Science 9 Final Exam Review 2014 Name:

**Space: Chapters 10-12**

1. Give 3 Examples of Constellations in the sky, and name an asterism in each one.
2. The earth has two main types of motion, rotation about its axis and revolving around the sun.
3. Describe each type of motion
4. Which type of motion determines: i) The length of a day ii) The length of a year
5. Name and describe the 2 main classes of planets in the solar system.
6. Describe the composition and characteristics of the sun.
7. Describe the difference between asteroids, meteors, meteorite, and comets
8. Where did comets originate?
9. Why is Pluto now a dwarf planet? How does it differ from the other 8 planets?
10. Name and explain contributions to space exploration (Canadarm 1 and 1, Canadahand, International space station).
11. Name and describe Canadian astronauts (Bondar, Garneau, and Hadfield).
12. Name and describe the 3 types of galaxies.
13. Identify early technologies that advanced early scientific observation about the solar system (Stone circles, Astrolabe, Telescope)
14. Describe the formation of stars and the life cycle of a star
15. Sample: How long does it take light to travel from a distant star to earth if they are 211 light years apart?
16. Describe science/technology based careers: astronaut, scientist, engineer, doctor, pilot, and technician
17. Identify scientific/social benefits and negative consequences of space exploration: medical, industrial, agricultural, meteorological, and military
18. What are some risks associated with space travel?

**Atoms, Elements and Compounds: Chapters 1-3**

1. What are the 8 WHMIS Symbols?

2. What is matter?

3. Describe the following physical properties: color, malleability, electrical conductivity, magnetism, luster, density, melting point, boiling point, texture

4. Identify and describe chemical properties: combustibility, reactivity, toxicity

5. What is the difference between a law and a theory?

6. What are the 4 key points to Dalton’s atomic theory?

7. Describe the theories of J.J. Thompson, Ernest Rutherford and Niels Bohr

8. Describe Rutherford`s Gold Foil Experiment.

9. Describe the 3 subatomic particles in terms of their symbols, charges, mass and locations.

10. Why is it important to write the chemical symbols properly?

11. What were Mendeleev’s two main contributions to the development of the periodic table?

12. What is the difference between the atomic number and the atomic mass?

13. Using the atomic number and atomic mass, determine the number of protons, neutrons and electrons in an element

14. How are metals and non-metals different? (Identify the properties of each)

15. Identify on a periodic table each of the following groups: metals, non-metals, metalloids, alkali metals, alkaline earth metals, halogens, noble gases, transition metals

16. Find the element in:

Period 4, Group 1 Period 3, Group 18 Period 5, Group 11

17. What are the common properties of each group: noble gases, alkali metals, halogens and alkaline earth metals?

18. Why is hydrogen unique?

19. Draw Bohr-Rutherford diagrams (Bohr Diagrams) for elements #1-18.

20. How many electrons fit in each energy level?

21. Explain the difference between a molecular and an ionic compound.

22. What is the chemical formula for :

Table Salt (Sodium Chloride)

Calcium Carbonate

Sodium Hydroxide

23. Name the following ionic compounds:

NaBr CaCl2 Fe2S3 Cu3N2

24. Identify the chemical formula for:

Sucrose (table sugar) =

Carbon Dioxide =

Methane =

Water =

25. Name the following molecular compounds:

C3H8 P3Cl5 SF2 CO CO2

26. Identify three examples of:

1. Chemical Changes
2. Physical Changes

27. Give 5 pieces of evidence that indicate a chemical change has occurred

28. Write the Chemical Symbols for:

Hydrogen Iron Nitrogen Silicon

Sodium Nickel Oxygen Silver

Potassium Zinc Neon Gold

Magnesium Copper Helium Mercury

Calcium Carbon Chlorine Lead

**Electricity: Chapters 7-9**

1. Using the diagram shown below, explain what happens to Object A and B after they are rubbed together. Be sure to indicate the objects current charges and charges after rubbing. (Note: Object B has a strong attraction for electrons)



2.Draw each of the following series circuits

a. 1 bulb, 1 resistor, a voltmeter, a battery and 1 closed switch

b. 2 bulbs, 1 resistor, an ammeter, a battery and 1 opened switch

3. Draw each of the following parallel circuits

* 1. 2 bulbs, 1 battery, 1 closed switch and 1 opened switch
  2. 4 bulbs, 1 battery, 4 resistors, 2 opened switches and 2 closed switches

4. A 12 V battery requires 3 A of current. What resistance is going through this circuit?

5. You require your circuit to have 16 Ω of resistance but you only have an 8 V battery. How much current can the system take?

6. If the same system needs 15A and16 Ω run an appliance, what voltage of appliance can you use?

7. How much power is used by a 1500 V saw running on a 12 A current?

8. A scooter has a 25 A fuse attached to it. If it runs off a 110 V motor, what kind of power does the scooter have?

9. Convert the following:

* 1. Change 1450 W to kW
  2. Change 21000 W to kW
  3. Change 24 minutes to hours
  4. Change 156 minutes to hours

10. How much electrical energy is consumed by a 45kW washer left running for 45 minutes?

11. How much electrical energy is consumed by a 7500W toaster that is used at the breakfast program for 0.5 h?

12. You use a hair dryer for 0.4 h to dry your hair and it uses 65.5kW of electricity. If the cost of electricity is 9.512 cents/kWh, how much does it cost you to dry your hair?

13. You run a 1000 V dryer on 25 A of current for 3 hours. The cost of running the machine is 9.512 cents/kWh. How much does it cost you?

14. A regular light bulb uses 4.5 kWh of energy to supply 1 kWh of light for 1 hour. A incandescent light bulb uses 8.3 kWh of energy to supply 1.4 kWh of light for 1 hour. Which light bulb is more efficient?

15. Which radio would you recommend?

* 1. Radio A: uses 26 kWh to produce 4.5 kWh of radio for an hour
  2. Radio B: used 5 kWh to produce 2.2 kWh of radio for an hour

**Reproduction: Chapters 4-6**

1. What is the role of the nucleus and its contents in determining traits and controlling cell division?

2. What is the difference between DNA, Genes and Chromosomes?

3. Provide 2 examples of both natural and man-made mutagen sources.

4. Draw a picture of the 4 phases of mitosis, and label them.

5. What do checkpoints in the cell cycle do?

6. Compare and contrast mitosis and meiosis.

7. What are the 5 main types of asexual reproduction? Give an example of each.

8. Compare and contrast sexual and asexual reproduction.

9. Name 3 types of genetic disorders and describe them.

10. Compare complete and incomplete metamorphosis. Include examples.

11. Do you think genetic engineering is a good thing or not? Defend your position.