

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. VIIth Semester–Examination – Nov- 2011****Subject code: 171705****Subject Name: Instrumentation for Biomedical Application****Date: 29/11/2011****Time: 10:30 am – 01:00 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 generation of bioelectric potential in human body. Explain acting and resting potential with necessary wave form and with action of polarization and depolarization of cell. **10**

(b) Comment on “the body as a control system” **04**

Q.2 (a) Give the function of kidney and explain hemodialysis machine with block diagram. **07**

(b) Explain the basics of measurement theory giving the brief of data classes & measurement standards **07**

OR

(b) Give the categories of measurement. Explain each in detail. **07**

Q.3 (a) Explain the electrical activity of the heart. Draw suitable waveform **07**

(b) Explain micro electrode. What is the capacitance of microelectrode if the pipette radius is 0.2 μm and the inside tip radius is 0.15 μm . ($\epsilon=4$ dielectric constant of glass) **07**

OR

Q.3 (a) Write a detail note on colorimeter. **07**

(b) Write detail note on intermittent positive pressure breathing therapy **07**

Q.4 (a) Draw the block diagram of ECG machine. What are the leads of ECG. **07**

(b) Explain in detail with block diagram the auscultatory methods of blood pressure measurement. **07**

OR

Q.4 (a) Give the structure and function of central nervous system **07**

(b) What is EEG? Explain 10-20 electrode system **07**

Q.5 (a) Explain any bed side monitor circuits. **07**

(b) Explain any one type of blood cell counter with neat block diagram **07**

OR

Q.5 (a) Give the block diagram of ultrasonic flowmeters transducers **07**

(b) Give the terminologies of lung volumes and capacities **07**
