PSN College of Engineering and Technology
An Autonomous Institution, Affiliated to Anna University
Approved by AICTE, Accredited by NAAC with A+ Grade
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Multiple Choice Question Bank

Branch: B.E	Regulation: 2022	Year / Semester: IV /7
Course Code: **EE606403**	Course Name: **MEDICAL ELECTRONICS**	

UNIT-1 HUMAN PHYSIOLOGY SYSTEM

1. Source of Bioelectric potential is _____ in nature.
a) Electronic
b) electric
c) ionic
d) mechanical
Answer: ionic

2. The principal ion that is not involved with the phenomena of producing cell potentials is _____
a) sodium
b) potassium
c) chlorine
d) hydrogen
Answer: Hydrogen

3. What is the relatively static membrane potential of quiescent cells called?
a) Half-cell potential
b) action potential
c) resting membrane potential
d) cell potential
Answer: resting membrane potential

4. The variation of the electrical potential associated with the passage of a pulse along the membrane of a muscle cell or a nerve cell is called _____
a) muscle potential
b) action potential
c) resting potential
d) half cell potential
Answer: action potential

5. Cells depolarize and action potential in generated as soon as a stimulus is applied.

a) True
b) False
Answer: False

6. After a cell is stimulated, a finite period of time is required for the cell to return to its pre-stimulus state. This period is known as _____
a) restoration period
b) refractory period
c) regain period
d) regenerative period

Answer: refractory period

7. The filter used to reject the 50Hz noise picked up from power lines or machinery is called?
a) band reject filter
b) band stop filter
c) notch filter
d) all reject filter

Answer: notch filter

8. Devices that pass the signal from its source to the measurement device without a physical or galvanic connection by using transformer, optical or capacitive coupling technique are called?
a) filters
b) rectifiers
c) bridges
d) isolators

Answer: isolators

9. Which of the following technique is not employed in isolation devices?
a) Resistance
b) optical
c) inductance
d) capacitance

Answer: Resistance

10. Besides breaking ground loops, isolation blocks high voltage surges and rejects high common mode voltages.
a) True
b) False

Answer: True

11. Strain gauges are resistance devices in a Wheat stone bridge configuration _____
a) which does not require bridge completion circuitry and an excitation source
b) which requires bridge completion circuitry and an excitation source
c) which neither requires bridge completion circuitry nor an excitation source

d) which requires bridge completion circuitry but does not an excitation source

Answer: which requires bridge completion circuitry and an excitation source

12. Digital filters are sensitive to temperature as compared with analog filters.
a) True
b) False

Answer: False

13. Signal conditioning is not of much importance in the measuring and recording system.
a) True
b) False

Answer: False

14. Electrodes make a transfer from the _____ in the tissue to the electronic conduction which is necessary to make measurements.
a) electronic conduction
b) ionic conduction
c) electric conduction
d) impulsive conduction

Answer: ionic conduction

15. Surface electrodes damage the living tissues.
a) True
b) False

Answer: False

16. Deep-seated electrodes indicates the electric potential difference arising_____ the living tissues or cells.
a) Inside
b) outside
c) around
d) adjacent

Answer: Inside

17. All electrode potentials are measured with respect to which reference electrode?
a) hydrogen electrode
b) platinum electrode
c) calomel electrode
d) hydrogen absorbed on platinum electrode

Answer: hydrogen absorbed on platinum electrode

18. Off-set potential is _____

a) difference in half-cell potentials between two electrodes
b) sum of half-cell potentials between two electrodes
c) average of half-cell potentials between two electrodes
d) complement of half-cell potentials between two electrodes

Answer: difference in half-cell potentials between two electrodes
19. The main design feature of pregelled disposable electrodes which helps to reduce the possibility of artefacts, drift and baseline wandering is _____
a) low absorbency buffer layer with isotonic electrolyte
b) high absorbency buffer layer with isotonic electrolyte
c) high absorbency buffer layer without isotonic electrolyte
d) low absorbency buffer layer without isotonic electrolyte

Answer: high absorbency buffer layer with isotonic electrolyte

20. Buffer amplifier converts _____
a) low impedance signals to high impedance signals
b) high impedance signals to low impedance signals
c) ac impedance signals to dc impedance signals
d) dc impedance signals to ac impedance signals

