

S.No. 95

17PELE02

(For the candidates admitted from 2017 – 2018 onwards)

M.Sc. DEGREE EXAMINATION, APRIL/MAY 2018.

Second Semester

Electronics and Communication

BIOMEDICAL INSTRUMENTATION

Time : Three hours

Maximum : 75 marks

PART A — (5 × 5 = 25 marks)

Answer ALL questions.

1. (a) With a neat diagram, explain about cell potential waveform.

Or

- (b) Explain the limb electrodes used for ECG.

2. (a) Write short notes on main amplifier and driver stage.

Or

- (b) Explain the operation of instrumentation amplifier.

3. (a) How will you measure the partial pressure of carbon di oxide ( $p\text{CO}_2$ ) present in the human blood? Explain.

Or

- (b) Write short notes on blood pH measurement.

4. (a) Write the Bloch equation and explain.

Or

- (b) Write the principle of NMR imaging system.

5. (a) Explain the basic function of an audio meter with a suitable block diagram.

Or

- (b) Discuss the different types of artificial heart valves.

PART B — ( $5 \times 10 = 50$  marks)

Answer ALL questions.

6. (a) Explain about different types of electrode tissue interface.

Or

- (b) Explain in detail the strain gauge pressure transducer with a suitable diagram.

7. (a) With a neat block diagram, explain the working of ECG machine.

Or

- (b) Draw the block diagram of an EEG unit and explain the different parts in it.

8. (a) Discuss the principle and working of electromagnetic blood flow meter.

Or

- (b) Describe the working of automatic recognition and differential counting of cells with necessary block diagram.

9. (a) Describe with a neat sketch, the scanning system of Computer Tomography.

Or

- (b) Draw the block diagram of a typical NMR imaging system and explain.

10. (a) Draw the circuit diagram of a fixed rate pacemaker and explain its working.

Or

- (b) What is a synchronized DC defibrillator? Draw a block diagram of it and explain its working.