

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER V • EXAMINATION – WINTER - 2012****Subject code: 150302****Date: 12-01-2013****Subject Name: Biomedical Transducer****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 Electrical design consideration for the Generalized Instrumentation. **07**
(b) Explain temperature compensation in the strain gauge type transducers. **04**
(c) Explain fiber optic temperature sensor. **03**
- Q.2** (a) Explain used of Thermister for the measurement of cardiac output and nasal air flow. **07**
(b) Explain working of optical pyrometer with schematic diagram. **07**
- OR**
- (b) Explain construction, working principle and merits of LVDT. **07**
- Q.3** (a) Explain measurement of Intra vascular fibre optic pressure transducer and Fibre optic pressure transducer for intracranial pressure measurement in new born. **07**
(b) Explain working of Nuclear radiation transducer with necessary figures. **07**
- OR**
- Q.3** (a) Explain working of Electromagnetic Blood flow meter with schematic diagram. **07**
(b) Explain Intraocular pressure measurement technique. **07**
- Q.4** (a) Explain Air flow transducer for Fleish pneumotachometer. **07**
(b) Explain resistive Potentiometric transducers for translational and angular displacement measurement **07**
- OR**
- Q.4** (a) Give brief idea about Electrode-Electrolyte interface, half cell potential, motion artifacts and polarization. **07**
(b) Explain capacitive displacement transducer for respiration sensing. **07**
- Q.5** (a) Explain construction and working of Transcutaneous PO₂ sensor. **07**
(b) Explain construction of various microelectrodes. **07**
- OR**
- Q.5** (a) Explain Microbial biosensor for ammonia and nitrogen dioxide. **07**
(b) Write a short note on role of Smart sensors in Biomedical measurement. **07**
