

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – WINTER 2013****Subject Code: 171006****Date: 03-12-2013****Subject Name: Biomedical Instrumentation****Time: 10:30 TO 01:00****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 origin of biomedical signals in detail. 07
(b) Explain the difference among action, resting and bioelectric potential. 07
- Q.2 (a) Define transducers? Differentiate between active and passive transducers. 07
(b) Define man instrument system. Describe the components of man instrument system. 07
- OR
- (b) Define biometrics. Explain the physiological system of body. 07
- Q.3 (a) What are electrodes? What is their significance? Explain the various types of electrodes used. 07
(b) Explain the various techniques used for blood pressure measurement. 07
- OR
- Q.3 (a) List the various types of electrodes used in EMG. 07
(b) Explain the functioning of heart and cardiovascular system in detail. 07
- Q.4 (a) Write a short note on (i) Plethymography (ii) Colour Doppler effects. 07
(b) Draw and explain the schematic diagram of an EEG machine. 07
- OR
- Q.4 (a) What is ECG? Draw its block diagram and explain its working. 07
(b) How programmable pacemaker different from ordinary one? How pacemaker is implanted inside the human body. 07
- Q.5 (a) What is X-RAY? How it is different from CT scan? 07
(b) Draw and explain the various components of biotelemetry system. 07
- OR
- Q.5 (a) Draw and explain the block diagram of patient monitoring system. 07
(b) Describe (i) MRI (ii) Pulse rate measurement 07