Answer: high impedance signals to low impedance signals

21. Before placing the electrodes the skin should be _____
a) wet
b) dry
c) hairy
d) oily

Answer: dry

22. Generally what is the material of needle electrodes?
a) Stainless steel
b) copper
c) lead
d) iron
Answer: Stainless steel

23. Monopolar needle electrodes are having coatings of which material over the stainless steel wires which are bare only at the tips?
a) carbon
b) calcium
c) sodium
d) Teflon
Answer: Teflon

24 . When two wires of different material are joined together at either end,forming two junctions which are maintained at a different temperature, a_____ force is generated.
a) thermo-motive
b) electro-motive
c) chemical reactive

d) mechanical
Answer: thermo-motive

25. Which of the following material is used to build photovoltaic cells?
a) Selenium
b) celenuim
c) silicon
d) iron
Answer: Selenium

26. Active transducers work on the principle of _____
a) energy conversion
b) mass conversion
c) energy alteration
d) volume conversion
Answer: energy conversion

27. Accuracy is _____
a) ability of the transducer or sensor to see small differences in reading
b) ability of the transducer or sensor to see small differences in reading
c) algebraic difference between the indicated value and the true or theoretical value of the measurand
d) total operating range of the transducer
Answer: algebraic difference between the indicated value and the true or theoretical value of the measurand

28. The smallest change in measurant that will result in a measurable change in the transducer output is called _____
a) offset
b) linearity
c) resolution
d) threshold
Answer: threshold

29. Unwanted signal at the output due either to internal sources or to interference is called _____
a) offset
b) noise
c) drift
d) threshold
Answer: noise

30. The ability of the sensor to see small differences in reading is called _____
a) resolution
b) drift
c) offset
d) linearity

Answer: resolution

UNIT-2 ELECTRO -PHYSIOLOGICAL MEASUREMENTS

1. _____ instrument is used to hold patients head and guide the placement of electrodes.
a) Monotaxic
b) Stereotonic
c) Stereotaxic
d) Monotonic
Answer: Stereotaxic

2. Number of cloud deployment models that are recognized are _____
a) 2
b) 5
c) 3
d) 4
Answer: 3

3. The ground electrode is usually positioned over which body structures?
a) bony
b) hairy
c) fleshy
d) sweaty
Answer: Bony

4. When intramuscular EMG is required to look into the electrical activities of deeper or overlaid muscles, _____ electrodes are used.
a) plate shape electrodes
b) surface electrodes
c) thin thread electrodes
d) fine wire electrodes
Answer: fine wire electrodes

5. The contraction of the skeletal muscles results in the generation of action potential in the individual muscle fibers. Record of this action potential is called _____
a) ECG
b) EMG
c) EEG
d)EKG
Answer: EMG

6. In voluntary contraction of the skeletal muscles, the muscle potential ranges from _____
a) 50 uV – 5 mV
b) 50 mV – 5 V
c) 0.05 uV – 2 mV
d) 50 mV – 500 mV
Answer: 50 uV – 5 mV

7. Electrodes to measure EEG are placed on _____
a) forehead

b) scalp
c) cheek
d) ears
Answer: Scalp

8. According to the international 10/20 system to measure EEG, even number denotes which side of the brain?
a) left
b) top
c) bottom
d) right
Answer: right

9. Letter F in the EEG electrode placement system denotes?
a) front
b) face
c) frontal lobe
d) fast
Answer: frontal lobe

10. Normal EEG frequency range is _____
a) 50-500Hz
b) 0.5-50HZ
c) 0.05-5Hz
d) 1-200Hz
Answer: 0.5-50HZ

11. The letter T in the EEG electrode placement system denotes?
a) temporal lope
b) temper lobe
c) trace
d) timpanic
Answer: temporal lope

12. According to the international 10/20 system to measure EEG, odd number denotes which side of the brain?
a) left
b) right
c) top
d) front
Answer: left

