

Test bank chapter (2)

Choose the correct answer

NOTE: A periodic table is required to work many of the problems in this chapter.

- 1. Which of these elements is most likely to be a good conductor of electricity?
 - a) N
 - b) S
 - c) He
 - d) Fe
- 2. An atom of the isotope sulfur-31 consists of how many protons, neutrons, and electrons? (p = proton, n = neutron, e = electron)
 - a) 15 p, 16 n, 15 e
 - b) 16 p, 15 n, 16 e
 - c) 16 p, 31 n, 16 e
 - d) 32 p, 31 n, 32 e
- 3. A magnesium ion, Mg²⁺, has
 - a) 12 protons and 13 electrons.
 - b) 24 protons and 26 electrons.
 - c) 12 protons and 10 electrons.
 - d) 24 protons and 22 electrons.
- 4. Which of these pairs of elements would be most likely to form an ionic compound?
 - a) P and Br
 - b) Cu and K
 - c) C and O
 - d) O and Zn
 - 5. The elements in a column of the periodic table are known as
 - a) metalloids.
 - b) a period.
 - c) noble gases.
 - d) a group.

- 6. Which is the correct formula for copper (II) phosphate?
 - a) Cu₂PO₄
 - b) $Cu_3(PO_4)_2$
 - c) Cu₂PO₃
 - d) $Cu(PO_4)_2$
- The correct name for NH₄NO₃ is 7.
 - a) ammonium nitrate.
 - b) ammonium nitrogen trioxide.
 - c) ammonia nitrogen oxide.
 - d) hydrogen nitrogen oxide.
- 8. What is the formula for the ionic compound formed by calcium ions and nitrate ions?
 - a) Ca₃N₂
 - b) $Ca(NO_3)_2$
 - c) Ca₂NO₃
 - d) Ca₂NO₂
- 9. The Stock system name for Mn₂O₇ is
 - a) dimanganese heptaoxide.
 - b) magnesium oxide.
 - c) manganese(VII) oxide.
 - d) manganese(II) oxide.
- Which of these elements is chemically similar to oxygen?
 - a) sulfur
 - b) calcium
 - c) iron
 - d) nickel
- 11. The formula of stannic oxide is SnO₂. The valence of Sn is:
 - a) +1
 - b) +2
 - c) +3
 - d) +4

Explanation: To know the charge on Sn atom, make this simple calculation remember that the charge on oxygen atom is -2, let X is the charge on Sn atom

 $X+(-2 \text{ (charge on O)} \times 2 \text{ (number of O atoms)} = 0 \text{ (equal zero because the compound is neutral)}$

$$X - 4 = 0 >>>> x = +4$$

12. Which pair of atoms constitutes a pair of isotopes of the same element?

(a). 14 X	14 7X
(b). 14 X	12 6X
(c). ¹⁷ ₉ X	17 8X
(d). 19 X	19X

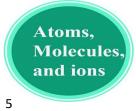
Explanation: Isotopes of an element are atoms of the same element with same number of protons but different number of neutrons. Only choice (b) has 2 atoms of X with 6 protons and 8 and 6 neutrons respectively.

- 13. Elements in Group 8A are known as the_____.
 - a) chalcogens
 - b) alkali metals
 - c) noble gases
 - d) alkaline earth metals
- 14. _____typically forms ions with a +2 charge.
 - a) Transition metals
 - b) Halogens
 - c) Alkaline earth metals
 - d) Alkali metals

Explanation: The alkaline earth metals are in group 2A of the periodic table and lose 2 electrons to form cations with 2 positive charges.

- 15. An anion is defined as
 - a) a charged atom or group of atoms with a net negative charge.
 - b) a stable atom.
 - c) a group of stable atoms.
 - d) an atom or group of atoms with a net positive charge.
- 16. A cation is defined as
 - a) a charged atom or group of atoms with a net negative charge.
 - b) a stable atom.
 - c) a group of stable atoms.
 - d) an atom or group of atoms with a net positive charge.
- 17. Atoms of the same element with different mass numbers (or number of neutrones) are called
 - a) ions.
 - b) neutrons.
 - c) chemical families.
 - d) isotopes.

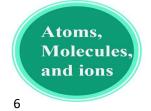
- 18. How many neutrons are there in an atom of lead 82Pb whose mass number is 208?
 - a) 82
 - b) 126
 - c) 208
 - d) 290
- 19. An atom of the isotope ¹⁶S-31 consists of how many protons, neutrons, and electrons?
 - a) 15 p, 16 n, 15 e
 - b) 16 p, 15 n, 16 e
 - c) 16 p, 31 n, 16 e
 - d) 32 p, 31 n, 32 e
- 20. A magnesium ion, 20Ca²⁺, has
 - a) 20 protons and 22 electrons.
 - b) 20 protons and 20 electrons.
 - c) 20 protons and 18 electrons.
 - d) 22 protons and 20 electrons.
- 21. A sulfide ion, 16S2-, has:
 - a) 16 protons and 16 electrons
 - b) 32 protons and 16 electrons
 - c) 16 protons and 14 electrons
 - d) 16 protons and 18 electrons
- 22. Which of these pairs of elements would be most likely to form a molecular compound?
 - a) Na and Br
 - b) Ca and O
 - c) C and O
 - d) Zn and O
- 23. What is the formula for the ionic compound formed by calcium ions and nitrate ions?
 - a) Ca_3N_2
 - b) Ca(NO₂),
 - c) Ca_2NO_3
 - d) Ca₂NO₂



