

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III (NEW) EXAMINATION – WINTER 2017

Subject Code: 2130903

Date: 21/11/2017

Subject Name: Electrical Measurement and Measuring Instruments

Time: 10:30 AM to 01:00 PM

Total Marks: 70

Instructions:

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

- Q.1** (a) Define the terms “Indicating instruments”, “Recording instruments” and “Integrating instruments”. **03**
- (b) Explain the following terms. **04**
1. Accuracy 2. Precision 3. Resolution 4. Sensitivity
- (c) Explain the controlling systems used in instruments. **07**
- Q.2** (a) Describe how to make extension of range of ammeter. **03**
- (b) Explain the electrodynamic type wattmeter. **04**
- (c) Explain construction working, torque equation, advantages and disadvantages of moving iron instrument with diagram. **07**
- OR**
- (c) Explain construction, working, torque equation, of single phase induction type energy meter. **07**
- Q.3** (a) Explain working principle of Q meter. **03**
- (b) Explain working of Kelvin’s double bridge for measurement of low resistance with neat diagram **04**
- (c) Explain measurement of inductance with the help of Hay’s Bridge. Also draw vector diagram. **07**
- OR**
- Q.3** (a) Explain the loss of charge method for measurements of high resistance. **03**
- (b) Explain measurement of capacitance with the help of Schering’s Bridge. **04**
- (c) Explain Megger with suitable diagram. **07**
- Q.4** (a) Define instrument transformer. Explain ratio error and phase angle error in CT. **03**
- (b) Explain any one pressure measurement techniques in detail. **04**
- (c) Explain the construction and principle of working of a linear voltage differential transformer (LVDT) **07**
- OR**
- Q.4** (a) What is a transducer? Give classifications of transducer. **03**
- (b) Describe the construction, theory and working of thermocouples. **04**
- (c) Explain the construction wire wound strain gauges and derive the expression for the gauge factor. **07**
- Q.5** (a) State different pressure measurement techniques **03**
- (b) State the basic components of a magnetic tape recorder **04**
- (c) Describe the working of a Potentiometric type of strip chart recorder. **07**
- OR**
- Q.5** (a) Explain harmonic analyzer. **03**
- (b) Describe digital storage oscilloscope with schematic block diagram. **04**
- (c) Explain different methods for data transmission in telemetry systems **07**
