Atomic Structure MCQs

Multiple Choice Questions on Atomic Structure

1. Who discovered cathode rays?
   a) Ernest Rutherford
   b) J.J. Thomson
   c) James Chadwick
   d) Niels Bohr
2. Cathode rays are composed of:
   a) Protons
   b) Neutrons
   c) Electrons
   d) Photons
3. The charge-to-mass ratio (e/m) for electrons was determined by:
   a) Robert Millikan
   b) J.J. Thomson
   c) Ernest Rutherford
   d) John Dalton
4. J.J. Thomson's experiment used:
   a) Gold foil
   b) Cathode ray tube
   c) Oil drops
   d) Alpha particles
5. The deflection of cathode rays in an electric field shows that they are:
   a) Neutral particles
   b) Positively charged
   c) Negatively charged
   d) Both positive and negative charged
6. Canal rays are composed of:
   a) Protons
   b) Electrons
   c) Neutrons
   d) Photons
7. Canal rays are also known as:
   a) Alpha rays
   b) Beta rays
   c) Positive rays
   d) Gamma rays
8. The discovery of the proton is attributed to:
   a) J.J. Thomson
   b) Ernest Rutherford

c) James Chadwick
d) Niels Bohr

9. Rutherford's gold foil experiment demonstrated the existence of:
   a) Neutrons
   b) Electrons
   c) Nucleus
   d) Orbitals
10. The particles used in Rutherford’s gold foil experiment were:
    a) Protons
    b) Neutrons
    c) Electrons
    d) Alpha particles
11. The mass of a proton is approximately how many times the mass of an electron?
    a) 1000
    b) 1836
    c) 2000
    d) 1
12. The neutron was discovered by:
    a) J.J. Thomson
    b) Ernest Rutherford
    c) James Chadwick
    d) Niels Bohr
13. The charge of a proton is:
    a) +1
    b) -1
    c) 0
    d) +2
14. The mass of a neutron is:
    a) Equal to the mass of a proton
    b) Slightly greater than the mass of a proton
    c) Slightly less than the mass of a proton
    d) Equal to the mass of an electron
15. The main conclusion of Rutherford's gold foil experiment was:
    a) Atoms are mostly empty space
    b) Electrons are in fixed orbits
    c) Protons are at the center
    d) Neutrons are in the nucleus
16. The e/m ratio for protons is:
    a) Greater than that of electrons
    b) Less than that of electrons
    c) Equal to that of electrons
    d) Zero
17. The plum pudding model of the atom was proposed by:
    a) Ernest Rutherford
    b) J.J. Thomson

   c) Niels Bohr
   d) James Chadwick
18. Cathode rays can be deflected by:
   a) Electric fields only
   b) Magnetic fields only
   c) Both electric and magnetic fields
   d) Neither electric nor magnetic fields
19. The nucleus of an atom contains:
   a) Electrons and protons
   b) Protons and neutrons
   c) Neutrons and electrons
   d) Electrons only
20. Rutherford’s model of the atom failed to explain:
   a) The existence of the nucleus
   b) The stability of the atom
   c) The presence of protons
   d) The charge of the electron
21. The term "alpha particles" refers to:
   a) Electrons
   b) Helium nuclei
   c) Protons
   d) Neutrons
22. J.J. Thomson's model of the atom could not explain:
   a) The existence of electrons
   b) The mass of the atom
   c) The nuclear structure
   d) The charge of the proton
23. Canal rays are produced in:
   a) Cathode ray tubes
   b) Discharge tubes with gas
   c) Oil drop apparatus
   d) Gold foil experiments
24. The relative charge of an electron is:
   a) +1
   b) -1
   c) 0
   d) +2
25. The electron was discovered by:
   a) J.J. Thomson
   b) Ernest Rutherford
   c) James Chadwick
   d) Niels Bohr
26. In Rutherford's gold foil experiment, most alpha particles:
   a) Passed straight through
   b) Were deflected at large angles

   c) Were absorbed by the foil
   d) Were converted to neutrons
27. The model of the atom that described electrons in fixed orbits was proposed by:
   a) J.J. Thomson
   b) Ernest Rutherford
   c) Niels Bohr
   d) James Chadwick
28. Cathode rays travel from:
   a) Anode to cathode
   b) Cathode to anode
   c) Positive to negative
   d) Neutron to proton
29. The gold foil experiment was significant because it demonstrated that:
   a) Atoms are indivisible
   b) Atoms have a dense central nucleus
   c) Electrons are in fixed orbits
   d) Neutrons exist
30. The mass of an electron compared to a proton is approximately:
   a) 1/1836
   b) 1/2
   c) 1
   d) 1836

Answer Key

1. b
2. c
3. b
4. b
5. c
6. a
7. c
8. b
9. c
10. d
11. b
12. c
13. a
14. b
15. a
16. b
17. b
18. c
19. b
20. b
21. b
22. c
23. b
24. b
25. a
26. a
27. c
28. b
29. b
30. a