

1. What is a Cathode?
 - a. The generator from which a conventional current leaves a polarized electrical device
 - b. The power supply from which a conventional current leaves a polarized electrical device
 - c. The diode from which a conventional current leaves a polarized electrical device
 - d. The electrode from which a conventional current leaves a polarized electrical device
2. What is an *Anode*?
 - a. A diode through which positive electric charge flows into a polarized electrical device
 - b. A capacitor through which positive electric charge flows into a polarized electrical device
 - c. A ballast through which positive electric charge flows into a polarized electrical device
 - d. An electrode through which positive electric charge flows into a polarized electrical device
3. What does X stand for in the word *x-ray*?
 - a. X-radiation was used to signify an extra powerful type of radiation
 - b. X-radiation was used to signify an unknown type of radiation.
 - c. X-radiation was used to signify a extreme type of radiation.
 - d. X-radiation was used to signify an exact wavelength type of radiation.
4. Who is the Father of X-ray Technology?
 - a. Walter Rohlfesen
 - b. Wilhelm Xavier
 - c. Wilhelm Roentgen
 - d. William Xander
5. *What role does the electron play in producing an x-ray?*
 - a. *Electron*- negative moves toward the positively charged anode. Hits the anode gives up its energy and produces heat and light.
 - b. *Electron*- negative moves toward the positively charged cathode. Hits the cathode gives up its energy and produces current and light.
 - c. *Electron*- negative moves toward the neutrally charged capacitor. Hits the anode gives up its light and produces current.
 - d. *Electron*- negative moves toward the positively charged capacitor. Hits the cathode gives up its heat and produces current.
6. How is Voltage used in creating x rays?
 - a. Excites the electrons and causes them to move from the anode to the capacitor.
 - b. Excites the electrons and causes them to move from the cathode to the coil.
 - c. Excites the electrons and causes them to move from the cathode to the anode.
 - d. Excites the electrons and causes them to move from the cathode to the anode.
7. How does the higher voltage affect the x-ray?
 - a. The higher voltage decreases the power of the x-ray
 - b. The higher voltage increases the power of the x-ray.
 - c. The higher voltage increases the capacitance of the x-ray.
 - d. The higher voltage decreases the capacitance of the x-ray.
8. What is a Crookes tube?
 - a. Early x-ray tube.
 - b. Future x-ray tube.
 - c. Future x-ray coil.

- d. Early x-ray shield.
9. What problem did the Crookes tube present?
- a. It allowed x-rays to be contained everywhere.
 - b. It allowed x-rays to bounce everywhere.
 - c. It allowed x-rays to be eliminated everywhere.
 - d. It allowed x-rays to evaporate everywhere.
10. What were the advantages of the Angled Anode?
- a. The Angled Anode allowed the rays to not pass through the side of the tube.
 - b. The Angled Anode allowed the rays to pass through the ends of the tube.
 - c. The Angled Anode directed the rays to pass through the side of the tube.
 - d. The Angled Anode allowed the rays to not pass through the ends of the tube.
11. *Why do modern x-rays use a Rotating Anode?*
- a. Allows electrons to be focused so that heat energy is spread over a thin area.
 - b. Allows electrons to be focused so that heat energy is focused over a narrow area.
 - c. Allows electrons to be focused so that heat energy is spread over a smaller area.
 - d. Allows electrons to be focused so that heat energy is spread over a wider area.
12. *What organs can be viewed on a chest x-ray?*
- a. Lungs and heart.
 - b. Kidneys and liver.
 - c. Pancreas and Lungs.
 - d. Lungs and liver.
13. *What diseases below can be detected by a chest x-ray?*
- a. Pneumonia and lung tumors.
 - b. Tuberculosis and enlarged heart.
 - c. All of the above.
 - d. None of the above.
14. *In what year was the x-ray discovered?*
- a. 1835
 - b. 1895
 - c. 1825
 - d. 1845
15. What is the *Electro-magnetic Spectrum*?
- a. The lower range of light that exists. From radio waves to microwaves.
 - b. The middle range of light that exists. From visible light to ultra-violet.
 - c. The entire range of light that exists. From radio waves to gamma rays.
 - d. The partial range of light that exists. From radio microwaves to infra-red.
16. At which end of the spectrum do you find x-rays?
- a. The highest end of the spectrum.
 - b. The lowest end of the spectrum.
 - c. The bottom end of the spectrum.
 - d. The middle of the spectrum.
17. What is a *Radiograph*?
- a. Sound produced by passing x-rays through an object.
 - b. Image produced by passing x-rays through an object.

