**CLASS COPY DO NOT TAKE!!!**

**Fall Final Exam Practice Problems Answers**

Chunk 1 Answers

|  |
| --- |
| 1) Democritus, Aristotle, John Dalton, JJ Thompson, Rutherford, Bohr, Schrodinger, Chadwick |
| 2) See your notebook! |
| 3) Hit gold foil with radioactive particles. They should have gone straight through because they thought the atom was uniform, but they bounced off sometimes in weird angles. This told them that there was a dense nucleus in the center, and the rest of the atom was mostly empty space |
| 4) Electrons travel randomly in orbitals – that the orbitals are areas of “probability clouds” of where you are likely to find an electron, but we don’t know exactly where they are. They do not travel in circular rings/orbits like Bohr thought |
| 5) 3.45 x 10-3 |
| 6) 2.98 x 107 |
| 7) Should be one number then the decimal, then the rest of the numbers (2.46) |
| 8) Should be one number then the decimal, then the rest of the numbers 5(.4) |
| 9) Kilo |
| 10) deci |
| 11) meter, liter, gram |
| 12) king henry died by drinking chocolate milk (or you may have a different one, this is just the one I’m used to) |
| 13) 34020000 cm |
| 14) 29400 mm |
| 15) 2700 g |
| 16) 0.000085 Dg |
| 17) Protons+neutrons |
| 18) The number of protons (and electrons if it is a neutral atom) |
| 19) 61 neutrons |
| 20) Cl = 17, 18, 17 Ba = 56, 81, 56 C = 6, 6, 6 Ne = 10, 10, 10 |
| 21) It has the same number of protons and electrons, but a different number of neutrons. It is the same element, just a different version of the element. |
| 22) Carbon-12 has 6 neutrons, carbon-13 has 7, and carbon-14 has 8 neutrons |
| 23) Br-80 = 35, 45, 35 Br-83 = 35, 48, 35 |
| 24) Bromine-80 because the average atomic mass listed on the periodic table is 79.90 and this is closer to Bromine-80 than bromine-83 |
| 25) 6.02 x 1023 |
| 26) To help us convert from grams to molecules, because atoms are very small it is hard to count them in small “chunks” so we use the mole because it is a large “chunk” we can count in – like counting eggs by the dozen |
| 27) You use the mass from the periodic table and you add up the mass of each atom in the molecules. You do not round because you don’t know which isotopes you are using, so you want to use the “average mass” so you are most closely going to match what you would find in nature |
| 28) 107.87 g/mol |
| 29) 74.1 g/mol |
| 30) 174.27 g/mol |
| 31) 68.17 g/mol |

Chunk 2 Answers

|  |  |
| --- | --- |
| 1 | 5.63 x 105 cm |
| 2 | 1.79 m/s |
| 3 | 1.85 x 106 m/hr |
| 4 | 1.16 x 102 mi/hr |
| 5 | 0.27 mol |
| 6 | 0.086 mol |
| 7 | 3681.18 g |
| 8 | 6.041 g |
| 9 | 9.63 x 1024 molecules |
| 10 | 4.15 x 107 mol |
| 11 | Area where an e- is most likely to be found, also called a probability cloud |
| 12 |  |
| 13 | 2 |
| 14 | 2, 6, 10, 14 |
| 15 |  |
| 16 |  |
| 17 | Fill bottom to top, 2 e- per orbital, one e- in each p or |
| 18 | Ge |
| 19 | K |
| 20 |  |
| 21 |  |
| 22 |  |
| 23 |  |
| 24 | Ground state = lowest energy level an e- can be in  Excited state = a higher energy level than normal |
| 25 |  |
| 26 | Gamma, beta, alpha |
| 27 |  |
| 28 |  |
| 29 |  |
| 30 |  |

Chunk 3 Answers

|  |  |
| --- | --- |
| 1 | 0.0394 mg |
| 2 | 6.25% |
| 3 | 46.87 g |
| 4 | 3.61 x 10-12 g |
| 5 | +1, +2, -1, 0 |
| 6 | 1, 1, 2, 7, 6, 6, 4, 3 |
| 7 |  |
| 8 | (Answers may vary) |
| 9 |  |
| 10 | Fr, Na, Ca, Fe, S, F |
| 11 |  |
| 12 | Fr, Na, Ca, Fe, S, F |
| 13 |  |
| 14 | F, S, Fe, Ca, Na, Fr |
| 15 | CO32-  PO43-  Fe3+  NO3- |
| 16 | **Ionic**: cation + anion OR metal + nonmetal  Binary: cation keeps normal name, add roman numeral if transition metal, change anion to -ide  Polyatomic: use ion names from common ions list  **Covalent**: use prefixes, last element change end to -ide |
| 17 | Tetranitrogen decoxide  Aluminum oxide  Tetraphosphorus decasulfide  Zinc sulfate  Copper (II) chloride  Ammonium nitrite  Carbon tetrachloride  Calcium chlorite  Pentacarbon monoiodide |
| 18 | Ga2O3  CaCl2  (NH3)PO3  CaO2 |
| 19 | P2O  S4F3  NH4 |
| 20 | Metal + nonmetal, nonmetal + nonmetal, metal + metal |
| 21 | Transfer, share, “sea” of free-flowing electrons |
| 22 | I, I, C, M, C, C |
| 23 | Most atoms want 8 valence e- |
| 24 | H = 2  B = 6  P = 10  S = 12 |
| 25 |  |
| 29 | Single: H2, H2O, NH3  Double: CO2, O2  Triple: N2  Lone pairs: CO2 , H2O, NH3, N2, O2 |
| 30 |  |