SNC 1PI Extra Chemistry and Physics Review Name: Answer Key

1. Read each of the following sentences. Decide if the sentence is true or false. If the sentence is false, rewrite it to make it correct.
   (a) Physical changes result in the formation of new substances.
   False – chemical
   (b) A chemical property of salt is that it forms white crystals in the shape of a cube.
   False – physical
   (c) The formation of dew is a physical change.
   True – change of state
   (d) Non-metals are usually malleable and ductile and conduct electricity well.
   False – metals
   (e) The starting substances in a reaction are called the products.
   False – reactants

2. Label each of the following properties as physical or chemical.
   (a) Copper sulfate crystals are blue. P
   (b) Gold is an excellent conductor of electricity. P
   (c) Iron rusts when exposed to air and water. C
   (d) Salt is soluble in water. P
   (e) Calcium reacts with water to produce hydrogen. C
   (f) Gasoline burns in an automobile engine. C

3. Which of the following lists of properties is characteristic of metals?
   (a) Shiny, brittle, conduct heat and electricity.
   (b) Shiny, malleable, conduct heat and electricity.
   (c) Shiny, malleable, do not conduct heat and electricity.
   (d) Shiny, malleable, conduct heat but not electricity.

4. State whether each of the following changes is a physical change or a chemical change. Give a clue reason for your answer in each case.
   (a) The snow on the sidewalk outside your house melts. P – change of state
   (b) A piece of silverware gradually tarnishes (turns black) when left exposed to air. C – colour change
   (c) Milk turns sour after several days. C – precipitate, new smell
   (d) The three sugar cubes that you add to your coffee disappear when you stir the coffee. P – dissolving
   (e) You accidentally spill some bleach on your favourite blue shirt and end up with white stains on the shirt. C – new colour
   (f) To reconnect a loose wire in your computer, the technician melts some solder. P – change of state

5. Only one of the following lists does not consist entirely of symbols for elements. Which one?
   (a) C, He, Mg, Cu (b) H, ASA, P, Fe (c) He, N, Cl, O (d) Ca, Ne, Li, He

6. The total number of atoms represented by the formula $K_2Cr_2O_7$ is $2+2+7=11$
   (a) 1 (b) 3 (c) 11 (d) 28

7. Write symbols for the following elements that are found in living things.

oxygen	O	carbon	C	hydrogen	H	nitrogen	N	phosphorus	P
sulfur	S	chlorine	Cl	sodium	Na	potassium	K	magnesium	Mg
iodine	I	calcium	Ca						

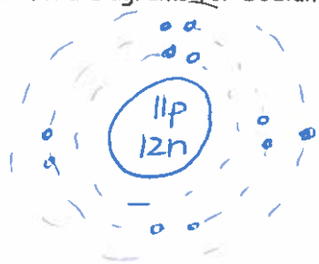
8. Protons are:
   (a) positively charged particles found outside the nucleus in an atom.
   (b) negatively charged particles found outside the nucleus in an atom.
   (c) neutral particles found in the nucleus in an atom.
   (d) positively charged particles found in the nucleus in an atom.

9. Electrons are:
   (a) positively charged particles found outside the nucleus in an atom.
   (b) negatively charged particles found outside the nucleus in an atom.
   (c) neutral particles found in the nucleus in an atom.
   (d) negatively charged particles found in the nucleus in an atom.

10. Neutrons are:
(a) negatively charged particles found outside the nucleus in an atom.
(b) neutral particles found outside the nucleus in an atom.
(c) neutral particles found in the nucleus in an atom.
(d) positively charged particles found in the nucleus in an atom.

11. a) Draw a Bohr-Rutherford diagrams for Sodium - Na (mass number = 23, atomic number = 11)

11 p
11 e → dots
12 n



b) Draw a Bohr Rutherford diagram for Phosphorus - P (mass number = 31, atomic number = 15)

15 p
15 e → dots
16 n

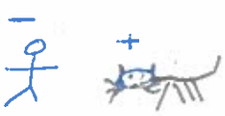
12. The most metallic elements in the periodic table are found:
(a) on the right of the table
(b) on the left of the table
(c) in the middle of the table
(d) in the second column

13. Rows in the periodic table are also referred to as:
(a) periods. (b) families. (c) groups. (d) columns.

14. When a plastic comb is rubbed with a piece of animal fur and is brought close to a fine stream of water from a tap, the stream of water will be:
(a) attracted to the comb.
(b) repelled by the comb.
(c) unaffected by the comb.
(d) first attracted, then repelled.

15. Describe what would happen on a dry, cool day if you were to pet a long-haired cat for several seconds before reaching out to touch a metal doorknob. Why does this occur?

shock → you are negatively charged ~~after~~ petting ~~the~~ cat (charging by friction)



→ you reach for the door knob and the electrons move from you to the door knob (shock)

16. Which of the following is a good conductor?
(a) silk (b) sand (c) salt water (d) silver

17. When a negative rod charges a pith ball by contact, there is a flow of:
(a) electrons from the rod into the pith ball.
(b) protons from the rod into the pith ball.
(c) electrons from the pith ball to the rod.
(d) protons from the pith ball to the rod.

18. When electrons are flowing through an electric circuit, the switch that controls the circuit must be:
(a) open. (b) closed. (c) off. (d) ready.

19. Which of the following is used to measure current?
(a) Ohmmeter (b) Ammeter (c) Electric meter (d) Voltmeter

20. The unit for measuring electrical resistance is the:
(a) ampere. (b) volt. (c) coulomb. (d) ohm.

21. What is the voltage drop across a room air conditioner if it has a resistance of 16.2 ohms and a current of 6.8 A flowing through it?

$V = ?$

$I = 6.8\ A$

$R = 16.2\ \Omega$

$V = I \times R$

$= (6.8)(16.2)$

$= 110.16\ V$

∴ the voltage drop is 110.16 V

22. An electric crock-pot connected to a 120 V outlet has a resistance of 52 ohms. How much current does the crock-pot use?

$V = 120V$

$I = ?$

$R = 52\ \Omega$

$I = \frac{V}{R}$

$= \frac{120\ V}{52\ \Omega}$

$= 2.3\ A$

∴ the crockpot uses 2.3 A

23. The current required to operate a coffee maker is 7.5 A. What is its resistance when connected to a 120 V circuit?

$V = 120V$

$I = 7.5A$

$R = ?$

$R = \frac{V}{I}$

$= \frac{120\ V}{7.5A}$

$= 16\ \Omega$

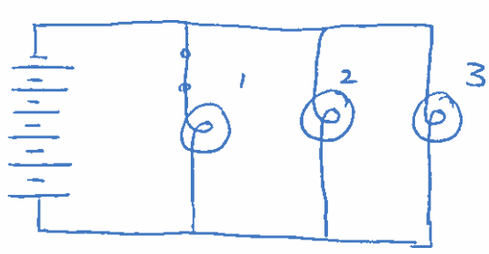
∴ the resistance is 16 Ω

24. Draw circuit diagrams to show three bulbs in:

(a) series

(b) parallel

25. Draw a schematic circuit diagram for a circuit containing a 6 cell battery, which is connected to three light bulbs in parallel. A closed switch is connected in series with only one light bulb.



If the switch was opened, which light bulbs would stay on and which ones would turn off?

2, 3 on

1 off