

B.E./B.TECH. Degree Examination, December 2020

Fifth Semester

**EE18001- Biomedical Engineering**

(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions

**PART A - (8 X 2 = 16 marks)**

1. From equipment point of view, the respiratory system in the human body is a \_\_\_\_\_ system.  
a) hydraulic      b) pneumatic      c) mechanical      d) electrical
2. \_\_\_\_\_ is very useful for patients having respiratory or cardiac problems because of their simplicity of use and the ability to provide continuous and immediate oxygen saturation levels.  
a) Pulse Oximeter,      b) Ear Oximeter,      c) Skin Reflectance Oximeter  
d) Intravascular Oximeter
3. A computational method is the basis for producing an image of the cross section of the body in:  
a. PET scan      b. CT scan      c. MRI scan      d. Ultrasonography
4. In hemodialysis (HD), blood is filtered through a \_\_\_\_\_.  
a) Hemolysis,      b) Dialyzer,      c) Cholesterol Screen,      d) Hemoglobin
5. Mention any two applications of ultrasonic transducers.
6. Discuss the measurement procedure with a spirometer.
7. Describe the activity conveyed by the QRS complex in the ECG waveform.
8. Explain the need for a pacemaker.

**PART B - (4 X16 = 64 marks)**

09. (a) Explain the characteristics of resting potential and discuss the different events that occur during generation of action potential in a cell (16)  
(OR)  
(b) (i) Discuss the principle involved in LVDT along with its characteristics. (8)  
(ii) With a block diagram explain the cardiovascular circulation system (8)
10. (a) Classify the different methods of monitoring blood pressure. Explain the concept involved in monitoring B.P using Sphygmomanometer. (16)  
(OR)  
(b) Explain the applications of blood gas analysers in detail. (16)

11. (a) (i) What is the medical use of chopper amplifier? Draw the diagram of mechanical chopper amplifier and explain its working (8)

(ii) Classify different types of electrodes used in medical field (8)

**(OR)**

(b) Explain in detail ECG lead configurations and the working of ECG with neat diagram (16)

12. (a) (i) Draw a X ray tube and explain its construction and working (12)

(ii) Compare CT scan and MRI scan. (4)

**(OR)**

(b) (i) Explain the operating principle of a Heart-Lung machine (12)

(ii) Draw the block diagram of short wave diathermy unit and explain briefly its working details (4)