

MEDICAL ELECTRONICS

ASSESSMENT 3 - ANSWER KEY

1. The designation of the waveform itself generally ends in the suffix _____ , whereas the name of the instrument used to measure the potentials and graphically reproduce the waveform ends in the suffix _____

0 / 2 pts
Auto-graded

graph, gram

gram, graph ✓

graphy, gram

gram, graphy

2. Each potential in the heart originates neat the top of the right atrium at a point called _____

1 / 1 pt
Auto-graded

SA or AV node

pacemaker or Sinoatrial node ✓

pacemaker

Sinoatrial node

3. To initiate the heartbeat, the action potentials generated by the pacemaker propagate in all directions along the surface of both atria. The wave terminates at a point near the center of the heart called _____

1 / 1 pt
Auto-graded

atrioventricular node ✓

Sinoatrial node

Tricuspid valve

Bicuspid valve

4. The bioelectric potentials associated with muscle activity constitute _____

1 / 1 pt
Auto-graded

electromyograph

electromyogram ✓

electroneurogram

electromiograph

5. Devices that convert ionic potentials into electronic potentials are called as _____

1 / 1 pt
Auto-graded

Converter

Transducer

Electrode ✓

Sensor

6. The interface of metallic ions in solution with their associated metals results in an electrical potential that is called _____

0 / 1 pt
Auto-graded

Half cell potential

Biopotential

Electrode potential ✓

Action potential

7. An equation relating the potential across the membrane and the 2 concentrations of the ion is called the _____

1 / 1 pt
Auto-graded

Nernst Equation ✓

Concentration Equation

Gas constant

8. Electrodes used to measure bioelectric potentials near or within a single cell is called as _____

1 / 1 pt
Auto-graded

- microelectrode ✓
- skin surface electrode
- needle electrode
- macro electrode

9. A 0.01 mole solution of a substance is defined as _____mole of the substance dissolved in 1 litre of solution

2 / 2 pts
Auto-graded

- 0.001
- 0.01 ✓
- 0.1
- 1.0

10. The pH is a measure of the acid-base balance of fluid. A neutral solution has a pH of _____

1 / 1 pt
Auto-graded

- 7.0 ✓
- 7.35
- 7.38
- 7.42

11. Lower pH number indicate _____, whereas higher pH value define a _____ solution

2 / 2 pts
Auto-graded

- acidity, Basic ✓
- acidity, acidic
- alkalosis, acidic
- alkalosis, basic

12. The electrode potential for a half cell is sometimes called the _____

1 / 1 pt
Auto-graded

- half cell potential ✓
- Bio potential
- electrode potential
- cell potential

13. Blood enters the heart on the right side through 2 main veins: _____ which leads from the body upper extremities and _____ leading from the body's organs and extremities below the heart.

2 / 2 pts
Auto-graded

- Superior vena cava, Inferior vena cava ✓
- Inferior vena cava, Superior vena cava
- Tricuspid valve, bicuspid valve
- bicuspid valve, Tricuspid valve

14. The heart pumps about _____ litres of blood per minute

1 / 1 pt
Auto-graded

- 4
- 5 ✓
- 6
- 7

15. At any given time, about _____ percent of the blood volume is in the veins, about _____ percent in the arteries, and the remainder in the capillaries

2 / 2 pts
Auto-graded

- 50 to 60 , 40
- 60 to 70 , 30
- 70 to 80 , 20 ✓
- 80 to 90 , 10

16. Heart's pumping cycle is divided into 2 major parts:

2 / 2 pts

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_____ and _____

Systole , Diastole ✓

Cycle 1 , Cycle 2

Left Pumping, Right Pumping

Input , output

17. Systole is defined as the period of _____ of the heart muscles and Diastole is defined as the period of _____ of heart muscle.

