

20 Multiple choice questions



A+
100%

1. an electronic device used to view electrical signals, e.g. waveforms
 - a. **CORRECT: cathode ray oscilloscope (CRO)**
 - b. cathode rays
 - c. cathode ray tubes
 - d. cooper pair

2. the diffraction of x-rays from crystals; British physicist Sir William Henry Bragg (1862-1942) and his son William Lawrence Bragg (1890-1971) applied X-ray diffraction to the study of crystals; called X-ray crystallography
 - a. diffraction
 - b. conduction
 - c. black body radiation
 - d. **CORRECT: bragg diffraction**

3. the area of influence surrounding a charge
 - a. **CORRECT: electric field**
 - b. electric current
 - c. black body
 - d. electrons

4. an idealised body which absorbs all radiation that falls on it according to Planck's law; it is also a perfect radiator of energy
 - a. cathode
 - b. electrons
 - c. cooper pair
 - d. **CORRECT: black body**

5. the structure of crystals e.g. metals
 - a. cathode
 - b. drift velocity
 - c. cooper pair
 - d. **CORRECT: crystal lattice**

6. where two electrons pair up and travel unimpeded through the crystal lattice of a superconductor
 - a. **CORRECT: cooper pair**
 - b. cathode rays
 - c. conduction
 - d. doping

7. the spreading of a wave into the geometrical shadow of an object
 - a. conduction
 - b. bragg diffraction
 - c. electrons
 - d. **CORRECT: diffraction**

8. waves produced by charges oscillating in conductors e.g. radio antennae
 - a. electric current
 - b. **CORRECT: electromagnetic waves**
 - c. electrons
 - d. electric field

9. the French physicist who proposed that matter has wave characteristics
 - a. drift velocity
 - b. discharge tube
 - c. electrons
 - d. **CORRECT: de Broglie, Louis**

10. the manipulation of charged particles by electric and magnetic fields; a cathode ray tube (CRT) has an electron gun, a deflecting system and a florescent screen, which are used in oscilloscopes and TVs
 - a. cathode
 - b. cathode rays
 - c. **CORRECT: cathode ray tubes**
 - d. discharge tube

11. negatively charged subatomic particle found in all neutral atoms
 - a. black body
 - b. **CORRECT: electrons**
 - c. cathode
 - d. conduction

12. the process of adding atoms of group V or group III elements to semiconductor material such as silicon or germanium, which results in a change in the conductivity
 - a. **CORRECT: doping**
 - b. cathode
 - c. conduction
 - d. electrons

13. emitted by a black body that obeys Planck's law
 - a. conduction
 - b. bragg diffraction
 - c. **CORRECT: black body radiation**
 - d. black body

14. an evacuated glass tube containing electrodes and used to investigate the effect of passing electricity through gases at low pressures
 - a. cathode rays
 - b. **CORRECT: discharge tube**
 - c. diffraction
 - d. cathode ray tubes

15. the flow of charge, which is carried by electrons in metal conductors and both holes and electrons in semi-conductors
 - a. electric field
 - b. discharge tube
 - c. electrons
 - d. **CORRECT: electric current**

16. particles that travel from the negative electrode (cathode) of an electric discharge tube; experiments show that cathode rays are electrons; the nature of cathode rays - wave or particle - was long debated
- cooper pair
 - CORRECT: cathode rays**
 - cathode
 - cathode ray tubes
17. the electron-emitting electrode in an electron tube
- black body
 - CORRECT: cathode**
 - cathode rays
 - electrons
18. the process of charge moving through a medium; conduction in metals results from the drift of a large number of electrons through the lattice
- electrons
 - CORRECT: conduction**
 - diffraction
 - cathode
19. the speed of electrons moving through a conductor; depends on the density of electrons, the cross-sectional area and the charge
- black body
 - crystal lattice
 - diffraction
 - CORRECT: drift velocity**
20. quantum-mechanical effect where two electrons pair up and pass unimpeded by the lattice
- CORRECT: BCS model of superconductivity**
 - black body radiation
 - drift velocity
 - conduction