR (04) :-** **20**

a) Explain precision and resolution for electronic equipments.
b) Draw a neat circuit diagram of LCR – Q meter & explain its operating principle.
c) Explain specifications of dual trace and dual beam CRO.
d) Describe operating principle of harmonic distortion analyzer with a neat block diagram.
e) With a neat diagram, explain the principle of digital time measurement.

Q.2 (a) A set of independent current measurements were recorded as 10.03,10.10,10.11,10.08 A .Calculate a)Average current b) Range of error. **20**

(b) List and discuss operation and applications of Kelvin bridge

Q.3 (a) Draw the block diagram of CRO and explain its operation. State specifications of CRO. **20**

(b) Explain how Lissajous patterns / figures are used for measurement of an unknown frequency & phase shift using a cathode ray oscilloscope (CRO).

Q.4 a) Draw the circuit diagram and explain the operation of bridge used to measure capacitance. **20**

b) Explain various features of digital storage oscilloscope.

Q.5 (a)Draw the neat diagram and explain the operation of dual slope type DVM.

(b) In a food processing unit, a highly acidic solution is stored in a storage tank where its level has to be continuously monitored round the clock. Your supervisor suggests that due to highly acidic nature of the solution, a non-contact transducer should be used for the level measurement. Which transducer will you use for above application? Describe its operation with a neat diagram. **20**

Q.6 (a)Draw the diagram and explain the operation of Rotameter.

(b)Explain the operation of linear variable differential transformer. What is residual voltage? **20**

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