



GRADE 9 SCIENCE

Final Practice Exam

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Name: _____

Student Number: _____

Attending Non-Attending

Phone Number: _____

Address: _____

For Marker's Use Only

Date: _____

Final Mark _____ /100 = _____ %

Comments:

Instructions

- You have a maximum of 2 hours to write this exam.
- Supplies required: calculator, paper, and ruler

Multiple Choice

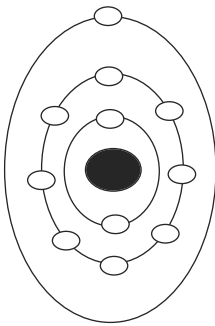
Each question has a single best answer. Make your choice by circling the letter beside your answer. (18 x 1 mark each = 18 marks)

1. In Western history, the first recorded scientist to propose that Earth revolved around the Sun was
 - a. Galileo
 - b. Copernicus
 - c. Ptolemy
 - d. Aristarchus
2. Sperm and egg cells are referred to as
 - a. gametes
 - b. zygotes
 - c. diploid cells
 - d. homologous cells

3. Which of the following elements has a total of six electrons in its valence shell?
 - a. nickel
 - b. chromium
 - c. sulphur
 - d. bromine
4. Jupiter, Saturn, Neptune, and Uranus are considered a family known as
 - a. the galactic planets
 - b. gas giant planets
 - c. terrestrial planets
 - d. solar planets
5. What is the altitude of Polaris when observed from Winnipeg, Manitoba?
 - a. 0°
 - b. 15°
 - c. 35°
 - d. 50°
6. An example of a naturally occurring diatomic molecule is
 - a. gold
 - b. copernicium
 - c. carbon dioxide
 - d. hydrogen gas
7. Twelve coulombs of electric charge travels through a resistor which uses 24 joules of energy. What is the potential difference across the resistor?
 - a. 2 J/C
 - b. 12 J/C
 - c. 36 J/C
 - d. 288 J/C
8. Ernest Rutherford is credited for the discovery of
 - a. the moons of Jupiter
 - b. the nucleus of the atom
 - c. deoxyribonucleic acid (DNA)
 - d. the piezoelectric effect

Name: _____

9. Human egg cells are produced in the
- ovaries
 - vagina
 - cervix
 - uterus
10. The unit for measuring electric current is the
- joule
 - ohm
 - ampere
 - tesla
11. The diagram below represents



- an atom of magnesium
 - a molecule of sodium
 - an alkali metal
 - a chalcogen
12. How long does it take the Moon to revolve around Earth?
- 24 hours
 - 27 days
 - 12 days
 - 1 week
13. A mother is homozygous recessive for a sex-linked trait. Which statement is true?
- Half of her daughters will display the dominant phenotype.
 - All of her daughters will display the recessive phenotype.
 - All of her sons will display the dominant phenotype.
 - All of her sons will display the recessive phenotype.

14. Stars such as our Sun produce their energy
 - a. through the nuclear fission of helium into hydrogen
 - b. through the nuclear fusion of hydrogen into helium
 - c. through the nuclear fission of hydrogen into helium
 - d. through the combustion of hydrocarbons
15. A diploid human cell contains
 - a. 64 chromosomes
 - b. 23 pairs of chromosomes
 - c. 46 pairs of chromosomes
 - d. 23 chromosomes
16. A rod that has been negatively charged touches an electroscope.
 - a. Negative charges move out of the electroscope.
 - b. Positive charges move out of the electroscope.
 - c. Negative charges move into the electroscope.
 - d. Positive charges move into the electroscope.
17. A metal that can be hammered into thin sheets demonstrates the property called
 - a. malleability
 - b. conductivity
 - c. ductility
 - d. lustre
18. Which scientist contributed to the first periodic table?
 - a. Tycho Brahe
 - b. Dimitri Mendeleev
 - c. Aristotle
 - d. Isaac Newton

Name: _____

Matching

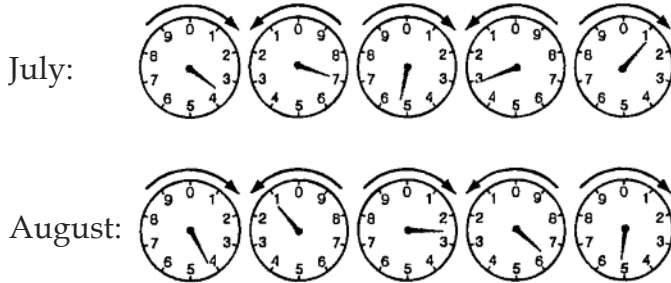
Place a letter in the space provided that gives the best match.