13. The delta wave in EEG ranges from _____
a) 0.5-4Hz
b) 4-8Hz
c) 8-13Hz
d) 13-22Hz
Answer: 0.5-4Hz

14. Disturbance in the EEG pattern resulting from the external stimuli is called _____

a) provoked response
b) ckoored response
c) evoked response
d) impulse response

Answer:evokedresponse

15. Which rhythm is the principal component of the EEG that indicates the alertness of the brain?
a) theta rhythm
b) gamma rhythm
c) beta rhythm
d) alpha rhythm
Answer: alpha rhythm

16. Which type of electrodes are employed to study the electrical activities of individual cells?
a) milli-electrodes
b) micro-electrodes
c) surface-electrodes
d)pre-jelledelectrodes
Answer: micro-electrodes

17. Glass micro-capillaries are a type of micro electrode.
a) True
b) False
Answer: True

18. Metallic micro electrodes have impedance _____ compared to conventional electrodes?
a) equal
b) smaller
c) high
d) very high
Answer: Very high

19. Which of the following metal is preferred for manufacturing micro electrodes?
a) Stainless steel
b) Tungsten
c) Iron
d) Copper
Answer: Tungsten
20. _____ are devices which convert one form of energy into another.
a) transducers
b) electrodes
c) impulses
d)opamp
Answer:Transducers

21. Which type of transducer requires energy to be put into it in order to translate changes due to the measurand?
a) active transducers

b) passive transducers
c) powered transducers
d) local transducers
Answer: passive transducers

22. Active transducers work on the principle of _____
a) energy conversion
b) mass conversion
c) energy alteration
d) Volume conversion
Answer: energy conversion

23. Which electrode can be used to pick up signals from individual fibers of muscle tissues?
a) biopolar needle electrode
b) concentric core needle electrode
c) multi-element needle electrode
d) monopolar needle electrode
Answer: multi-element needle electrode

24. Linearity of transducer is _____
a) Closeness of the transducer's calibration curve to a special curved line within a given percentage of full scale output
b) Closeness of the transducer's calibration curve to a special straight line within a given percentage of full scale output
c) Closeness of the transducer's calibration curve to a special straight line within a given percentage of half scale output
d) Closeness of the transducer's calibration curve to a special curved within a given percentage of half scale output
Answer: Closeness of the transducer's calibration curve to a special straight line within a given percentage of full scale output

25. LVDT stands for _____
a) Linear Virtual Double Transformer
b) Linear Virtual Differential Transducer
c) Linear Variable Differential Transducer
d) Linear Variable Differential Transformer
Answer: Linear Variable Differential Transformer

26. Which of the following is not a piezo-electric material?
a) quartz
b) rochelle salt
c) aluminium
d) barium titanate
Answer: aluminium

27. Piezo-electricity is _____
a) sound electricity
b) pressure electricity
c) temperature electricity
d) photo electricity

Answer: pressure electricity

28. The figure of merit which describes the overall behaviour of the wire under stress is determined from?
a) elastic modulus
b) gauge factor
c) elastic factor
d) gauge resistance
Answer: gauge factor

29. Sudden involuntary drop in body core temperature below 35*C (95*F) is called _____
a) Accidental hyperthermia
b) Accidental misothermia
c) Accidental exothermia
d) Accidental hypothermia
Answer: Accidental hypothermia
30. Which of the following has the widest range of temperature measurement?
a) RTD
b) Thermocouple
c) Thermistor
d) Mercury thermometer
Answer: Thermocouple

UNIT-3 NON - ELECTRICAL PARAMETER MEASUREMENT

1. Liquid part of blood is _____
   a) Platelets
   b) Red Blood Cells
   c) White Blood Cells
   d) Plasma
   Answer: Plasma

2. What does red blood cells contain for combining with a large volume of oxygen?
   a) Proteins
   b) Haemoglobin
   c) Lipids
   d) Platelets
   Answer: Haemoglobin

3. Blood in _____ must be made similar to arterial Blood in composition.
   a) heart
   b) brain
   c) ear
   d) eyes
   Answer: Ear

4. Pulse oximetry is used to measure the oxygen level in blood & heart rate.

a) True
b) False
Answer: True

5. What are used as light source in Skin Reflectance Oximeter?
   a) Photodiode
   b) Red and infrared LED's
   c) Flashtube
   d) Arc Lamp
   Answer: Red and infrared LED's

