

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- Vth SEMESTER-EXAMINATION – MAY/JUNE - 2012****Subject code: 150302****Date: 02/06/2012****Subject Name: Biomedical Transducers****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) Explain Electrical design consideration for Biomedical transducers. **07**
(b) Explain Piezoelectric transducer with Piezoelectric materials and derive the output equation of Piezocrystal. **07**

- Q.2** (a) Explain Construction, working and merits of LVDT. **07**
(b) Explain thermo emf transducer with cold junction compensation. **07**

OR

- (b) Write a technical note on temperature sensor Thermister. Explain used of thermister for cardiac output measurement. **07**

- Q.3** (a) Explain Transient type Ultrasonic blood flow transducer. **07**
(b) Explain Phonocardiograph with block diagram. **07**

OR

- Q.3** (a) Write a short note on Tonometry. **07**
(b) Explain Electromagnetic Blood flow transducer. **07**

- Q.4** (a) Explain strain gauge Displacement transducer. **07**
(b) Explain Nuclear radiation transducers. **07**

OR

- Q.4** (a) Derive the differential voltage equation for variable separation differential capacitive type displacement transducer. **07**
(b) Write a short note on Enzyme based glucose sensor. **07**

- Q.5** (a) Explain Polarographic Clark PO₂ sensor and Transcutaneous PO₂ sensor. **07**
(b) Write a short note on microelectrodes. **07**

OR

- Q.5** (a) Explain Electrode equivalent circuit. **07**
(b) Write a short note on Smart Sensors. **07**