(18 x 0.5 marks each = 9 marks)

- | | |
|--------------------|--|
| ___ insulator | a. discovered the moons of Jupiter |
| ___ astrolabe | b. contain genes |
| ___ Bohr | c. developed a model of electron orbitals |
| ___ chromosome | d. the protons in a nucleus |
| ___ halogen | e. chlorine |
| ___ Galileo | f. does not conduct electricity |
| ___ Punnett square | g. provides only one path for electrical current |
| ___ light year | h. a vertical coordinate |
| ___ series circuit | i. the distance that light travels in 365 Earth days |
| ___ atomic number | j. the movement of electrons through a conductor |
| ___ current | k. a model for predicting genotypes |
| ___ neutron | l. female gonad |
| ___ joule | m. found in the nucleus of an atom |
| ___ potassium | n. an alkali metal |
| ___ electroscope | o. detects electric charge |
| ___ altitude | p. claimed that Earth orbited the Sun |
| ___ ovaries | q. Arabic instrument for observing stars |
| ___ Copernicus | r. unit of energy |

Short Answer (29 marks)

1. There are two hydro meter readings shown below. One meter reading is for July and the other is for August. (4 marks)



- a. What is the energy reading for July and August? Show the units. (2 marks)
- _____
- _____
- _____
- b. What is the energy consumption between July and August in this example? (1 mark)
- _____
- _____
- c. If the cost for energy were \$0.24 per kilowatt hour, what will this household pay for energy? (1 mark)
- _____
- _____

2. Name two types of asexual reproduction. For each type, name one species that uses the method. (4 marks)

Name: _____

3. Identify the following elements by name and symbol. (5 marks)
- a. This element is the lightest in existence. _____
 - b. This element is the most reactive non-metal. _____
 - c. The atomic mass of this element is approximately 32. _____
 - d. This element contains two more protons than nickel. _____
 - e. On the periodic table, this element is located on the fourth period and the second family. _____

4. What is a phenotype? How is it different from a genotype? (3 marks)

5. What is a geosynchronous orbit, and how does it benefit telecommunications systems? (2 marks)

6. What is a nebula, and how does it form a star? (3 marks)

7. Fill in the blanks in the following sentences about cell division. (5 marks)

Mitosis takes place in _____ cells, while meiosis occurs in _____ cells. Mitosis produces two _____ cells, while meiosis produces a total of _____ cells, each with a _____ chromosome count.

8. Use the Energuide symbol below to answer the following questions. (3 marks)



a. How much energy would be used by this appliance in a typical month of use?

b. If you were paying 7.5 cents per kWh for electrical energy in your area, what would it cost to use this appliance for three months?

Diagrams and Long Answers (44 marks)

1. In a species of dog, the gene for long hair (H) is dominant over the gene for short hair (h). A licensed breeder mates a long-haired male (Hh) with a long-haired female (Hh). (7 marks)

a. Draw a Punnett square showing the potential genotypes of this pairing's offspring. (1 mark)

Name: _____

- b. What are the possible genotypes of the offspring? In what percentages are they predicted to appear? (3 marks)

- c. What phenotypes will the puppies display, and in what percentage? (2 marks)

- d. How can the breeder alter the pairing to ensure that only long-haired puppies are born? (1 mark)

2. Draw a Bohr atom of fluorine. (6 marks)

- a. Draw the atom, labelling the nucleus and one of the electrons. (2 marks)

- b. How many neutrons are there in fluorine? _____ (1 mark)

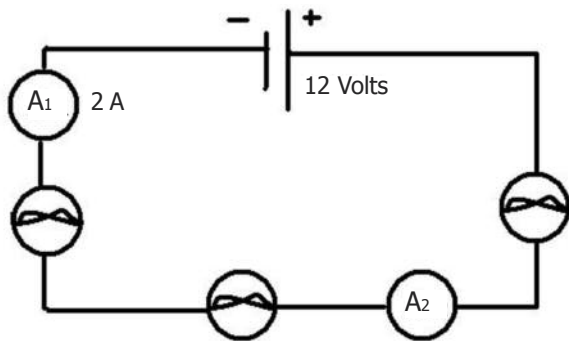
- c. What is the mass number for fluorine? _____ (1 mark)

- d. To what family does fluorine belong? _____ (1 mark)

- e. What is one trait shared by this family?

_____ (1 mark)

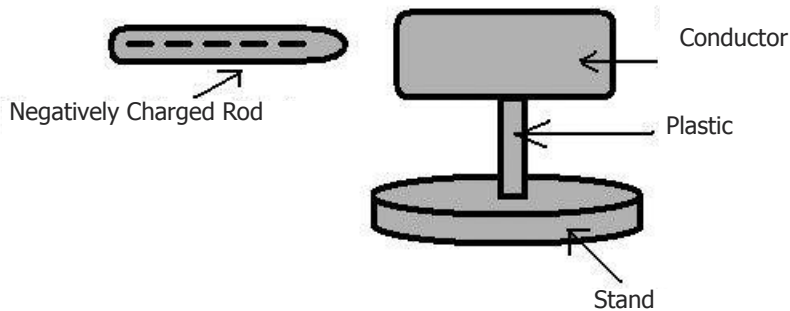
3. Use the diagram below to answer the following questions. (5 marks)



- Are the three bulbs connected in series or parallel? _____
- What is the reading in A2? _____
- What is the total current in the circuit? _____
- The three light bulbs all have the same resistance. What is the voltage across each of the light bulbs? _____
- Draw an arrow on the diagram indicating the direction of electron flow.

