



SRI VASAVI ENGINEERING COLLEGE

(Sponsored by Sri Vasavi Educational Society)

Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada
Pedatadepalli, **TADEPALLIGUDEM – 534 101**, W.G. Dist, (A.P.)

Department of Electronics and Communication Engineering

BME QUESTION BANK

UNIT-1

1. Explain the various components of the MAN-INSTRUMENT system
2. Discuss the various objectives of a Medical Instrument System
3. Discuss briefly various major Physiology systems of the body –cardiovascular system, bio- chemical system ,Nervous system
4. Illustrate the problems encountered with measurement from human beings
5. What are Bio-electric potentials ? Discuss the frequency and voltages ranges of ECG,EEG and EMG
6. Explain Resting potentials, Action potentials, polarization, de-polarization and Re-polarization by considering the different ways of transport of ions through the cell membrane
7. Write short notes on
 - a. Safety Considerations of Human System'
 - b. Propagation of Action potentials
 - c. Classification of Muscles

UNIT-2

1. Explain the three basic types of electrodes for the measurement of Bio-Electric Potentials
2. Draw and Explain the equivalent circuit of the Bio-potential electrode and the necessity of the reference electrode
3. What is a Transducer ? Classify the transducers with working principles; and tabulate the few methods of Energy Conversion used in Active Transducers
4. Discuss the three types of Active Transducers and Explain what they measure and their principles and their application in Bio-Medical Instrumentation
5. Discuss the three Types of passive transducers by taking Resistance, Inductance and Capacitance for each Transducer
6. .Tabulate the transducers for Bio-Medical Application
7. Write short notes on a)Pulse sensors b) Respiratory sensors c)Bio-chemical transducer



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UNIT-3

1. What is electrocardiography? Give normal values of amplitudes and duration of ECG parameters.
2. Discuss about the electrodes and leads that are fixed to the body of the patient in order to record an electrocardiogram
.Discuss about all commonly used ECG recorders briefly
3. Indirect methods of blood pressure measurement
4. Describe the Three methods used to measure the blood pressure
5. What is the importance of blood flow ? Discuss the bio-medical instruments that are used to measure the blood flow.
6. Write short notes on
7. a) Measurement of Heart Sounds
b) Plethysmography
c) Discuss various characteristic features of ECG amplifiers
8. Explain the Anatomy and Physiology of the Respiratory System
9. Discuss various parameters which are a function of individual's Physical characteristics and condition of breathing mechanism
10. Explain the medical instrument spiro-meter and its functioning and what are the parameters that it can measure and what it cannot
11. Explain the methodology of measuring Residual volume, Functional Residual Capacity, Intra alveoli pressure, intra thoracic pressures
12. Explain briefly about the mechanical measurements for finding pressures of lung volume and capacities
13. Explain all the Respiratory therapy equipment briefly

UNIT-4

1. What are the elements of Intensive Care Monitoring and also explain the patient monitoring displays
2. Discuss about the patient care monitoring system block diagram and bed side monitoring block diagram briefly
3. Discuss instrumentation and methods for rapid diagnosis and repair of instrumentation in an intensive care unit
4. Explain briefly about the other instruments for monitoring patients
5. Explain the organization of hospital for Patient Care and monitoring
6. Write the short notes on



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7. a) Pacemakers
b) Defibrillators
c) R.F Waves for Therapeutic Use
8. What do you understand by therapeutic and prosthetic devices? Explain in detail
9. Write notes on hearing aids describing all aspects and use of audiometers
10. What do you understand by myoelectric arms? Explain underlying principle with an example
11. What is Laparoscopy? Describe laparoscopic system use in surgery and benefits over normal surgery
12. Describe complete laparoscopic system

UNIT-5

1. Discuss the principles of Ultrasonic measurements and also Explain briefly about different modes of Transmission of Ultrasound and Discuss the displays for Ultrasound imaging
2. What is meant by Diagnosis? Explain the x-ray diagnostic technique and discuss the x-ray film processing'
3. a) Discuss different digital Radiographic diagnostics
b) Short notes on radiation therapy
4. Elaborately give all the historical developments of CAT scan
5. Explain the principle of MRI scan and Emission Computerized Tomography
6. What are the components of bio-telemetry system and explain briefly about the telemetry for emergency patient monitoring

UNIT-6

1. What is a generalized model of an accident and explain importance of each component in the model
2. What are Physiological effects of electrical current? Discuss various methods of accident prevention.
3. Discuss the requirement of an ideal bio potential amplifier and with block diagram discuss the various stages in an Operational Amplifier
4. Discuss different displays in a monitor.
5. Discuss all the principles of recording techniques briefly with diagrams
6. Write the short notes on the color printers