Myfuture CBC Revision

chemisty - Grade 10

Question Paper

1. Which property generally increases across a period and is associated with an atom's ability to attract electrons in a bond?

A. Atomic radius

B. Metallic character

C. Number of electron shells

D. Electronegativity

2. Why are noble gases generally unreactive (inert)?

A. They have full outer electron shells and are stable

B. They have extremely large atomic radii

C. They have no protons in the nucleus

D. They are always found as solids at room temperature

3. An ionic bond usually forms between:

A. A metal and a non-metal

B. Two non-metals

C. Two metals

D. Two noble gases

4. What are lone pairs in Lewis structures?

A. Electrons involved in all chemical bonds

B. Valence electrons not shared in bonds

C. Ions that form ionic bonds

D. Protons that move between atoms

5. What does the atomic number of an element tell you?

A. The total mass of the atom in grams

B. The number of protons in the nucleus

C. The number of neutrons in the nucleus

D. The number of electron shells

6. What causes bright lines in an element's emission spectrum?

A. Nuclei splitting into smaller parts

B. Protons changing into electrons

C. Electrons dropping to lower energy levels and releasing photons

D. Atoms gaining neutrons

7. When a halogen atom reacts with a metal, what charge does the halogen typically form?

A. A negative charge of one (-1)

B. A neutral charge (0) always

C. A positive charge of one (+1)

D. A positive charge of two (+2)

8. On the periodic table, where are metals generally located compared to non-metals?

A. Metals are mostly on the left and centre; non-metals are on the right

B. Metals and non-metals are randomly mixed with no pattern

C. Metals are only in the top row; non-metals only in the bottom row

D. Metals are on the right; non-metals are on the left

9. Which scientist's model concluded that most of the atom's mass is in a small dense nucleus?

A. Mendeleev

B. Rutherford

C. Thomson

D. Dalton

10. Which hydrogen isotope has one proton and two neutrons?

A. Tritium

B. Deuterium

C. Protium

D. Hydron

11. What is the main difference between carbon-12 and carbon-14 isotopes?

A. They have different numbers of protons

B. Carbon-12 has more protons than electrons

C. They have different atomic numbers

D. They have the same number of protons but carbon-14 has two extra neutrons

12. What is the general trend in atomic radius as you move from left to right across a period?

A. Atomic radius decreases

B. Atomic radius first increases then drops to zero

C. Atomic radius stays the same

D. Atomic radius increases

13. Which of the following is a cation?

A. Cl

B. O2

C. Na+

D. F

14. What is the molecular shape of methane (CH4) according to VSEPR theory?

A. Linear

B. Bent

C. Tetrahedral

D. Trigonal planar

15. How does ionisation energy generally change across a period from left to right?

A. Ionisation energy increases

B. Ionisation energy decreases

C. Ionisation energy stays the same

D. Ionisation energy alternates up and down without pattern

16. Which is a typical property of transition metals?

A. They have only one oxidation state and are always colourless

B. They often show variable oxidation states and form coloured compounds

C. They are all gases at room temperature

D. They are located in group 1

17. How many valence electrons does a neutral sulfur atom have?

A. 2

B. 6

C. 8

D. 4

18. Chlorine has atomic number 17 and mass number 35. How many neutrons does a chlorine-35 atom have?

A. 52

B. 18

C. 35

D. 17

19. Relative atomic mass shown on the periodic table is best described as:

A. The number of protons in the nucleus

B. The exact mass of one atom measured in grams

C. A weighted average mass of an element’s isotopes taking their abundances into account

D. The mass of the heaviest isotope only

20. What does 'periodicity' in the periodic table mean?

A. That elements are randomly placed with no order

B. The order of elements by their atomic weights only

C. The arrangement of elements according to their colour

D. The repeating pattern of chemical and physical properties of elements across periods

21. What is the usual oxidation state of noble gases in their stable form?

A. -1

B. 0

C. +1

D. +2

22. Which element is an alkali metal found in group 1 of the Periodic Table?

A. Sodium

B. Carbon

C. Chlorine

D. Oxygen

23. Which of the following elements commonly forms a +2 ion?

A. Neon

B. Calcium

C. Chlorine

D. Sodium

24. Elements in the same group have similar chemical properties because they have the same:

A. Melting points

B. Atomic masses

C. Number of valence electrons

