

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-III (NEW) EXAMINATION – WINTER 2020****Subject Code:2130903****Date:05/03/2021****Subject Name:Electrical Measurement and Measuring Instruments****Time:10:30 AM TO 12:30 PM****Total Marks:56****Instructions:**

1. Attempt any **FOUR** questions out of **EIGHT** questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Describe how to make extension of range of ammeter. **03**  
(b) Explain the various effects with which deflecting torque is produced. **04**  
(c) Explain Maxwell's inductance-capacitance bridge for measurement of inductance. Derive bridge balance equation and draw vector diagram. **07**
- Q.2** (a) Explain digital storage oscilloscope with block diagram. **03**  
(b) Explain strip chart recorders. **04**  
(c) Describe the construction and working of L.V.D.T. with neat sketches. Draw its output characteristics. State advantages and disadvantages of it. **07**
- Q.3** (a) Explain CT and PT. **03**  
(b) Define the terms Indicating instruments, Recording instruments and Integrating instruments. Give suitable example for each case. **04**  
(c) Prove that deflection of electro-dynamometer type wattmeter is proportional to power consumed. **07**
- Q.4** (a) Give advantages, limitations and applications of Wheatstone bridge. **03**  
(b) Explain working of Kelvin's double bridge for measurement of low resistance with neat diagram **07**  
(c) Explain the construction, working, torque equation, advantages and disadvantages of single phase induction type energy meter with neat diagram. **07**
- Q.5** (a) Explain with diagram, the bonded type of strain gauge. **03**  
(b) Explain any one pressure measurement techniques in detail. **04**  
(c) State different errors in measurement and explain any three. **07**
- Q.6** (a) Explain measurement of capacitance with the help of Schering's Bridge. **03**  
(b) Derive the equations of balance for Owen's bridge. Draw the phasor diagram for conditions under balance. **04**  
(c) What is Hall effect? Describe the construction, working principle of Hall effect Transducers and write its applications. **07**
- Q.7** (a) Describe the construction, theory and working of thermocouples. **03**  
(b) Explain DMM with schematic diagram. **04**  
(c) Explain in detail harmonic analyzes. **07**
- Q.8** (a) State the basic components of a magnetic tape recorder **03**  
(b) What are the different types of telemetry system? Explain any one system. **04**  
(c) Describe the working of a Potentiometric type of strip chart recorder. **07**

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