

- Q.29 Describe types of electrodes.  
 Q.30 Describe spirometer.  
 Q.31 Discuss block diagram of bio-telemetry system.  
 Q.32 Explain applications of embedded system in bio-medical instrumentation.  
 Q.33 Discuss ventilators.  
 Q.34 Discuss CAT scan.  
 Q.35 Explain blood pressure measurement.

#### **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Draw and explain cardiovascular system of human being.  
 Q.37 Describe pulse oximeter SPO<sub>2</sub> measurement with suitable diagram.  
 Q.38 Explain ECG machine with its Lead arrangement and block diagram.

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**6th Sem / Branch : Instrumentation & Control/EI  
Sub.: Bio-Medical Instrumentation**

Time : 3Hrs.

M.M. : 100

#### **SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 EEG is associated with \_\_\_\_\_  
 a) Heart                                    b) Brain  
 c) Muscles                                d) None of these  
 Q.2 Spirometer is used for measurement of \_\_\_\_\_  
 a) % of oxygen in blood                b) Blood pressure  
 c) Lung's capacity                      d) All of these  
 Q.3 Needle electrodes are used for \_\_\_\_\_  
 a) ECG                                    b) EEG  
 c) EOG                                    d) None of these  
 Q.4 Nervous system is constituted by \_\_\_\_\_  
 a) Spinal cord & brain                b) Heart  
 c) Lung's                                 d) None of these  
 Q.5 Body Fluid contains \_\_\_\_\_  
 a) NA, K & Cl ions                    b) Na & Cl ions  
 c) Cl and K ions                        d) None of these

- Q.6 Kortkoff sound is produced by measurement of \_\_\_\_\_  
a) Blood sugar      b) Blood pressure  
c) Body temperature      d) None of the above
- Q.7 The value of action potential is \_\_\_\_\_  
a) +20 mv      b) +100 mv  
c) -50 mv      d) -20 mv
- Q.8 CICU stands for \_\_\_\_\_  
a) Cure intensive care unit  
b) Coronary intensive care unit  
c) Care intensive care unit  
d) None of these
- Q.9 Cardiovascular system is also called as \_\_\_\_\_ system.  
a) Pneumatic      b) Hydraulic  
c) Chemical      d) Electrical
- Q.10 Preamplifier must have \_\_\_\_\_  
a) High gain  
b) Low noise characteristics  
c) Both A & B  
d) None of the above

### SECTION-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 Define bio medical instrumentation.
- Q.12 Cell in action state is called depolarized cell. (True/False)

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- Q.13 The body functions are conducted by Nervous system. True/False
- Q.14 Expand CMRR.
- Q.15 The heart consists of four chambers and four valves. True/False
- Q.16 Define resolution.
- Q.17 Define resting potential.
- Q.18 Define telemedicine.
- Q.19 \_\_\_\_\_ system is also called as pneumatic system.
- Q.20 Expand ICU.

### SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Write a short note on in-vivo and in-vitro measurement.
- Q.22 Discuss bio-chemical system.
- Q.23 Draw and explain action potential.
- Q.24 Describe pacemakers.
- Q.25 Describe ICU.
- Q.26 Write a short note on computer application in bio-medical devices.
- Q.27 Discuss bio-medical instrumentations.
- Q.28 Explain respiratory system.

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