Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER I (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2713102 Date: 19/05/2016 **Subject Name: BIOSENSORS & BIOMEMS** 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) Enlist active and passive transducers with Explanation of their transduction 07 principles. **(b)** Explain any one application of amperometric transducers. **07 Q.2** (a) Enlist semiconductor type transducers. Explain anyone in details. 07 **(b)** Explain technical aspects for measurement of saturated pressure of O_2 . 07 OR What is piezoelectric effect? Give name of Piezo materials. Enlist the **(b) 07** Biomedical applications of Piezotransducers. 0.3 (a) Explain design and working of Glucose biosensor. 07 For level measurement application of the capacitive transducer, derive the **(b)** 07 equation for change in capacitance due to change in dielectric medium. 0.3 Enlist the transducers which are working on the basis of resistive transduction 07 (a) principle. Explain technical aspects of anyone transducers for Biomedical application. Explain technical aspects of anyone method for flow measurement. 07 **(b)** 0.4 Write a short note on fabrication process of BioMEMS. **07** (a) Explain design concepts of Load cell and Cantilever beam for Force **(b)** 07 measurement. OR Explain cold junction compensation techniques for Thermo couple. 07 **Q.4** (a) Discuss application of MEMS in drug delivery system. 07 **(b)** Explain design aspects of any one sensor for direct blood Pressure **Q.5** (a) 07 measurement. Write a short note on radiation sensors and their medical applications. 07 **(b)** OR **Q.5** Write a short on Linear variable differential transformer. 07 (a) Write a short note on Biochips and biosensor arrays. **(b) 07**
