

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V • EXAMINATION – SUMMER 2013****Subject Code: 151702****Date: 21-05-2013****Subject Name: Sensors and Signal Conditioning****Time: 10.30 am - 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) Draw functional block diagram of Measurement System and describe each component in detail. **07**

(b) Define following: (1) Accuracy and Precision (2) Resolution (3) Fidelity (4) Saturation (5) Calibration (6) Dead zone (7) Bandwidth. **07**

Q.2 (a) What are the applications of signals in control system? Give proper justification to each signal. **07**

(b) List the method to measure basic electrical parameter. Describe any two with its construction, working, benefits and limitation. **07**

OR

(b) Discuss the basics of an amplifier? Draw and describe measurement circuit of Differential amplifier. Compare it with instrumentation Amplifier **07**

Q.3 (a) Why LVDT is called linear transducer? Draw and describe construction, working, benefits and limitation of LVDT. **07**

(b) Explain the vibration type transducer with necessary details **07**

OR

Q.3 (a) What is the role of passive transducer in electrical measurement system? Describe Resistive type temperature measuring sensors with suitable circuit. **07**

(b) List the passive inductive transducer. Explain eddy current type displacement transducer with application. **07**

Q.4 (a) Compare the accuracy and stability of capacitive transducer with resistive one. Describe capacitive moisture transducer including its design, working and its limitation. **07**

(b) Why charge amplifier is required in piezo- transducer? Explain it for Piezo- electric pressure measuring device. **07**

OR

Q.4 (a) What is the importance of tachometers in control system? Explain reluctance type tachometer with its construction, working, benefits and limitation. **07**

(b) Explain Photo electric effect. Compare performance and application of Photo-voltaic, Photo-emissive and Photo-conductive transducer. **07**

Q.5 (a) Compare performance of crystal oscillator with LC-tuned oscillator. Explain any one in detail. **07**

(b) What are the requirements of high frequency oscillator? Explain Op-Amp based amplifier with its gain and working frequency. **07**

OR

Q.5 (a) Why regulation is require for voltage type electrical parameter? Draw and describe three terminal variable voltage regulators. **07**

(b) List the radiation range of nuclear gauge. Describe its construction, working, benefits and limitation. **07**