2 / 2 pts

Auto-graded

Contraction, Relaxation ✓

Relaxation, Contraction

Opening, Closing

Closing, Opening

18. The activated AV node after a brief delay initiates an impulse into the ventricles through the bundle of his and into the bundle branches that connect to the _____ in the myocardium

1 / 1 pt

Auto-graded

Purkinjie Fibers ✓

Arteries

Veins

Capillaries

19. The technique of listening to sounds produced by the organs and vessels of the body is called as auscultation

1 / 1 pt

Auto-graded

True ✓

False

20. With each heartbeat, the normal heart produces two distinct sounds that are audible in the stethoscope

1 / 1 pt
Auto-graded

True ✓

False

21. The LUB sound is caused by the _____ of the atrioventricular valves which permit the flow of blood from the atria into the ventricles and the DUB sound is caused by the _____ of the semilunar valves.

2 / 2 pts
Auto-graded

Closure, Closing ✓

Opening, Closing

Opening, Opening

Closure, Opening

22. Additional sounds called murmurs are heard between the normal heart sounds in abnormal heart

1 / 1 pt
Auto-graded

True ✓

False

23. There is no difference in the frequency range between normal and abnormal heart sounds

1 / 1 pt
Auto-graded

True

False ✓

24. The vibrations of the side of the heart as it thumps against the chest wall from the _____, whereas the tip or apex of the heart hitting the rib cage produces the _____

2 / 2 pts
Auto-graded

- Vibrocardiogram, Apexcardiogram ✓
- Vectorcardiogram, Tipcardiogram
- Electrocardiogram, Apexcardiogram
- Echocardiogram, Tipcardiogram

25. To record an electrocardiogram, a number of electrodes usually _____ are affixed to the body of the patient

1 / 1 pt
Auto-graded

- 2
- 4
- 5 ✓
- 10

26. For unipolar leads, the electrocardiogram is recorded between a single _____ electrode and the _____

2 / 2 pts
Auto-graded

- Limb, central terminal
- Right arm, Left arm
- Exploratory, central Terminal ✓
- Exploratory, Limb electrode

27. _____ presents an image of both the magnitude and the spatial orientation of the heart vector

2 / 2 pts
Auto-graded

- Electrocardiography
- Vectorcardiography ✓
- Vibrocardiography
- Echocardiography

28. To obtain a blood pressure measurement with a sphygmomanometer and a stethoscope, the pressure cuff on the upper arm is first inflated to a pressure well above _____

1 / 1 pt
Auto-graded

Blood Pressure

Systolic Pressure ✓

Diastolic pressure

29. The method of locating the systolic and diastolic pressure values by listening to the korotkoff sound is called _____ method of sphygmomanometry.

2 / 2 pts
Auto-graded

Systolic

Palpatory

Diastolic

Auscultory ✓

30. In _____ method, the physician identifies the flow of blood in the artery by feeling the pulse of the patient downstream from the cuff instead of listening for the korotkoff sounds.

1 / 1 pt
Auto-graded

Auscultory

Palpatory ✓

Diastolic

Systolic

31. The device in which the transducer is mounted at the tip of the catheter is called _____

1 / 1 pt
Auto-graded

Catheter tip blood pressure transducer ✓

Kymograph

Variable Inductance Transducer

Catheter transducer

32. Magnetic blood flow meters are based on the principle of _____

1 / 1 pt
Auto-graded

- Magnetic Induction ✓
- Electromagnetic Induction
- Faradays Law

33. In a magnetic blood flow meter, with a sinusoidal magnet current, the induced voltage is _____ and with a square wave magnet current, the induced voltage is _____

2 / 2 pts
Auto-graded

- Sinusoidal, Square
- Sinusoidal, spikes ✓
- Spikes, Square
- Square, Sinusoidal

34. Ventricular fibrillation is far more dangerous than atrial

1 / 1 pt
Auto-graded

- True ✓
- False

35. The two defibrillator electrodes applied to the thoracic walls are called _____ or _____ paddles

2 / 2 pts
Auto-graded

- anterior-anterior, anterior-posterior ✓
- anterior, posterior
- internal, external

36. The right lung consists of 3 lobes (upper, middle, lower) and the left lung consists of 2 lobes (upper and lower)

1 / 1 pt
Auto-graded

- True ✓
- False

37. ICU stands for _____

1 / 1 pt
Auto-graded

- Intensive care unit ✓
- Intensive cardiac care unit
- Intermediate coronary unit
- Internal care unit

38. _____ is a special dome or bell-shaped muscle located at the bottom of the thoracic cavity which when contracted pulls downward to enlarge the thorax

1 / 1 pt
Auto-graded

- Diaphragm ✓
- Bronchioles
- Alveolar sac
- Alveolar duct

39. During normal inspiration, the pressure inside the lungs, the intra alveolar pressure is about _____ Hg whereas during expiration the pressure becomes about ____ Hg.