6. Law obeyed by Pulse Oximeter is _____
   a) Lambert-Bouguer law
   b) Beer 's law
   c) Beer-Lambert law
   d) Lamber-Bouguer, Beer's and Beer-Lambert Law
   Answer: Lamber-Bouguer, Beer's and Beer-Lambert Law

7. This technique involves measuring the optical transmittance of the ear at how many wavelengths?
   a) 12
   b) 6
   c) 8
   d) 10
   Answer: 8

8. Which of the following is the most reliable method for detecting FHR pattern?
   a) Abdominal foetal electrocardiogram
   b) Foetal phonocardiogram
   c) Ultrasound technique
   d) Foetal ECG with scalp electrode
   Answer: Ultrasound technique

9. What is maximum ultrasound intensity of narrow beam transducer?
   a) 15 mW/cm2
   b) 20 mW/cm2
   c) 25 mW/cm2
   d) 30 mW/cm2
   Answer: 25 mW/cm2

10. What is used to detect foetal heart movements in broad beam transducer?
    a) Quartz crystal
    b) Piezo electric crystal
    c) Topaz crystal
    d) Berlinite crystal

Answer: Piezo electric crystal

11. Which transducer is arranged in the shape of a clover leaf so that it provides a large area of illumination?
    a) piezo-electric
    b) ultrasonic
    c) array
    d) pressure
    Answer: ultrasonic

12. The narrow beam transducer is very sensitive and produces a good trigger signal for instantaneous heart rate determination.
    a) True
    b) False
    Answer: True

13. Doppler velocimetry works on the principle of _____
    a) frequency measurement of fiber optic sensor
    b) amplitude measurement of fiber optic sensor
    c) phase measurement of fiber optic sensor
    d) time shift measurement of fiber optic sensor
    Answer: frequency measurement of fiber optic sensor

14. Fluoroptic temperature sensors work on the principle of _____
    a) thermistor
    b) thermocouple
    c) optical fiber
    d) rtd
    Answer: optical fiber

15. Endoscopic imaging uses _____
    a) thermal sensors
    b) chemical sensors
    c) optic fiber sensors
    d) pressure sensors
    Answer: optic fiber sensors

16. The chemical reaction of glucose with oxygen is catalyzed in the presence of _____
    a) glucose oxidase
    b) monoglucose carbodase
    c) glusoce dioxidase
    d) biglucose oxidase
    Answer: glucose oxidase

17. Blood glucose level measurement device uses a biosensor works on the principle of

electrochemical.
a) True
b) False
Answer: True

18. Aesthetics of appearance is called _____
a) orthosis
b) cosmesis
c) lymphosis
d) homeostasis
Answer: cosmesis

19. Which of the following is not a soft tissue?
a) ligament
b) bone
c) tendons
d) skin
Answer: Bone

20. Blood vessels are _____
a) soft tissue
b) hard tissue
c) connective and hard tissue
d) connective and soft tissue
Answer: connective and soft tissue

21. _____ is non-invasive method allowing the monitoring of the saturation of a patient's hemoglobin.
a) Ear Oximetry
b) Pulse Oximetry
c) Skin-Reflectance Oximetry
d) Intravascular Oximetry
Answer: Pulse Oximetry

22. What is used as a photodetector in pulse oximetry?
a) Phototransistor
b) Solar cell
c) Photodiode
d) Photographic plates
Answer: Photodiode

23. What is the wavelength of infrared LED in pulse oximetry?
a) 660 nm
b) 740 nm

c) 905 nm
d) 950 nm
Answer: 905 nm

24. Portable pulse oximeters are useful for _____ whose oxygen levels may decrease at high altitude.
a) Athlete
b) Swimmer
c) Mountain climber
d) Fisher
Answer: Mountain climber

25. _____ 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 Reflactance Oximeter
d) Intravascular Oximeter
Answer: Pulse Oximeter

26. What are labour-activity transducers?
a) temperature transducer
b) ultrasonic transducer
c) pressure transducer
d) piezoelectric transducer
Answer: pressure transducer

