

Answer **ALL** questions

PART A - (8 X 2 = 16 marks)

1. EMG is a technique for measuring
 - a. Heart rate
 - b. Retinal abnormality
 - c. Muscular activity
 - d. Respiration rate
2. If the heart rate is 70 beats/min and the stroke volume is 70ml, then the cardiac output is,
 - a. 5L/min
 - b. 6L/min
 - c. 4.5L/min
 - d. 5.5L/min
3. Which of the following is competitive type of pacemaker?
 - a. Ventricular Inhibited
 - b. Ventricular Triggered
 - c. Atrial synchronous
 - d. Fixed rate
4. Which of the following is false about Hemodialysis?
 - a. Consumes less time
 - b. Complex
 - c. Requires trained professional
 - d. Less effective
5. Differentiate between absolute and relative refractory period.
6. In a diseased condition, the report of an individual shows, 150mmHg/100mmHg BP, 25 breaths/min, 103°F and 95 pulses/min. If the individual has recovered, what will be the normal values of the above mentioned parameters?
7. If a person is undergoing cardiac surgery, name the various medical instruments required to monitor/aid the doctor as well as the patient during the surgery.
8. Depict the connections between various components of radio pill.

PART B - (4 X16 = 64 marks)

09. (a) (i) Draw the block diagram of an instrument which is used to find the reason for improper heart beat and explain the various lead configurations associated with it. **(16)**

(OR)

- (b) (i) Identify the medical instrument that helps the physician to observe the alpha wave and also explain the lead configurations. (8)
- (ii) Depict and explain the various blocks of an instrument which automatically analyzes multiple blood samples fed into it. (8)
10. (a) (i) How to measure the volume of blood pumped by the heart with the help of a dye? Explain in detail. (8)
- (ii) Explain how the concept of electromagnetism is used to measure the flow of blood in an artery. (8)

(OR)

- (b) (i) Explain the method in which the systolic and diastolic blood pressure is recorded by listening to the korotkoff sounds. (8)
- (ii) Explain the working of a pacemaker that can be used when there is an improper ventricular contraction. (8)
11. (a) (i) Which component of heart lung machine helps in gaseous exchange? Explain about its types. (8)
- (ii) Which medical instrument is used to revert cardiac arrest? Explain its working in detail. (8)

(OR)

- (b) (i) Assertion: Heat energy can be used to perform surgery. Justify with relevant explanations. (8)
- (ii) Explain the methods by which electrical safety can be assured in hospitals. (8)
12. (a) (i) Explain the imaging technique through which heat distribution inside the human body can be visualized. (8)
- (ii) Discuss the applications of LASER in medicine. (8)

(OR)

- (b) (i) Which instrument helps the physician to diagnose that a person is suffering from severe stomach ulcer? Explain its working in detail. (8)
- (ii) What is the necessity to transmit diagnostic reports across geographical regions? Explain about the various components involved in such transmitting systems. (8)