

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – SUMMER 2013****Subject Code: 130903****Date: 23-05-2013****Subject Name: Electrical and Electronics Measuring Instruments****Time: 02.30 pm - 05.00 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) Give classification of measuring instruments on the basis of operating principle. **07**
(b) Explain difference between accuracy and precision. **07**
- Q.2** (a) Discuss the classification of analog instrument **07**
(b) Derive Torque equation of DöArsonaval Galvanometer. **07**
OR
(b) Explain the working principle of A.C. potentiometer. State the application of AC potentiometer. **07**
- Q.3** (a) Describe construction and working of PMMC instrument. **07**
(b) State and explain errors in induction watt hour meter. **07**
OR
- Q.3** (a) Describe construction and working of a Maximum Demand indicator. **07**
(b) The inductance of attraction type moving iron instrument is given by $L = (10 + 5\theta - \theta^2) \mu\text{H}$ where θ is the deflection in radian from zero position. The spring constant is $12 \times 10^{-6} \text{ N-M/rad}$. findout the deflection for a current of 5A. **07**
- Q.4** (a) Describe use multiplier in case of voltmeter. State disadvantages of multiplier. **07**
(b) Explain the measurement of three phase power using two watt meter method with necessary diagrams. **07**
OR
- Q.4** (a) Explain working principle and use of analog tachometer. **07**
(b) Describe with a circuit diagram operation of an electronic voltmeter used in differential amplifier. **07**
- Q.5** (a) Explain with a neat diagram working of a Synchroscope. **07**
(b) Calculate the total power and reading of the two wattmeterö connected to measure power in 3-phase balance load, if the reactive power is 15 KVAR and load power factor is 0.8 lagging. **07**
OR
- Q.5** (a) Explain working of hot-wire instruments. Also state advantages and disadvantages of hot-wire instruments. **07**
(b) Describe construction and working of Trivector meter **07**