2 / 2 pts
Auto-graded

- 3mm, +3mm ✓
- 4mm, +4mm
- 3mm, +4mm
- 4mm, +3mm

40. The resistance to the flow of air into and out of the lungs is called airway resistance

1 / 1 pt
Auto-graded

- True ✓
- False

41. The volume of gas inspired or expired during each respiration cycle is called as _____ and the volume of gas remaining in the lungs at the end of a maximal expiration is called as _____

2 / 2 pts
Auto-graded

- Tidal volume, Residual volume ✓
- Residual volume, Tidal volume
- Inspiratory reserve volume, Expiratory reserve volume
- Expiratory reserve volume, Inspiratory reserve volume

42. _____ is the amount of gas contained in the lungs at the end of a maximal inspiration

2 / 2 pts
Auto-graded

- Total lung capacity ✓
- Inspiratory capacity
- Vital capacity
- Residual capacity

43. The instrument that has an oscilloscope readout instead of a graphic pen recorder

0 / 1 pt
Auto-graded

- ECG
- EEG
- EMG ✓
- ERG

44. The instrument used for respiratory volume measurement is _____

0 / 2 pts
Auto-grade

- Spirometer
- Kymograph
- Bronchspirometer
- All the above ✓

45. Air enters the lungs through the air passages which includes

1 / 1 pt
Auto-graded

- Nasal cavities
- Pharynx, Larynx
- Trachea and Bronchi

All the above



46. Methods used to find cardiac output

2 / 2 pts
Auto-graded

- Indicator or dye dilution method
- Radiographic method
- Fick method

All the above



47. Which type of transducers are used in Blood flow meters?

0 / 1 pt
Auto-graded

- Cannula type
- Slip-on (Or) C-type
- Magnetic Blood flow

All the above



48. The type of data obtained by telemetry

0 / 1 pt
Auto-grade

- Temperature by rectal or oral thermistor
- Respiration by impedance pneumograph
- Indirect blood pressure by contact microphone and cuff

All the above



49. The methods used to count WBC and RBC are,

1 / 1 pt
Auto-graded

- Coulter method
- Dark field method
- Flow cytometry method

All the above



50. Endoscope is used

1 / 1 pt
Auto-graded

- To remove growths
- Open narrow opening
- Treat Bleeding ulcers
- Remove foreign objects that is stuck

All the above



51. Telemedicine projects in prisons have been found to

1 / 1 pt
Auto-graded

_____.

- Improve health care
- Cut costs
- Improve security

All of the above



52. Telemetry is also used for the transmission of electroencephalogram

1 / 1 pt
Auto-graded

True



False

53. Normal glucose level in an adult is

1 / 1 pt
Auto-graded

120mg/dL

140mg/dL ✓

140-199mg/dL

>200mg/dL

54. Even surgery can be done using endoscope

1 / 1 pt
Auto-graded

True ✓

False

55. Anaemia is caused due to deficiency of _____

1 / 1 pt
Auto-graded

Haemoglobin ✓

Fibrin

Thrombin

Neutrophils

56. In which of the following cases would face-to-face medical care be less expensive than telemedicine?

1 / 1 pt
Auto-graded

Therapy for depression

Medical care for prisoners

Surgery ✓

Telemedicine is always less expensive

57. Which of the following two elements are removed by the detection filter in the process of the ECG waveform?

2 / 2 pts
Auto-graded

Low frequency noise, motion noise ✓

Muscle artifact, motion noise

Baseline wander, motion noise

Baseline wander, muscle artifact

58. Which of the following is a non-invasive technique to measure blood velocity in a particular vessel from surface of the body?

