

Roll No.

## Time: 3 Hours

Note: 1. Attempt all Sections. If require any missing data; then choose suitably. 2. Any special paper specific instruction.

## SECTION A

## 1. Attempt all questions in brief.

- a) Define random error and Gross error with suitable example.
- b) What is the difference between analog and digital multimeter?
- c) What is Quality factor and its importance in measurement?
- d) How current is measured in the circuit using Ammeter?
- e) What do you mean interpolation?
- f) What is Instrument calibration?
- g) What do you mean by Transducers and Inverse Transducers?

## 2.

- SECTION B Attempt any *three* of the following: a) Explain the working of a source follower electronic voltmeter. Describe how the range of this voltmeter can be extended. Explain the use of zero adjustment and calibration resistors.
- b) Design amulti range FET Voltmeter circuit and explain its working with diagram.
- c) Explain how inductance is measured using bridges? Explain any one?
- d) Explain how frequency and phase are measured by CRO.
- e) Describe the different modes of operation of Piezo-electric transducers with suitable diagram.

# SECTION C

### 3. Attempt any one part of the following:

- a) A batch of resistors each has a nominal resistance of  $330\Omega$  are to be tested and classified as  $\pm$  5% and  $\pm$ 10% components are specified at 25°C, and their temperature coefficient is -300 ppm/<sup>0</sup>C. Calculate the maximum and minimum resistance for these components at 100°C and Calculate the maximum and minimum absolute resistance for each case.
- b) Explain the construction of Series ohm meter and their application.

## Attempt any *one* part of the following: 4.

- a) Draw and explain the block diagram of digital frequency meter system.
- b) Draw and explain the working of digital multimeter.

### 5. Attempt any *one* part of the following:

- a) How dielectric loss and unknown capacitance are measured by Schering Bridge?
- **b)** Draw and explain the working of Wheatstone bridge.

## Total Marks: 70

Sub Code:REC-403

 $7 \ge 3 = 2$ 

 $2 \ge 7 = 14$ 

 $7 \ge 1 = 7$ 

# $7 \ge 1 = 7$

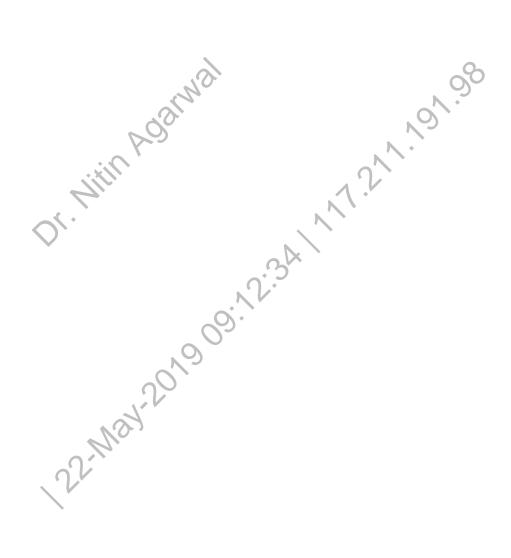
 $7 \ge 1 = 7$ 

# 6. Attempt any *one* part of the following:

- a) Why is delay line used in vertical section of an oscilloscope? Explain it in detail.
- b) Explain DSO and its Application.

# 7. Attempt any *one* part of the following:

- a) Explain the working procedure of X-Y Plotter with neat sketch.
- b) Explain the working of AC voltmeter calibration.



 $7 \ge 1 = 7$