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**Question Paper Code: 47503**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Seventh Semester

Electronics and Instrumentation Engineering

14UEI703 - BIOMEDICAL INSTRUMENTATION

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

- Which of these units is the part of biomedical instrumentation system?  
(a) Amplifier                      (b) Transmitter                      (c) Modulator                      (d) Multiplexer
- The transducer that converts the input signal into the output signal, which is a discrete function of time, is known as \_\_\_\_\_ transducer.  
(a) Active                      (b) Analog                      (c) Digital                      (d) Pulse
- Physiological signal obtained from skin is called?  
(a) EMG                      (b) ECG                      (c) EEG                      (d) ) EOG
- ECG Stands for.....?  
(a) Electromiografia                      (b) Electrooculograma  
(c) Electrocardiograma                      (d) Electroencefalografia
- The frequency of the reflected ultrasonic energy is ..... by a moving interface.  
(a) Increased                      (b) Decreased  
(c) both a and b                      (d) Slightly increased by one

6. Principle of operation of plethysmograph depends on .....
- (a) Boyle's law (b) Magnetic induction  
(c) Faradays law (d) Beer's law
7. If a patient goes for a blood test, which is the possible test he/she will undergo?  
(a) CBC (b) MBC (c) TBC (d) CVC
8. A condition of slow heart where the heart rate reduces to  
(a) 10 – 20 beats (b) 20-30 beats (c) 30-50 beats (d) 40-50 beats
9. A defibrillator is an .....
- (a) Electrical device (b) Mechanical device (c) Electronic device (d) Transducer
10. .... is the electrical technique which permits examination of the physiological data of man or animal under normal conditions  
(a) Radio telemetry (b) Micro shock (c) Macro shock (d) Bio-telemetry

PART – B (5 x 2= 10Marks)

11. Give the abbreviation form for RNA, DNA.
12. Compare Electrocardiograph and Electroencephalograph.
13. Recall the methods used to measure blood pressure directly.
14. Mention the applications of ventricular inhibited pacemaker?
15. Draw the block diagram of a bio-telemetry system.

PART – C (5 x 16= 80Marks)

16. (a) What are the requirements to satisfy bio potential amplifier? (16)  
Describe the design of the main stages of a bio potential amplifier.

Or

- (b) Draw the equivalent circuit of a bio potential electrode interface. Discuss in detail about various types of bio potential electrodes. (16)

17. (a) Discuss in detail about the unipolar and bipolar limb lead system used for measuring ECG. (16)

Or

- (b) With a neat block diagram, explain the working principle of EMG. (16)

18. (a) Demonstrate the working principle of Plethysmographic pulse rate monitor. (16)

Or

- (b) Explain any one method of measuring blood pressure. (16)

19. (a) Summarize the working of a DC defibrillator with a neat block diagram. (16)

Or

- (b) Examine the following diathermy with suitable examples  
(i) Short wave diathermy (ii) Microwave diathermy (16)

20. (a) Analyze the construction and working of various components in X-ray machine. (16)

Or

- (b) Evaluate the technique of obtaining tomography with relevant diagrams. (16)

