

18/5/17

(3 Hours)

[Total Marks:80]

**Instructions:**

- (1) Question 1 is compulsory. Solve any 3 questions out of remaining questions.
- (2) Neat diagram must be drawn wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.

- 1.a. What is fibrillation? Explain Cardioversion w.r.t the DC defibrillator. (05)
- b. What is Impedance Plethysmography? State its application. (05)
- c. Explain Resting and Action potentials of a cell with a neat diagram. (05)
- d. Explain the principle of an Ultrasonic Blood Flowmeter. (05)
- 2.a. Explain with a neat diagram the Haemodialysis machine. (10)
- b. Write a detailed note on Heart Sounds measurement. (10)
3. a. Draw and explain the Einthoven's triangle. Also explain the 12-lead configuration for ECG measurement. (10)
- b. Explain, with a neat diagram, the working of the CT machine. Also, highlight the significance of the CT number. (10)
- 4.a. Draw the equivalent circuit of the Electrode-Electrolyte interface. Explain the following terms: Half-cell potential, Electrode Impedance and Electrode Offset potential. (10)
- b. Explain the Dye dilution method of Cardiac Output (CO) measurement with relevant diagrams. (10)
- 5.a. What are the various measurements in the Respiratory system? Explain the principle of working for each of the measurements. (10)
- b. Explain Ultrasound Imaging. Also, highlight the different Ultrasound modes and their applications. (10)
6. Write short notes on ( Any three ): (20)
  - a. Electromyogram (EMG)
  - b. Significance of the frequencies in EEG
  - c. Baby Incubators
  - d. Magnetic Resonance Imaging (MRI)