

GANPAT UNIVERSITY
B.TECH. SEMESTER –VI BIOMEDICAL & INSTRUMENTATION ENGINEERING
REGULAR EXAMINATION MAY – JUNE 2012.
BME 602: BIOMEDICAL INSTRUMENTATION I

Time:- 3 Hours

Total Marks:- 70

Instructions:

1. Answer to the questions must be written in separate answer books.
2. Figure to the right indicate marks.
3. Conventional terms / notations are used.
4. All the questions are compulsory.

SECTION-I

- Que-1** 12
- (a) Write about Cochlear Implant in detail.
 - (b) Write the working principle & application of given transducers: Piezo Electric transducer, Photo diode, Strain gauge transducer, Ultrasonic transducer.
 - (c) Write in detail Implantable telemetry for measuring Blood flow & Blood pressure.
- OR**
- Que-1** 12
- (a) Discuss Pure tone audiometer with its complete block diagram.
 - (b) What is Telemetry? Write about Obstetrical Telemetry with its block diagram.
 - (c) Draw the complete block diagram of Arrhythmia monitor & explain it.
- Que-2** 11
- (a) Write a short note on Paramagnetic Oxygen Analyzer.
 - (b) Draw the block diagram for the measurement of SpO_2 & Pulse rate & explain it.
 - (c) Write about Turbine type Pneumotachometer in detail.
- OR**
- Que-2** 11
- (a) Write a short note on Galvanic Oxygen Analyzer.
 - (b) Draw the block diagram for measuring Heart rate & explain it.
 - (c) Write about Wedge Spirometer with neat figure.
- Que-3** 12
- (a) Draw the Respiratory cycle & Discuss all Lung Volumes & Capacities with its normal range & also explain Flow- Volume curve.
 - (b) Write the principle of Spirometry & Explain Ultrasonic Spirometer with neat figure.
 - (c) Write the physiology of Hearing & also write about Speech audiometer.

SECTION-II

- Que-4 12
- (a) What is cardiocograph? Which are the different methods to measure foetal ECG?
 - (b) Why cardiac output measurement is needed? Draw & explain indication method of measuring cardiac output.
 - (c) What is the need of blood pH measurement?
- OR
- Que-4 12
- (a) Discuss colorimeter.
 - (b) Explain impedance technique with necessary diagram.
 - (c) Enumerate errors occur during blood cell counting.
- Que-5 11
- (a) Explain Abdominal Foetal ECG with necessary diagram.
 - (b) Discuss working principle of ultrasound Doppler shift blood flow meter.
 - (c) Enumerate different methods of blood cell counting.
- OR
- Que-5 11
- (a) Discuss flame photo meter.
 - (b) Explain Electronic blood flow meter.
 - (c) Write merits & demerits of
 - i) Electromagnetic blood flow meter
 - ii) Doppler shift blood flow meter
- Que-6 12
- (a) Draw & explain principle, working, advantages & disadvantages of coulter counter.
 - (b) How blood pH measurement can be done?
 - (c) Write merits & demerits of
 - i) NMR blood flow meter
 - ii) Laser blood flow meter

END OF PAPER