

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-III (New) EXAMINATION – WINTER 2015**

**Subject Code:2130903****Date:29/12/2015****Subject Name: Electrical Measurements and Measuring Instruments****Time: 2:30pm to 5:00pm****Total Marks: 70****Instructions:**

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

|            |   | <b>MARKS</b> |
|------------|---|--------------|
| <b>Q.1</b> | <b>Short Questions</b>  | <b>14</b>    |
|            | 1 Define accuracy.  |              |
|            | 2 Define precision.   |              |
|            | 3 Define sensitivity.   |              |
|            | 4 Define resolution.  |              |
|            | 5 Define Indicating Instruments.  |              |
|            | 6 Define recording Instruments.   |              |
|            | 7 Define Integrating Instruments.   |              |
|            | 8 State methods for measurements of low resistances.  |              |
|            | 9 State methods for measurements of medium resistances.   |              |
|            | 10 State methods for measurements of high resistances.  |              |
|            | 11 Give examples of analog transducers.   |              |
|            | 12 State applications of hall effect transducers.   |              |
|            | 13 Define telemetry.  |              |
|            | 14 Define creeping.   |              |
| <b>Q.2</b> | (a) State and explain types of errors in an instruments.  | <b>03</b>    |
|            | (b) Explain the controlling systems used in instruments.  | <b>04</b>    |
|            | (c) Explain the construction , working , torque equation , advantages and dis-advantages of PMMC instrument with neat diagram.                    | <b>07</b>    |
|            | <b>OR</b>   |              |
|            | (c) Explain the construction , working , torque equation , advantages and dis-advantages of Moving Iron instrument with neat diagram.             | <b>07</b>    |
| <b>Q.3</b> | (a) Explain the damping systems used in instruments.  | <b>03</b>    |
|            | (b) Explain DMM with schematic diagram.   | <b>04</b>    |
|            | (c) Explain the construction , working , torque equation , advantages and dis-advantages of Electrodynamometer type instrument with neat diagram. | <b>07</b>    |
|            | <b>OR</b>   |              |
| <b>Q.3</b> | (a) Explain digital storage oscilloscope with block diagram.  | <b>03</b>    |
|            | (b) Explain construction & operation of Hot wire instruments.   | <b>04</b>    |
|            | (c) Derive the bridge balance equation of maxwell's bridge and also provide advantages , dis-advantages & limitations of it.                      | <b>07</b>    |
| <b>Q.4</b> | (a) Give advantages , limitations and applications of Wheatstone bridge   | <b>03</b>    |
|            | (b) Explain CT and PT.  | <b>04</b>    |

- (c) Explain the construction , working , torque equation , advantages and dis-advantages of single phase induction type energymeter with neat diagram. **07**

**OR**

- Q.4** (a) Explain Piezo electric transducer. **03**  
(b) Explain electrostatic instrument. **04**  
(c) Derive the bridge balance equqtion of hay's bridge and also provide advantages & dis-advantages of it. **07**

- Q.5** (a) Explain strip chart recorder. **03**  
(b) Explain LVDT. **04**  
(c) Derive the bridge balance equqtion of anderson's bridge and also provide advantages , dis-advantages & limitations of it. **07**

**OR**

- Q.5** (a) State applications of Power analyzer. **03**  
(b) Explain Megger. **04**  
(c) Explain the construction , working , advantages and dis-advantages of RTD with neat diagram. **07**

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