1 / 1 pt
Auto-graded

Electromagnetic

Ultrasonic ✓

NMR

Laser Doppler

59. Which of the following operations can be done with an endoscope? i. Bypass surgery ii. Cardiac Catherization iii. Kidney Stone Removal iv. Knee Replacement v. Biopsy vi. Tracheotomy vii. Appendix Removal

2 / 2 pts
Auto-graded

i, ii, iii, iv, vii

ii, iii, v, vii ✓

iii, vii

v, vi, vii

60. Extraction of a small section of diseased tissue to study and diagnose is called _____

1 / 1 pt
Auto-graded

autopsy

biopsy ✓

necrosis

endoscopy

61. Which of the following tests can be performed on the extracted blood? i) HIV ii) Diabetes iii) Hepatitis B surface antigen iv) Malaria v) Antibody to Hepatitis C vi) Serological test for Syphilis vii) Dengue viii) Creatinine

2 / 2 pts
Auto-graded

i, iii, v, vi ✓

i, ii, iii, iv, v, vi, viii, viii

ii, iv, vii, viii

i, v, viii

62. What is Brain-Computer Interface?

2 / 2 pts
Auto-graded

A process in which your brain is taken and put in a computer hard drive.

A process in which the brain waves from your brain are sent to wires and converted from chemical to electrical energy and then the process occurs on the computer, this device is designed for paralyzed people with disabilities. ✓

A process in which the brain waves from your brain are sent to wires and converted from electrical to chemical energy and then the process occurs on the computer, this device is designed for paralyzed people with disabilities.

A process in which a brain gives of UV Radiation to a computer and the computer captures the thoughts and carries out the task virtually

63. Which of the following are the two main characteristics of receivers?

2 / 2 pts
Auto-graded

Selectivity and sensitivity ✓

Gain and attenuation

Modulation and demodulation

Multiplexing and demultiplexing

64. An individual's number of heartbeats per minute is known as _____, while the volume of blood that is pumped by his ventricles with each heartbeat is his _____.

2 / 2 pts
Auto-graded

heart rate; blood pressure

blood pressure; strength of ventricular contraction

heart rate; stroke volume ✓

stroke volume; pulse

65. The dialysate used in the dialyser consists of _____ i. Sodium ii. Potassium iii. Iron iv. Carbon v. Magnesium vi. Manganese vii. Chlorine viii. Sulphur ix. Phosphorus x. Calcium

2 / 2 pts
Auto-graded

Sodium, Pottasium, Magnesium, Chlorine, Calcium

Sodium, Pottasium, Magnesium, Phosphorus

Sulphur, Pottasium, Magnesium, Chlorine ✓

Sodium, Pottasium, Manganese, Calcium, Chlorine

66. In which pacemaker, there will be competition between natural and artificial pacemaker?

1 / 1 pt
Auto-graded

Ventricular asynchronous pacemaker (Fixed rate pacemaker) ✓

Ventricular synchronous pacemaker (R-wave Triggered (Or) Standby)

Ventricular inhibited pacemaker (R-wave Blocked (Or) Demand pacemaker)

Atrial synchronous pacemaker (P-wave Synchronized)

67. What surgical functions are performed by the diathermy machine?

2 / 2 pts
Auto-graded

cutting, coagulation, fulguration ✓

cutting, fulguration

cutting, coagulation

coagulation, fulguration

68. Find the cardiac output of a patient whose heart rate is 80BPM and a stroke volume of 80 millilitres per beat

2 / 2 pts
Auto-graded

6.0 Litres/Minute

6.2 Litres/Minute

6.4 Litres/Minute ✓

6.6 Litres/Minute

69. Calculate the stroke volume in millilitres if the cardiac output is 5.2 litres/minute and heart rate is 76 beats/minute

2 / 2 pts
Auto-graded

6.842 ml

68.22 ml

68.42 ml ✓

684.2 ml

70. Calculate energy stored in a $16\mu\text{f}$ capacitor of a defibrillator that is charged to a potential of 5000V

2 / 2 pts
Auto-graded

20 Joules

200 Joules ✓

220 Joules

2200 Joules