27. In external toco-tonometry, movement of _____ may be superimposed on labour activity.
a) heart
b) eye
c) foetus
d) muscle
Answer: foetus

28. What is measured in the internal method using fluid-filled catheter?
a) IUP
b) ECG
c) IUC
d) EMG
Answer: IUP

29. What is the range of Instantaneous beat to beat rate digitally displayed?
a) 0 to 50 bpm
b) 50 to 210 bpm

c) 210 to 350 bpm
d) 350 to 410 bpm
Answer: 50 to 210 bpm

30. Uterine contractions are calibrated in range of _____ in two-channel chart recorder.
a) 0-100 mm Hg
b) 100-200 mm Hg
c) 200-300 mm Hg
d) 300-400 mm Hg
Answer: 0-100 mm Hg

UNIT-4 MEDICAL IMAGING PARAMETER MEASUREMENTS

1. CT scan standards for
   a. Computed Tomography
   b. Computer Topography
   c. Computer Tomography
   d. Computed Topography
   Answer: Computer Tomography

2. The following are properties of ultrasound waves as applied in medical imaging, except?
   a. They are longitudinal
   b. They are acoustic
   c. They are electromagnetic
   d. They depend upon the medium through which it propagates
   Answer: They are electromagnetic

3. What biological measurement is done by the Spirometer?
   a. Blood pressure measurement
   b. Blood Flow measurement
   c. Respiratory volume measurements
   d. Blood sugar measurement
   Answer: Respiratory volume measurements

4. What is the function of a Nebulizer as a respiratory therapy?
   a. It is a device used to administer medication in the form of mist inhaled into the lungs and used for treatment of asthma, and other pulmonary disorders.
   b. It is a device used to remove liquid or gases by suction from the body.
   c. It is equipment used to increase humidity of the inspired air.
   d. None of the above.
   Answer: It is a device used to administer medication in the form of mist inhaled into the lungs and used for treatment of asthma, and other pulmonary disorders

5. What is Tidal volume with regard to lung capacities?
   a. It is the extra volume that can be inspired.

b. It is the maximum volume of the gas that can be expelled from the lungs by forceful expiration after maximum inspiration.

c. It is the volume of gas inspired or expired during each respiration cycle.

d. It is the volume of air remaining in the lungs at the end of expiratory level.

Answer: It is the volume of gas inspired or expired during each respiration cycle

6. Which blood flow measurement method is described by the above procedure?
   a. Plethysmography chamber blood flow meter
   b. Radiographic flow meter
   c. Dye dilution flow meter
   d. Ultrasonic blood flow meter
   Answer: Dye dilution flow meter

7. All the following are methods of blood pressure measurement, except?
   a. Sphygmomanometer
   b. Percutaneous method
   c. Hagen-poiseuille analysis
   d. Catheterization
   Answer: Hagen-poiseuille analysis

8. The following are methods of blood flow measurement, except?
   a. Magnetic blood flow measurement
   b. Coriolis blood flow measurement
   c. Ultrasonic blood flow measurement
   d. Radiographic blood flow measurement
   Answer: Coriolis blood flow measurement

9. The following procedure refers a blood flow measurement method:
   a. The dye is injected at a constant rate in the blood flow and a detector measures the dye concentration downstream.
   b. The concentration of the dye in the blood stream keep on increasing at lapses and it finally reaches a constant value.
   c. The blood flow = Injection of dye (milligrams/mm)/concentration of dye (milligrams per liter)
   Answer: The blood flow = Injection of dye (milligrams/mm)/concentration of dye (milligrams per liter)

10. The blood pressure within the glumerular capillaries is _____ of mercury.
    a) 80 mm
    b) 70-80 mm
    c) 90 mm
    d) 70-90 mm
    Answer: 70-90 mm

11. Which of the following radiating source is most common and convenient for use in spectrophotometer?

a) Carbon Arc Lamp
b) Mercury-vapor Lamp
c) Tungsten Lamp
d) Xenon Arc Lamp
Answer: Tungsten Lamp

12. Which of the following component is used for selection of narrow band in spectrophotometer?
a) Optical system
b) Radiating source
c) Filtering Arrangement
d) Detecting system
Answer: Filtering Arrangement

