

GUJARAT TECHNOLOGICAL UNIVERSITY**BE SEM-V Examination-Nov/Dec.-2011****Subject code: 150302****Date: 24/11/2011****Subject Name: Biomedical Transducers****Time: 2.30 pm -5.00 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 the principle and working of thermister. Narrate the uses of thermister. 07
- (b) Explain the use of strain gauge transducer for blood pressure measurement. 07
- Q.2** (a) Explain the principle, working, merits and limitations of LVDT. 07
- (b) Derive the output equation for piezoelectric transducer. Also list the merits and demerits of the same. 07
- OR**
- (b) Explain the principle and working of optical pyrometer. 07
- Q.3** (a) Explain the use of fiber optic pressure transducer for intracranial pressure measurement in new born. 07
- (b) Explain ultrasonic flow transducer in detail. 07
- OR**
- Q.3** (a) Explain the use of capacitive transducer for respiration sensing. 07
- (b) Explain the principle and working of GM counter with neat sketch. 07
- Q.4** (a) Explain working of SO₂ sensor for pulse oximeter. 07
- (b) Explain polarographic Clark PO₂ sensor. 07
- OR**
- Q.4** (a) List out electric properties of microelectrodes used for bio potential measurement. 07
- (b) Explain working of Ag/AgCl electrode. 07
- Q.5** (a) Explain the use of MEMS in biomedical measurements with suitable example. 07
- (b) Explain static (any three) and dynamic (any three) performance characteristic of transducers. 07
- OR**
- Q.5** (a) Narrate the role of Nano sensors in biomedical measurements. 07
- (b) Explain the working of electromagnetic blood flow transducer. 07
