

## Revision Questions

Name:	Number:	Section:
<b>Useful information</b>		
Speed of light,	$c = 3.0 \times 10^8 \text{ m/s}$	
Planck's const.,	$h = 6.626 \times 10^{-34} \text{ J.s}$	
Avogadro's No.,	$N_A = 6.022 \times 10^{23} \text{ mol}^{-1}$	
Rydberg const. for H atom	$R_H = 2.179 \times 10^{-18} \text{ J}$	
Mass of the electron,	$m_e = 9.11 \times 10^{-31} \text{ kg}$	
Gas constant,	$R = 0.082 \text{ L atm K}^{-1} \text{ mol}^{-1} = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$	

PERIODIC TABLE																	
1 H																	4 He
7 Li	9 Be											11 B	12 C	14 N	16 O	19 F	20 Ne
23 Na	24 Mg											27 Al	28 Si	31 P	32 S	35.5 Cl	40 Ar
39 K	40 Ca	45 Sc	48 Ti	51 V	52 Cr	55 Mn	56 Fe	59 Co	59 Ni	63.5 Cu	65 Zn	70 Ga	72.5 Ge	75 As	79 Se	80 Br <small>Bromine</small>	84 Kr
85.5 Rb	86 Sr	89 Y	91 Zr	93 Nb	96 Mo	(96) Tc	101 Ru	103 Rh	106 Pd	108 Ag	112 Cd	115 In	119 Sn	122 Sb	128 Te	127 I	131 Xe
133 Cs	137 Ba	139 La	178.5 Hf	181 Ta	184 W	186 Re	190 Os	192 Ir	195 Pt	197 Au	201 Hg	204 Tl	207 Pb	209 Bi	(210) Po	(210) At	(222) Rn
(223) Fr	(226) Ra	(227) Ac	(261) Rf	(262) Db	(266) Sg	(264) Bh	(265) Hs	(268) Mt									
140 Ce	141 Pr	144 Nd	145 Pm	150 Sm	152 Eu	157 Gd	159 Tb	162.5 Dy	165 Ho	167 Er	169 Tm	173 Yb	175 Lu				
232 Th	231 Pa	238 U	237 Np	244 Pu	(243) Am	(247) Cm	(247) Bk	(251) Cf	(252) Es	(257) Fm	(258) Md	(259) No	(262) Lr				

**Key**

12 → Relative atomic mass to nearest whole number

**C** → Symbol

Carbon

6 → Atomic number

- 1- Express 1500 mm as decimeters  
a- 1.50 dm                      b- 15.0 dm                      c-  $1.5 \times 10^6$  dm                      d-  $1.5 \times 10^{12}$  dm
- 2- Which of these quantities represents the smallest mass?  
a-  $2.0 \times 10^4$  mg                      b- 0.00010 kg                      c-  $2.0 \times 10^5$   $\mu$ g                      d-  $2.0 \times 10^2$  cg
- 3- The pressure of a gas is measured as 60 torr. This pressure will be equal to:  
a- 7999 Pa                      b- 0.079 Pa                      c- 79.99 Pa                      d- 0.799 Pa
- 4- The sulfide ion,  $S^{2-}$ , has (p = protons and e = electrons)  
a- 16 p and 18 e                      b- 16 p and 16 e                      c- 16 p and 14 e                      d- 16 p and 10 e
- 5- Which of the following is a SI base unit?  
a- kilometer                      b- gram                      c- second                      d- Celsius
- 6- Express 7500 nm as micrometer  
a- 7.50  $\mu$ m                      b- 75.0  $\mu$ m                      c-  $7.5 \times 10^6$   $\mu$ m                      d-  $7.5 \times 10^{12}$   $\mu$ m
- 7- Express 7500 mm as picometer  
a- 7.50 pm                      b- 75.0 pm                      c-  $7.5 \times 10^6$  pm                      d-  $7.5 \times 10^{12}$  pm
- 8- Which of these quantities represents the largest mass?  
a-  $2.0 \times 10^2$  mg                      b- 0.0010 kg                      c-  $1.0 \times 10^5$   $\mu$ g                      d-  $2.0 \times 10^2$  cg
- 9- How many milliliters is 0.005 L?  
a- 0.5 mL                      b- 5 mL                      c- 50 mL                      d- 500 mL
- 10- Use the following table and choose which of the species are negatively charged?

atom or ion of element	A	B	C	D	E	F
Number of electrons (e <sup>-</sup> )	6	10	18	10	28	7
Number of protons (p)	6	8	17	11	30	7
Number of neutrons (n)	6	8	18	11	36	6

11. The O<sup>2-</sup> ion, is isoelectronic with



12. Which of the following is not a representative element (Main Groups)



13. A 50.0 mL sample of 0.436 M NH<sub>4</sub>NO<sub>3</sub> is diluted with water to a total volume of 250.0 mL. What is the ammonium nitrate concentration in the resulting solution?