13. Which of the following method uses only the human eye as a measuring instrument?
a) Telemetric
b) Colorimetric
c) Polarimetric
d) Calorimetric
Answer: Calorimetric

14. The tympanic membrane separates the ear canal from the _____
a) upper ear cavity
b) lower ear cavity
c) middle ear cavity
d) inner ear cavity
Answer: middle ear cavity

15. The middle ear is exposed to atmospheric pressure only through the _____
a) eustachian tube
b) tympanic membrane
c) pinna
d) auditory nerve
Answer: eustachian tube

16. The major function of the middle ear is _____
a) to transfer movements of the air in the outer ear to the cochlea
b) to transfer movements of the air in the outer ear to the auditory nerves
c) to transfer movements of the air in the outer ear to the tympanic membrane
d) to transfer movements of the air in the outer ear to the fluid-filled chambers of the inner ear
Answer: to transfer movements of the air in the outer ear to the fluid-filled chambers of the inner ear

17. Which threshold of hearing is measured by a pure-tone audiometer?
a) air-conduction thresholds of hearing
b) bone-conduction thresholds of hearing
c) speech reception thresholds for diagnostic purposes
d) air-conduction and bone-conduction thresholds of hearing
Answer: air-conduction and bone-conduction thresholds of hearing

18. Speech audiometers are normally used to determine _____

a) speech reception thresholds for diagnostic purposes
b) air-conduction and bone-conduction thresholds of hearing
c) bone-conduction thresholds of hearing
d) air-conduction thresholds of hearing
Answer: speech reception thresholds for diagnostic purposes

19. The instrument needed for a bio-telemetry system are
a) Tunnel Diode FM transmitter and Pulsed Hartley oscillator
b) Hartley type FM transmitter
c) Radio Telemetry with a sub-carrier
d) All the above
Answer: All the above

20. Impedance pneumography is a commonly-used technique to monitor a person's
a. respiration rate
b. heart rate
c. pulse rate
d. skin impedance
Answer: respiration rate

21 How does an ultrasound machine work?
a. By using magnetic fields and radio waves to create images of the body
b. By using X-rays to create images of the body
c. By sending high-frequency sound waves into the body and receiving the echo signals
d. By using electrical signals to stimulate the muscles
Answer: By sending high-frequency sound waves into the body and receiving the echo signals

22. Which of the following is not a biomedical imaging technique?
a. Computed Tomography (CT)
b. Magnetic Resonance Imaging (MRI)
c. Positron Emission Tomography (PET)
d. Spectrophotometry
Answer: Spectrophotometry

23. What is the full form of PET in PET scan?
a. Positron Emission Tomography
b. Positron Energy Transfer
c. Particle Energy Tomography
d. Photon Emission Transfer
Answer: Positron Emission Tomography

24. Which imaging modality uses sound waves to image the body's internal structures?
a. Computed Tomography (CT)
b. Magnetic Resonance Imaging (MRI)
c. Ultrasonography
d. Positron Emission Tomography (PET)
Answer: Ultrasonography

25. Which of the following is not a function of a pacemaker?
a. Regulate heart rhythm
b. Boost heart rate
c. Generate images of the heart
d. Help the heart's chambers work together
Answer: Generate images of the heart

26. What does a TENS (Transcutaneous Electrical Nerve Stimulation) machine do?

a. Stimulates nerves for therapeutic purposes
b. Measures blood pressure
c. Generates images of the heart
d. Helps the heart's chambers work together
Answer: Stimulates nerves for therapeutic purposes

27. What is an endoscope used for?
a. To view internal organs and vessels of the body
b. To measure blood pressure
c. To generate images of the heart
d. To stimulate nerves for therapeutic purposes
Answer: To view internal organs and vessels of the body

28. Which device is used for administering insulin to patients with diabetes?
a. Insulin pump
b. Nebulizer
c. Ventilator
d. Dialysis machine
Answer: Insulin pump

29. What does an angiography machine do?
a. Examines the inner parts of the gastrointestinal tract
b. Images blood vessels and the flow of blood
c. Measures blood pressure
d. Delivers electrical stimulation to heart muscles
Answer: Images blood vessels and the flow of blood

