

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER V • EXAMINATION – WINTER - 2012****Subject code: 151702****Date: 17-01-2013****Subject Name: Sensor and Signal Conditioning****Time: 02:30 pm to 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) Explain Data Logger in detail 07
(b) Explain Ionization Displacement Transducer in detail 07
- Q.2** (a) Explain Biquad Filter in detail 07
(b) Explain in detail – Piezoelectric Acceleration Transducer 07
- OR**
- (b) Explain the Frequency Modulation and show that it is the most efficient technique of analog modulation 07
- Q.3** (a) Draw the scheme of a Sample and Hold circuit and explain its operation and application 07
(b) Explain – DC power supplies 07
- OR**
- Q.3** (a) Define Calibration and explain the Process of Calibration 07
(b) Describe the construction and operation of a thermal conductivity gauge and show that it can be used for analysis of binary gas mixture. 07
- Q.4** (a) Describe the principles of operation and constructional features of a Bridgman gauge and derive the relationship between the input and output quantities. 07
(b) Explain the basic mechanism of recording and reproduction of an analog voltage signal by means of a magnetic tape 07
- OR**
- Q.4** (a) Explain how a capacitive transducer can be used as a microphone and show what are the additional considerations applied while designing the same. 07
(b) Explain in detail- Foster Seely Detector 07
- Q.5** (a) Explain in detail- Photo emissive transducers 07
(b) Describe the process of modulation and the techniques usually adopted. 07
- OR**
- Q.5** (a) Explain: 07
(1) Peltier Effect
(2) Thompson effect
(3) Seebeck effect
(4) Law of intermediate metals
(5) Law of intermediate temperature
(b) Describe Electrodynamics Vibration Transducer. 07