The arrow should point away from the negative terminal of the battery and towards the positive terminal.

4. Use the diagram below to answer the following questions. (5 marks)



- Draw the charge distribution for the conditions shown on the conductor. (2 marks)

Name: _____

b. How would you give the conductor a permanent charge without moving the charged rod? (1 mark)

c. What charge would be left on the conductor after completing part (b)? (1 mark)

d. What name is given to this method of charging an object? (1 mark)

5. Describe how seasons are produced in the Northern Hemisphere. (4 marks)

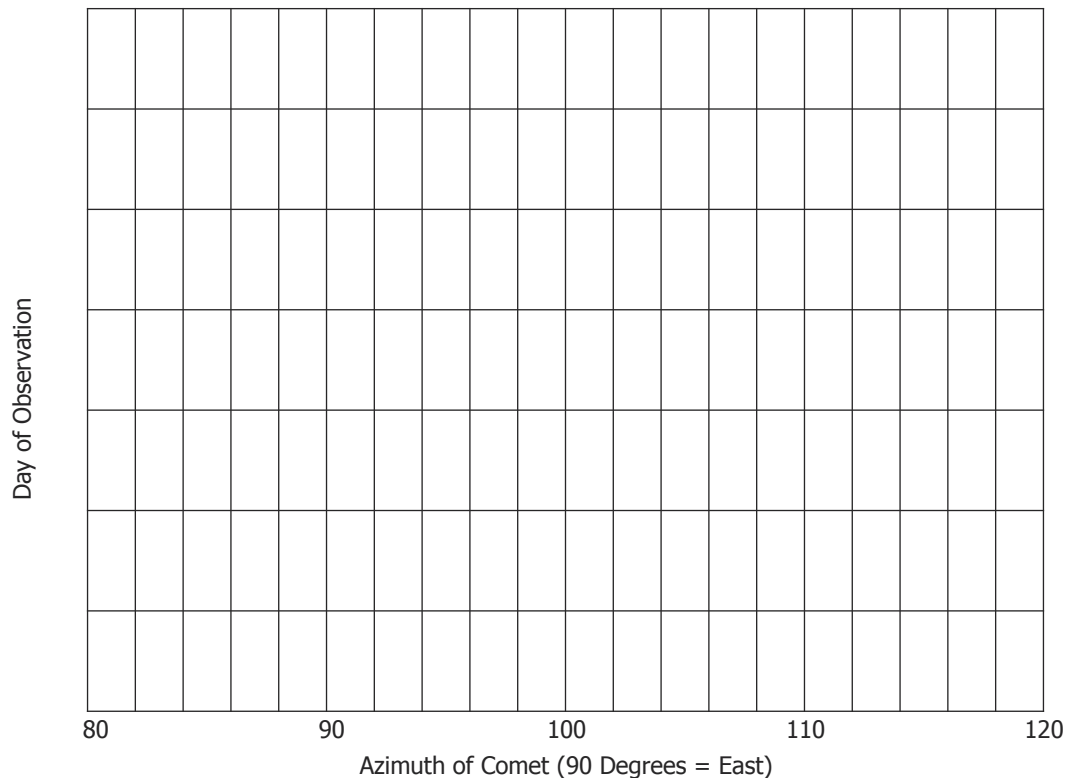
6. Why are you unlikely to find snow in countries along the equator? (2 marks)

7. What is the purpose of mitosis and meiosis within the human body? (2 marks)

8. Darren has been observing a newly discovered comet through his telescope. (8 marks)
- a. Using the data provided in the table below, plot a graph showing the position of this new comet over the months of April to October. (5 marks – 1 mark for title, 4 marks for graph)

Observation Date	Comet Azimuth	Day within Study
April 1	102.0	0
April 15	95.0	15
May 1	88.0	30
May 15	84.0	45
May 30	83.0	60
June 14	84.0	75
June 29	87.0	90
July 14	92.0	105
July 29	98.0	120
August 13	99.0	135
August 28	91.0	150
September 12	85.0	165
September 27	80.0	180

Title: _____



Name: _____

- b. When Darren shows his data table to Karen, she exclaims that he must have made an error, because the comet is clearly changing the direction of its revolution around the Sun. How might Darren defend his observations? (3 marks)

9. What are five indicators of a chemical change? (5 marks)