30. What is the primary function of a CT scanner?
a. To measure blood pressure
b. To generate images of the body's internal structures
c. To deliver medication in the form of a mist inhaled into the lungs
d. To sterilize medical equipment
Answer: To generate images of the body's internal structures

UNIT-5 ASSISTING AND THERAPEUTIC DEVICES

1. Which electrodes can work even after being induced to large electric discharge such as defibrillation?
a. polarizing electrodes
b. magnetic electrodes
c. non-polarizing electrodes
d. electrolytic electrodes
Answer: non-polarizing electrodes

2. The volume of blood within the dialyzer is known as
a. secondary volume
b. quarterly volume
c. priming volume
d.residual volume
Answer: priming volume

3. Which of the following instrument records the electrical activity of the heart?

a) VCG(Vectorcardiograph)
b) PCG(Phonocardiograph)
c) ECG(Electrocardiograph)
d) EEG
Answer: ECG

4. Where are potentials picked up by patient electrodes taken to?
a) Lead Selector switch
b) Preamp
c) Power Amplifier
d) Instrumentational amplifier
Answer: Lead Selector switch

5. _____ are made horizontally on electrocardiogram.
a) Time Measurements
b) Heart Rate Measurements
c) Time Measurements and Heart Rate Measurements
d) Not fixed and can be any thing
Answer: Time Measurements and Heart Rate Measurements

6. What measurements are made vertically on electrocardiogram?
a) Time Measurements
b) Heart Rate Measurements
c) Amplitude Measurements
d) Time Measurements and Heart Rate Measurements
Answer: Amplitude Measurements

7. In the Beat Labeling, if the signal quality is not good, the algorithm assigns the label _____ and _____
a) Supraventricular premature, inoperative
b) Inoperative, artifact
c) Artifact, Supraventricular premature
d) Ventricular ectopic, inoperative
Answer: Inoperative, artifact

8. What is the role of a defibrillator?
a. To measure blood pressure
b. To restore normal heart rhythm
c. To measure body temperature
d. To image the body's internal structures
Answer: To restore normal heart rhythm

9. What is the primary function of a dialysis machine?
a. To supply oxygen to patients
b. To filter waste and excess water from blood
c. To measure blood pressure
d. To assist in breathing
Answer: To filter waste and excess water from blood

10. What is the purpose of a centrifuge in a biomedical laboratory
a. To heat samples

b. To measure blood pressure
c. To separate components of a mixture
d. To image the body's internal structures
Answer: To separate components of a mixture

11. Which device is commonly used in hospitals to continuously monitor a patient's vital signs, like heart rate and blood pressure?
    a. Spirometer
    b. Defibrillator
    c. Patient monitor
    d. Dialysis machine
    Answer: Patient monitor

12. What is the role of a ventilator?
    a. To supply oxygen to patients
    b. To filter waste and excess water from blood
    c. To measure blood pressure
    d. To assist in breathing
    Answer: To assist in breathing

13. What is the purpose of an MRI machine?
    a. To measure body temperature
    b. To measure blood pressure
    c. To image the body's internal structures
    d. To sterilize medical equipment
    Answer: To image the body's internal structures

14. What is the function of a defibrillator?
    a. To sterilize medical equipment
    b. To deliver a dose of electric current to the heart
    c. To image the body's internal structures
    d. To measure blood pressure
    Answer: To deliver a dose of electric current to the heart

15. How does a defibrillator work?
    a. It uses sound waves to restore a normal heartbeat by sending an electric pulse or shock to the heart
    b. It uses a magnetic field to restore a normal heartbeat by sending an electric pulse or shock to the heart
    c. It uses light absorption to restore a normal heartbeat by sending an electric pulse or shock to the heart
    d. It restores a normal heartbeat by sending an electric pulse or shock to the heart
    Answer: It restores a normal heartbeat by sending an electric pulse or shock to the heart

