Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) - EXAMINATION - SUMMER 2017 Subject Code: 2171102 Date: 11/05/2017 **Subject Name: Biomedical Instrumention(Departmental Elective - II)** 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. 0.1 (a) A circuit has following specification: noise factor = N and noise figure = N dB 03 (where, N is real number). Find the value of the noise factor. Briefly explain different types of sensor error sources. 04 (c) List the type of Major Systems of Human Body and briefly explain function of **07** each System. **Q.2** For a small length of an unmyelinated nerve fiber, draw the network equivalent 07 electrical circuit and explain action potential propagation in nerve fiber with necessary diagrams. Explain General Medical Instrumentation system with block diagram. **07 (b) (b)** Explain Design process of Medical Instrumentation system. 07 Q.3 Define electrodes. Explain Internal electrodes in detail. 07 (a) Explain strategies to reduce noise from biomedical signal. **07** Q.3(a) Write a short note: Electrode skin interface and motion artifacts 07 Explain Microelectrodes with its applications. **(b) 07** Explain the standard lead system for ECG measurements with necessary 07 0.4 (a) diagrams. **(b)** Define Neuron. Explain ECG machine faults and solutions. 07 (a) Explain the Electro-conduction system of the heart with neat diagrams. **Q.4** 07 Explain EEG electrodes and 10-20 system for EEG. **(b)** 07 **Q.5** Explain Macroshock Hazards. 07 Explain the block diagram of EEG telemetry system. 07 0.5 Explain the amplitude and frequency bands of EEG. 07 (a)

Explain Power Distribution Protection in detail.

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