a- 21.8 M

b- 0.459 M

c-  $2.18 \times 10^{-2}$  M

d-  $8.72 \times 10^{-2}$  M

14. A sodium ion, Na<sup>+</sup>, has (p = protons and e = electrons)

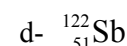
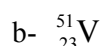
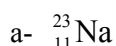
a- 23 p and 11 e

b- 23 p and 10 e

c- 11 p and 12 e

d- 11 p and 10 e

15. The appropriate symbol for the isotope with Z = 51 and A = 122 is



16. The elements in a column of the periodic table are known as

a- metal.

b- a period.

c- a group.

d- nonmetal

17. What is the mass in grams of one atom of iron (Fe)?

a-  $6.02 \times 10^{23}$  g

b-  $1.66 \times 10^{-24}$  g

c-  $9.28 \times 10^{-23}$  g

d- 55.85 g

18. A 4.691 g sample of MgCl<sub>2</sub> is dissolved in enough water to give 750. mL of solution. What is the molarity of this solution?

a-  $3.70 \times 10^{-2}$  M

b-  $1.05 \times 10^{-2}$  M

c-  $6.58 \times 10^{-2}$  M

d-  $4.93 \times 10^{-2}$  M

19. The bromine atom has two staple isotopes (Br-79 and Br-81). The atomic masses of  $^{79}_{35}\text{Br}$  (50.690 %) and  $^{81}_{35}\text{Br}$  (49.310 %) are 78.919 amu and 80.916 amu, respectively. Calculate the average atomic mass of bromine. The percentages in parentheses denote the relative abundances.

a- 79.903 amu                      b- 79.931 amu                      c- 79.917 amu                      d-159.834 amu

20. Calculate the percent composition by mass of C in picric acid ( $C_6H_3N_3O_7$ ).

a- 1.3 %                      b- 18.3 %                      c- 31.4 %                      d- 48.9 %

21. Calculate the number of O atoms in 2.00 g of glucose ( $C_6H_{12}O_6$ )

a-  $2.01 \times 10^{22}$                       b-  $4.01 \times 10^{22}$                       c-  $6.02 \times 10^{22}$                       d-  $8.03 \times 10^{22}$

22. Which of the following samples contains the greatest number of lead atoms?

a- 100 g of Pb                      b- 0.5 mole of PbO  
c- 2.0 mole of  $PbCO_3$                       d- 0.1 mole  $Pb_3(PO_4)_2$

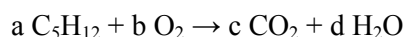
23. The empirical formula of an organic compound with 85.7% C and 14.3% H is

a- CH                      b-  $CH_2$                       c-  $C_2H$                       d-  $CH_4$

24. An empirical formula of an organic compound is  $C_3H_4O_2$ , if the molecular weight of the compound is (360 g/mol), the molecular formula of the compound will be:

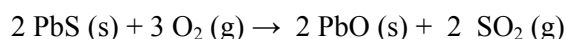
a-  $C_6H_8O_4$                       b-  $C_{12}H_{16}O_8$                       c-  $C_9H_{12}O_6$                       d-  $C_{15}H_{20}O_{10}$

25. The following reaction describes combustion of an alkane, the correct balance will be with



a- a = 5, b = 2, c = 2, d = 2                      b- a = 12, b = 2, c = 2, d = 2  
c- a = 1, b = 8, c = 5, d = 6                      d- a = 1, b = 4, c = 5, d = 6

26. For the reaction:



If 5.0 mol of PbS reacts with excess oxygen, how many moles of  $SO_2$  will produced?

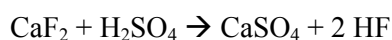
a- 2.5                      b- 5.0                      c- 7.5                      d- 10.0

- 27- How many grams of SF<sub>4</sub> (g) can theoretically be prepared from 6.00 g of SCl<sub>2</sub> (g) and 3.50 g of NaF(s)? The equation of reaction is:



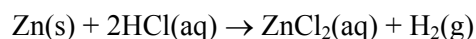
- a- 21.0 g SF<sub>4</sub>                      b- 210 g SF<sub>4</sub>                      c- 2.10 g SF<sub>4</sub>                      d- 0.210 g SF<sub>4</sub>

- 28- In a process 6.000 kg of CaF<sub>2</sub> are treated with an excess of H<sub>2</sub>SO<sub>4</sub> and yield 2.860 kg of HF. Calculate the percent yield of HF. It is prepared by the reaction:



- a- 85.0 %                      b- 88.0 %                      c- 93.0 %                      d- 95.0 %

29. Zinc dissolves in hydrochloric acid to yield hydrogen gas:



What mass of hydrogen gas is produced when a 7.35 g of zinc dissolves in 500. mL of 1.200 M HCl?

- a- 0.605 g                      b- 0.113 g                      c- 0.302 g                      d- 0.227 g

30. Which is the correct formula for copper(II) phosphate?

- a- Cu<sub>2</sub>PO<sub>4</sub>                      b- Cu<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>                      c- Cu<sub>2</sub>PO<sub>3</sub>                      d- Cu(PO<sub>4</sub>)<sub>2</sub>