16. How does a ventilator work?
    a. It uses sound waves to assist or replace spontaneous breathing

b. It uses a magnetic field to assist or replace spontaneous breathing

c. It uses electrical impulses to assist or replace spontaneous breathing

d. It uses positive pressure to assist or replace spontaneous breathing

Answer: It uses positive pressure to assist or replace spontaneous breathing

17. How does a dialysis machine work?

a. It uses sound waves to filter waste products and excess fluids from the blood when the kidneys are not able to adequately do so

b. It uses a semi-permeable membrane to filter waste products and excess fluids from the blood when the kidneys are not able to adequately do so

c. It uses a magnetic field to filter waste products and excess fluids from the blood when the kidneys are not able to adequately do so

d. It uses electrical impulses to filter waste products and excess fluids from the blood when the kidneys are not able to adequately do so

Answer: It uses a semi-permeable membrane to filter waste products and excess fluids from the blood when the kidneys are not able to adequately do so.

18. If a defibrillator fails to deliver a shock, what could be a possible cause?

a. The room is too bright

b. The machine's batteries might be depleted

c. The patient is perfectly healthy

d. The machine is too close to a window

Answer: The machine's batteries might be depleted

19. In troubleshooting a non-responsive ventilator, what could be the first check?

a. Check the power source

b. Check if the patient is breathing normally

c. Check if the machine is outdated

d. Check if the room temperature is suitable

Answer: Check the power source

20. What can cause a hematology analyzer to give inaccurate cell counts?

a. The sample is hemolyzed or clotted

b. The analyzer is not properly calibrated

c. The reagents used are expired or improperly stored

d. All of the above

Answer: All of the above

21. What can cause an X-ray machine to produce images with poor contrast?

a. The X-ray tube is malfunctioning

b. The settings of the machine are not properly adjusted

c. The film or digital sensor is expired or damaged

d. All of the above

Answer: All of the above

22. What is the main difference between invasive and non-invasive biomedical instruments?
    a. Invasive instruments require a power source, while non-invasive instruments do not
    b. Invasive instruments come into direct contact with the interior of the body, while non-invasive instruments do not
    c. Invasive instruments are used for diagnosis, while non-invasive instruments are used for treatment
    d. Invasive instruments are always larger than non-invasive instruments
    Answer: Invasive instruments come into direct contact with the interior of the body, while non-invasive instruments do not
23. What is the function of a defibrillator?
    a. To assist in breathing
    b. To monitor blood pressure
    c. To restore normal heart rhythm
    d. To monitor brain activity
    Answer: To restore normal heart rhythm

24. What is the working principle of a dialysis machine?
    a. It uses a magnetic field to clean the blood
    b. It uses diffusion and ultrafiltration to remove waste products and excess fluid from the blood
    c. It uses electrical impulses to stimulate the kidneys
    d. It uses high-frequency sound waves to break down toxins in the blood
    Answer: It uses diffusion and ultrafiltration to remove waste products and excess fluid from the blood

25. What is the purpose of a ventilation machine?
    a. To assist in or take over the process of breathing
    b. To monitor lung function
    c. To deliver medication to the lungs
    d. To warm and humidify the air
    Answer: To assist in or take over the process of breathing

26. What is the purpose of a hearing aid?
    a. To restore hearing to a completely deaf individual
    b. To assist in balance
    c. To amplify sound for individuals with hearing loss
    d. To monitor brain activity related to hearing
    Answer: To amplify sound for individuals with hearing loss

27. What is the function of a tonometer in eye care?
    a. To measure intraocular pressure
    b. To image the retina
    c. To correct vision
    d. To measure the size of the pupil
    Answer: To measure intraocular pressure

28. What is the function of a syringe in medical procedures?
    a. To deliver medication or fluid into the body
    b. To monitor blood pressure
    c. To image the body's internal structures
    d. To regulate heart rhythm
    Answer: . To deliver medication or fluid into the body

29. What is the primary function of a stent in cardiovascular care?
    a. To deliver medication to the heart
    b. To monitor heart activity
    c. To open or widen narrowed or blocked arteries
    d. To regulate heart rhythm
    Answer: To open or widen narrowed or blocked arteries

30. What is the primary objective of biomedical instrumentation?
    a. To produce a visual representation of the interior of the body
    b. To assist in the diagnosis and treatment of diseases
    c. To improve the comfort of patients
    d. To increase the speed of medical procedures
    Answer: To assist in the diagnosis and treatment of diseases