D. Number of neutron shells

25. Which of the following is a compound?

A. Helium gas

B. Salt (sodium chloride)

C. Iron filings

D. Copper

26. The mass number of an atom is the sum of:

A. Neutrons and electrons

B. Protons and neutrons

C. Electrons and protons

D. Protons and electrons and neutrons

27. How is a covalent bond formed?

A. By transfer of electrons to form oppositely charged ions

B. By attraction of free electrons to positive ions

C. By one atom losing protons to another

D. By sharing pairs of electrons between atoms

28. Which pair of atoms is most likely to form a covalent bond?

A. Mg and O

B. Ca and Ca

C. Na and Cl

D. Cl and Cl

29. Why are noble gases generally unreactive (inert)?

A. They have a full outer electron shell

B. They have very large atomic radii

C. They easily lose electrons

D. They have very low atomic numbers

30. Which property is typical of metals?

A. Brittle and non-lustrous

B. Always gaseous at room temperature

C. Good conductor of electricity

D. Poor conductor of heat

31. What causes iron to rust?

A. Reaction of iron with oxygen in presence of water

B. Mixing iron with salt without moisture

C. Heating iron without air

D. Physical rubbing of iron surfaces only

32. Which type of covalent bond is strongest among single, double and triple bonds?

A. Triple bond

B. Double bond

C. Single bond

D. All are equally strong

33. Which element among the following has the largest atomic radius: sodium (Na), magnesium (Mg), aluminium (Al), silicon (Si)?

A. Sodium (Na)

B. Aluminium (Al)

C. Silicon (Si)

D. Magnesium (Mg)

34. The atomic number of an element gives the number of:

A. Neutrons in the nucleus

B. Isotopes the element has

C. Electrons in the nucleus

D. Protons in the nucleus

35. Which property mainly determines the chemical identity of an element?

A. The number of protons in the nucleus

B. The total mass of the atom in kilograms

C. The number of neutrons only

D. The number of isotopes it has

36. A neutral aqueous solution at room temperature has a pH closest to:

A. 10

B. 7

C. 14

D. 1

37. How does atomic radius change down a group (column) in the periodic table?

A. It remains constant because electrons are unchanged

B. It decreases because nuclear charge strongly pulls electrons in
C. It becomes zero at the bottom of the group

D. It increases because additional electron shells are added

38. What is a coordinate (dative) covalent bond?

A. A bond between two nuclei without electrons

B. A shared pair of electrons where both electrons come from the same atom
C. A bond formed by transfer of electrons to form ions

D. An attraction between metal cations and delocalised electrons

39. Which unit is used to measure the amount of substance in chemistry?

A. Watt

B. Kilogram

C. Liter

D. Mole

40. Why do ionic crystals form a lattice structure?

A. Because atoms form isolated neutral molecules

B. Because atoms share electrons to form molecules

C. Because electrons become delocalised over many atoms

D. Because alternating cations and anions arrange to maximize attractive forces and

41. Which of these will conduct electricity in the solid state?

A. Copper metal

B. Solid sodium chloride

C. Solid sugar (sucrose)

D. Solid oxygen

42. What is the chemical formula for sodium chloride (table salt)?

A. Na2O

B. KCl

C. Cl2

D. NaCl

43. How many valence electrons does an oxygen atom have? (O, atomic number 8)

A. 8

B. 2

C. 6

D. 4

44. What is the mass number of an atom?

A. The number of electrons only

B. The atomic number multiplied by two

C. The number of protons only

D. The total number of protons and neutrons

45. What is the electronic configuration of sodium (Na, atomic number 11) in terms of electrons per shell?

A. 2, 9

B. 2, 8, 1

C. 2, 11

D. 2, 8, 2

46. Which statement best describes metallic bonding?

A. A bond that forms only between nonmetals

B. Positive metal ions surrounded by a sea of delocalised electrons

C. Sharing of electrons only between two atoms

D. Complete transfer of electrons forming charged ions

47. Which element is most metallic: lithium, beryllium, boron or carbon?

A. Beryllium

B. Lithium

C. Carbon

D. Boron

48. A neutral chlorine atom has 17 electrons. What is the number of electrons in a chloride ion (Cl^-)?

A. 16

B. 18

C. 19

D. 17

49. Which pair of elements are in the same group and therefore have similar reactivity: magnesium and calcium, carbon and oxygen, sodium and chlorine, helium and lithium?

A. Sodium and chlorine

B. Helium and lithium

C. Carbon and oxygen

D. Magnesium and calcium

50. Which subatomic particle has the smallest mass?

A. Alpha particle

B. Neutron

C. Proton

D. Electron