- c. Frequency produced by passing x-rays through an object.
 - d. Array produced by passing x-rays through an object.
18. X-rays are what type of radiation?
- a. Omega
 - b. Alpha
 - c. Theta
 - d. Gamma
19. X-rays devices should be operated by?
- a. Only facility administrators.
 - b. Only trained personnel.
 - c. Only doctors or nurses
 - d. Only medical technicians
20. Which of the following provides protection from X-ray radiation?
- a. Limited electrical voltage, size of x-ray and insulation.
 - b. Short exposures, location of X-ray and attire.
 - c. Distance from x-ray source and shielding.
 - d. Normal body temperature and location of x-ray.
21. What is Biomechatronics?
- a. The merging of man and machine
 - b. The merging of mechanics and electronics
 - c. The merging of man and electronics
 - d. The merging of machine and mechanics
22. What do galvanic detectors do?
- a. Detect an electric current produced by mechanical means.
 - b. Detect an electric current produced by chemical means
 - c. Detect an mechanical motion produced by electrical means
 - d. Detect an electric circuit produced by mechanical means
23. Mechanical sensors measure what information about a device?
- a. Limb location, applied current and load
 - b. Limb amount, applied pressure and lift
 - c. Limb position, applied velocity and weight
 - d. Limb position, applied force and load
24. What is an actuator?
- a. An artificial force that produces pressure and weight
 - b. An artificial muscle that reduces force and motion
 - c. An artificial muscle that produces force or movement
 - d. An artificial force that reduces movement or volume
25. What do biosensors do?
- a. Detect the user's impulses
 - b. Detect the user's memories
 - c. Detect the user's intentions
 - d. Detects the user's reflexes
26. Human motions are what?
- a. Complex

- b. Convoluted
 - c. Conical
 - d. Cylindrical
27. Which description below describes Biomechatronics research?
- a. Test ways of using living muscle tissue as circuits for electronic devices
 - b. Test ways of using living muscle tissue as electrodes for electronic devices
 - c. Test ways of using living muscle tissue as implants for electronic devices
 - d. Test ways of using living muscle tissue as actuators for electronic devices
28. What is electromyography?
- a. Using electrodes placed on the skin to monitor the motion activity of the underlying muscles
 - b. Using electrodes placed on the skin to monitor the electrical activity of the underlying organs
 - c. Using electrodes placed on the skin to monitor the electrical activity of the underlying muscles
 - d. Using electrons placed on the skin to maintain the electrical activity of the underlying muscles
29. Which of the following is an important aspect that separates Biomechatronics devices from conventional orthotic and prosthetic devices?
- a. A connection with the nerves and muscle systems of the user so he can store and convert information from the device
 - b. A connection with the nerves and muscle systems of the user so he can send and receive information from the device.
 - c. A connection with the nerves and muscle systems of the user so he can receive and store information from the device.
 - d. A connection with the nerves and muscle systems of the user so he can restore and remove information from the device.
30. Peter Veltink's group in the Netherlands is also using electromyogram surface electrodes for what?
- a. Feedback and control of lower-leg prosthetics
 - b. Friction and control of lower-leg prosthetics
 - c. Feedback and connection of lower-leg prosthetics
 - d. Friction and command of lower-leg prosthetics
31. Despite their small size, cells are what?
- a. Incredibly simple and never busy
 - b. Incredibly complex and never busy
 - c. Incredibly simple and constantly busy
 - d. Incredibly complex and constantly busy
32. Cytosol is a gel-like substance that is what?
- a. Mostly water
 - b. Mostly ammonia
 - c. Mostly calcium
 - d. Mostly sodium
33. The nucleus contains what?

- a. The cell's protein information
 - b. The cells chemical information
 - c. The cells genetic information
 - d. The cells structural information
34. Most cells have at least how many nucleus?
- a. Three
 - b. One
 - c. Two
 - d. Four
35. Nucleus is Latin for what?
- a. Little container
 - b. Little seed
 - c. Little cell
 - d. Little kernel
36. The endoplasmic reticulum (ER) is a network of what?
- a. Membrane-enclosed muscle
 - b. Membrane-enclosed sacs
 - c. Membrane-enclosed bones
 - d. Membrane-enclosed cells
37. Leukocytes are what?
- a. White blood cells
 - b. Enriched blood cells
 - c. Red blood cells
 - d. Depleted blood cells
38. Ribosomes contain more that how many proteins?
- a. 20
 - b. 30
 - c. 40
 - d. 50
39. Enzymes in the cisternae modify the proteins and pack them into what?
- a. Transfer vessels
 - b. Transfer vesicles
 - c. Transfer voles
 - d. Transfer vehicles
40. Mitochondria are what?
- a. The storehouses of a cell
 - b. The warehouses of a cell
 - c. The watersheds of a cell
 - d. The powerhouses of a cell

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