

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2160301**Date:06/05/2016****Subject Name: Diagnostic Instrumentation****Time: 10:30 AM to 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) Draw and explain block diagram of ECG machine. Design preamplifier circuit for ECG acquisition. **07**
- (b) Explain different lead configuration of ECG machine. Explain effects of artifacts on ECG recordings. **07**
- Q.2** (a) Draw and explain block diagram of EEG machine. Explain 10-20 method of electrode placement. **07**
- (b) Enlist and explain any 5 neurological disorders diagnosed by EEG. **07**

OR

- (b) Explain photocardiology. Design phonocardiograph amplifier. **07**
- Q.3** (a) Draw and explain block diagram of picoscale blood cell counter. Enlist and explain different errors in electronic counters. **07**
- (b) Explain basic water sealed spirometer with its drawbacks. **07**

OR

- Q.3** (a) Explain ultrasonic spirometer. Derive the equation for flow velocity. **07**
- (b) Draw and explain analog signal processing circuitry of pulse oximetry. Enlist different physiological variables which affects the accuracy of SaO₂ measurements. **07**
- Q.4** (a) Draw and explain block diagram of flame photometer. Define various interferences occur in flame photometry. **07**
- (b) Explain the working of gas chromatograph with its schematic. **07**

OR

- Q.4** (a) Explain endoscopy technique with its basic constructional diagram and various applications. **07**
- (b) Explain different optical filters used in spectrophotometer. **07**
- Q.5** (a) Explain multichannel photometer in detail with its schematic diagram. **07**
- (b) Write a short note on tonometry technique. **07**

OR

- Q.5** (a) Explain blood pCo₂ electrode with constructional diagram. **07**
- (b) Explain auto analyzer. **07**
