

3 • Molecules and Compounds

PRACTICE TEST

- What is the formula of the ionic compound formed between Mg and Br?
 - MgBr
 - Mg₂Br
 - MgBr₂
 - Mg₂Br₂
 - Mg₂Br₃
- What is the formula of the ionic compound formed between Ca and P?
 - Ca₂P₃
 - CaP
 - Ca₅P₁₀
 - Ca₂P
 - Ca₃P₂
- What is the name of the SO₃²⁻ ion?
 - sulfate
 - nitrate
 - sulfite
 - sulfur trioxide
 - hydrogen sulfate
- What is the correct formula and charge for the chromate ion?
 - CrO₄²⁻
 - CrO₄⁻
 - Cr₂O₇²⁻
 - Cr₂O₇⁻
 - Cr³⁺
- Which one of the following elements forms ions with two different valences?
 - calcium
 - arsenic
 - iron
 - fluorine
- The correct name for CCl₄ is
 - carbon(I) chloride
 - carbon chloride
 - carbon tetrachloride
 - monocarbon chloride(IV)
 - carbochlorinate
- The correct formula for hydrogen telluride is
 - HTe
 - H₂Te
 - H₃Te
 - HTe₂
- The correct formula for dinitrogen tetroxide is
 - NO₂
 - N₂O₄
 - N₂O₅
 - NO₃⁻
 - (N₂O)₄
- The correct name for S₂Cl₂ is
 - sulfur dichloride
 - sulfur(I) chloride
 - sulfur(II) chloride
 - disulfur dichloride
 - sulfur chloride
- The correct name for NO₂ is
 - nitrogen dioxide
 - nitrite
 - nitrogen oxide
 - nitrogen(II) oxide
 - nitrate
- The molar mass of (NH₄)₂S is closest to:
 - 50 g/mol
 - 82 g/mol
 - 68 g/mol
 - 100 g/mol
- How many atoms are in 12 molecules of glucose, C₆H₁₂O₆?
 - 24
 - 288
 - 2160
 - 7.22 x 10²⁴

13. Calculate the number of atoms in 4.0×10^{-5} g of aluminum.
- a) 8.9×10^{17} c) 6.5×10^{20}
 b) 4.6×10^{19} d) 3.8×10^{23}
14. Which of the following samples contains the smallest number of atoms?
- a) 1 g H₂ c) 1 g O₃
 b) 1 g O₂ d) 1 g Cl₂
15. What is the mass of **one molecule** of octane, C₈H₁₈?
- a) 114 g c) 1.10×10^{-22} g
 b) 1.89×10^{-22} g d) 4.32×10^{-23} g
16. What is the percent nitrogen (by mass) in ammonium carbonate, (NH₄)₂CO₃?
- a) 14.53% c) 29.16%
 b) 27.83% d) 33.34%
17. Of the following, the only empirical formula is
- a) N₂F₂ c) H₂C₂
 b) N₂F₄ d) HNF₂
18. A compound consists of the following elements by weight percent:
- carbon - 40.0%
 oxygen - 53.3%
 hydrogen - 6.7%
- The ratio of carbon : oxygen : hydrogen in the empirical formula is
- a) 1:2:1 c) 1:1:2
 b) 1:1:1 d) 2:1:2
19. An organic compound which has the empirical formula CHO has a molar mass of 232. Its molecular formula is:
- a) CHO c) C₄H₄O₄
 b) C₂H₂O₂ d) C₈H₈O₈
20. When CaSO₄·y H₂O is heated, all of the water is driven off. If 34.0 g of CaSO₄ [molar mass = 136] is formed from 43.0 g of CaSO₄·y H₂O, what is the value of y?
- a) 1 c) 3
 b) 2 d) 4

Answers:

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|------|-------|-------|-------|
| 1. c | 6. c | 11. c | 16. c |
| 2. e | 7. b | 12. b | 17. d |
| 3. c | 8. b | 13. a | 18. c |
| 4. a | 9. d | 14. d | 19. d |
| 5. c | 10. a | 15. b | 20. b |