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Roll No. .....

6th Sem / Instrumentation & Control

Subject : Biomedical Instrumentation

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which sensor is used to measure respiratory rate?

a) Piezoelectric sensor b) Thermistor

c) Strain gauge d) Potentiometer

Q.2 A thermistor is used to measure:

a) Blood pressure b) Blood flow

c) Temperature d) Heart rate

Q.3 Which sensor is commonly used in pulse oximeters?

a) LVDT

b) Infrared and red LED

c) Capacitive sensor

d) Thermocouple

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Explain the op-Amp as an Instrumentation amplifier

Q.24 Explain the Nervous system of human body

Q.25 Write short note on any two-

a) MRI

b) Ultrasound

c) Defibrillators

Q.4 CT scanners use:

a) Magnetic fields b) Sound waves

c) X-rays d) Infrared rays

Q.5 The basic principle of an X-ray is:

a) Reflection of sound

b) Transmission of light

c) Absorption of electromagnetic radiation

d) Emission of infrared rays

Q.6 Defribrillators are used to:

a) Increase blood pressure

b) Monitor brain activity

c) Restore normal heart rhythm

d) Reduce fever

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Expand CMMR

Q.8 Define the slew rate

Q.9 Expand EEG

Q.10 What are the therapeutic instruments?

Q.11 Explain the Offset current

Q.12 Draw IC-741 pin Configuration

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Explain the generalized block diagram of a medical instrumentation system?

Q.14 Explain all types of instruments used in Bio-medical

Q.15 Explain the Respiratory system with neat diagram

Q.16 Compare the ideal & practical Characteristics of operational amplifier.

Q.17 Explain the operational amplifies as a Differentiator

Q.18 Explain all Resting and action potentials

Q.19 Write a short note on Bio-electrode.

Q.20 Explain the working principal of Pulse Oxymeter SPO_2

Q.21 Explain the EEG with neat diagram

Q.22 Explain X-Ray & draw the block diagram also