d) -2

24. Which is the correct formula for copper(II) phosphate?
a) Cu_2PO_4
b) Cu ₃ (PO ₄) ₂ c) Cu PO ₄
d) Cu(PO ₄) ₂
25. The correct name for NH ₄ NO ₃ is
a) ammonium nitrate.
b) ammonium nitrogen trioxide.
c) ammonia nitrogen oxide.
d) hydrogen nitrogen oxide.
26. The correct name for PCl ₅ is
a) monophosphate pentachloride
b) phosphorus chloride
c) monophosphate tetrachloride
d) Phosphorus pentachloride
27. Which of the following expressions represents two molecules of water?
a) H_2O
b) H ₂ O ₂
c) 2 H ₂ O
d) 2 HO ₂
28. The empirical formula of a compound with molecules containing 12 carbon atoms, 14 hydrogen atoms, and 6 oxygen atoms is
a) $C_{12}H_{14}O_6$
b) C ₂ H ₄ O
c) CH ₂ O
d) $C_6H_7O_3$
Explanation: The empirical formula is always the simplest possible whole number ratio between the atoms of the molecules.
29. The charge on the manganese in the salt MnF ₃ is
a) +1
a) -1
c) +3

Explanation: Since every F has one negative charge, the Mn can have only 3 positive charges.



30. Magnesium reacts with a certain element to form a compound with the general formula MgX. What would the most likely formula be for the compound formed between potassium and element X?

- a) KX
- b) K₂X₂
- c) K₂X₃
- d) None of the above

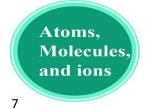
Explanation: In the compound MgX, X must have 2 negative charges since Mg will always have 2 positive charges. The element K will always form an ion with 1 positive charge and hence the only combination of K and X could be K_2X , which is not one of the options.

31. Bari	ium forms a	n ion with	a charge of	<u> </u>

- a) + 1
- b) -2
- c) +3
- d) None of the above.

Explanation: Barium is in group 2A of the periodic table and forms ions with only 2 positive charges.

- 31. Aluminum forms an ion with a charge of_____.
 - a) +2
 - b) -3
 - c) +3
 - d) +1
- 32. Iodine forms an ion with a charge of_____.
 - a) -7
 - b) + 1
 - c) -1
 - d) +2
- 33. The chemical symbol for the ion with 11 protons and 10 electrons.
 - a) Na
 - b) F-
 - c) Ne
 - d) Na⁺



34. Which of these compounds is a binary compound?

- a) NaCl
- b) MgSO₄
- c) NaOH
- d) HCN

35. Atoms with the same number of electrons and number of protons are called...

- a) ions
- b) isotopes
- c) neutral atoms
- d) different atoms

36. Atoms which have different number of electrons are called...

- a) ions
- b) isotopes
- c) neutral atoms
- d) different atoms

37. Use the following table and choose which of the species are positively charged?

Atom or ion element	Ι	II	III	IV	V	VI
Atom or ion electrons (e)	6	10	18	10	28	7
Atom or ion protons (p)	6	8	17	11	30	7
Atom or ion neutrons (n)	6	8	18	11	36	6

- A. III and V C. II and III B. IV and V D. I and VI
- 38. Which isotope has 45 neutrons?
 - (a). $^{80}_{36}$ Kr (b). $^{78}_{34}$ Se

 - (c). 80 Br
 - (d). 34 Cl

39. In the periodic table, the elements are arranged in_____

- a) alphabetical order
- b) order of increasing atomic number
- c) order of increasing metallic properties
- d) order of increasing neutron content

(a). $^{118}_{50}$ Sn⁺² (b). $^{116}_{50}$ Sn⁺⁴ (c). $^{112}_{48}$ Cd⁺² (d). $^{68}_{31}$ Ga

40.	n element in the upper right corner of the periodic table is	
	either a metal or metalloid a metal a non-metal either a metalloid or a non-metal	
41.	n element that appears in the lower left corner of a periodic table is	
	either a metal or metalloid a metal either a metalloid or a non-metal a non-metal	
42.	molecular formula always indicates	
	how many of each atom are in a molecule the simplest whole-number ratio of different atoms in a compound which atoms are attached to which in a molecule the isotope of each element in a compound	
43.	n empirical formula always indicates	
	 which atoms are attached to which in a molecule how many of each atom are in a molecule the simplest whole-number ratio of different atoms in a compound the geometry of a molecule 	
44.	here areprotons,neutrons, andelectrons in ¹	.31]
	a) 131, 53, and 54) 131, 53 and 52) 53, 78, and 54) 53, 131, and 52	
45.	Thich species has 48 electrons?	