

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-I Regular Examination January / February 2011

Subject code: 713102N

Subject Name: Biosensors & Biomems

Date: 01 /02 /2011

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) State the features of an ideal strain gauge. Explain the general classes of strain gauges briefly. 07
- (b) Derive the output voltage equation for LVDT. Draw its signal conditioning circuit and explain it. 07
- Q.2** (a) Write a short note on electromagnetic flow meter. 07
- (b) Explain the conductivity measurement using four electrodes. 07
- OR**
- (b) Explain the switching phase sensitive detector and its applications. 07
- Q.3** (a) Explain methods to determine Gauge factor of strain gauges. 07
- (b) Briefly explain thermistors. Draw its signal conditioning circuit. How it can be interfaced with computer? 07
- OR**
- Q.3** (a) Explain different sputtering techniques used for fabricating thin film type strain gauge. 07
- (b) State merits and demerits of RTD. Explain four wire measurement technique and draw its signal conditioning circuit 07
- Q.4** (a) Write a short note on transit time ultrasonic flow meter. 07
- (b) Explain the torques measurement techniques. 07
- OR**
- Q.4** (a) Write a short note on vortex flow meters. 07
- (b) Explain force measurement techniques. 07
- Q.5** (a) Write a short note on AD590 temperature sensor. 07
- (b) Explain design consideration for diaphragm type pressure transducer. 07
- OR**
- Q.5** (a) Write a short note on thermocouple compensation and calibration techniques. 07
- (b) Explain the functional characteristics and classification of pressure transducer. 07
