ALBERTA DISTANCE LEARNING CENTRE

Science 10 Online

SCN1270

Final Review Assignment

Units A, B, C, and D.

Student's Questions and Comments

FOR STUDENT USE ONLY

Student ID: _____

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Assigned to: _____

Marked by: _____

Date received: _____

	Total	Total Possible
Unit A		25
Unit B		26
Unit C		30
Unit D		21
TOTAL		**102**

Teacher's Comments:

_____

Teacher's Signature

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Science 10
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SCIENCE 10 Online

Final Review Assignment
Units, A, B, C, and D.

General Instructions

Total Marks: 102

This is a formative assessment. This means that this assignment is not part of your overall mark; however **it MUST be completed before you can write your final exam**. The point of this assignment is to help you check to make sure you are on the right track with the entire course, and that you are prepared for your final exam. Your teacher will review this assignment before you write your final exam.

Once you have downloaded and completed this assignment, please upload it as a PDF and follow the online instructions on how to submit it.

Science 10 Final Review Assignment
Units A, B, C, and D.

Total 25

Unit A

(2) 1. What does the theory of spontaneous generation state? How could mould growing on a tomato that is sitting on a countertop be used as evidence for that theory?

(2) 2. Why are microscopes important to biology and the development of the cell theory?

(1) _____ 3. Which function of the compound light microscope would not be used with the highest magnification objective lens?

A. *y*-axis adjust knob
B. fine focus knob
C. *x*-axis adjust knob
D. coarse focus knob

(3) 4. Draw a diagram or explain the structure of the cell membrane. Be sure to include the function of each structure you include in your explanation or diagram.

(3) 5. Name **three** differences between a plant and an animal cell.

(2) 6. Which cell will have a faster rate of diffusion? A cell with a surface area to volume ratio of 3:2 or 7:6? Explain your answer.

(1) 7. Is the cell an open or closed system? How do you know?

(6) 8. For each part of the leaf, explain how it is adapted for photosynthesis.

Leaf Part	How it is Adapted
Epidermis	
Palisade tissue	
Spongy Tissue	
Guard cells	
Stomata	
Xylem and Phloem	

(3) 9. Place the following statements in the correct order in the blanks below to describe how gas exchange occurs in the leaf. Make sure you include how the gas enters, and how it exits the leaf. Some statements may be used more than once.

a. Diffuses into air pockets
b. Diffuses into palisade cells
c. $CO_2(g)$ is converted into $O_2(g)$
d. Diffuses through spongy tissue layer
e. Moves through open stomata

_____ _____ _____ _____ _____ _____ _____ _____ _____

(2) 10. Place the following statements in the correct order in the blanks below to describe how glucose is transported from the palisade cells to the rest of the plant. Statements may be used once.

a. Water enters the phloem through osmosis
b. Water exits the phloem through osmosis
c. Glucose is actively transported into the phloem
d. Glucose is actively transported out of the phloem
e. Pressure from the leaves pushes the water and glucose through the phloem
f. An area of low glucose concentration is reached

_____ _____ _____ _____ _____ _____

Total 26

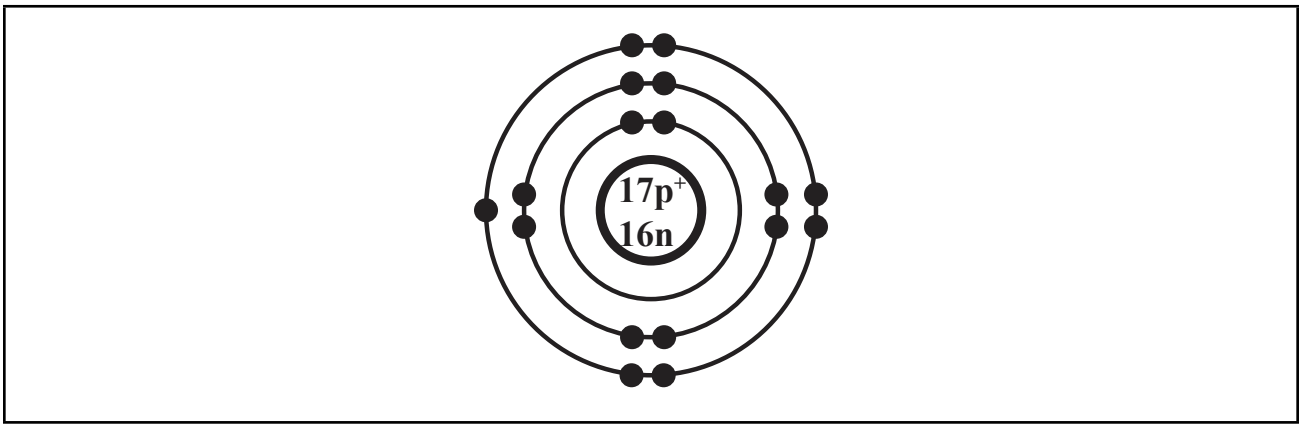
Unit B

(4) 11. Draw a diagram of or describe how each of the atomic models listed below would look.

Name of Model	Drawing of Model
Dalton	
Thomson	
Rutherford	
Bohr	

(3) 12. A group of students are working in a Science 10 chemistry laboratory. One of the students, River, is listening to music with headphones while she records her data. Another student, Dom, is getting ready to play a practical joke on Aubrey while she has her eyes closed, waiting for her chemicals to react. What are the three safety rules that are being broken in this laboratory? How would the students correct their behavior?

Use the following diagram to answer question 13.



(1) 13. Provide the proper isotope name for the element represented by the modified Bohr diagram.

(4) 14. Identify each of the following compounds as ionic or molecular and write the correct formula.

IUPAC Name	Classification (Ionic/Molecular)	Formula
gold(I) sulfide		
dinitrogen trioxide		
magnesium chloride		
beryllium borate		

(4) 15. Identify each of the following compounds as ionic or molecular and, using IUPAC rules, name the compounds.

Formula	Classification (Ionic/Molecular)	IUPAC Name
SiI_4		
$MnSe_2$		
Sr_3N_2		
$Sc_2(CrO_4)_3$		

(3) 16. You have 3 beakers sitting in front of you for a lab, but you forgot to label the beakers. You do not remember which chemical you put into which beaker, and they are all colourless solutions. You know that you had hydrogen chloride (HCl), lithium sulfate (Li_2SO_4), and ethanol (C_2H_5OH). How could you determine which beaker contains which compound? Describe two diagnostic tests, including expected results that you could use to identify the three solutions and allow you to label your beakers.

Use the following information to answer questions 17 to 21.

Fatima completed a lab activity by mixing aqueous solutions of lead(II) nitrate and sodium iodide. Fatima noticed the appearance of a precipitate once the solutions were mixed.

The incomplete skeleton equation for the reaction is

$Pb(NO_3)_2\ (aq) + NaI\ (aq) \longrightarrow PbI_2 + NaNO_3$

(1) 17. The lowest whole number coefficients to balance the above equation would be

_____, _____, _____, and _____.

(1) _____ 18. The states of the products would be

A. $PbI_2(aq) + NaNO_3(aq)$
B. $PbI_2(s) + NaNO_3(s)$
C. $PbI_2(aq) + NaNO_3(s)$
D. $PbI_2(s) + NaNO_3(aq)$

(2) 19. Calculate the molar mass of lead(II) nitrate, $Pb(NO_3)_2$. Write your answer using proper units. Show all work.

(2) 20. Calculate the number of moles in a 35.0 g sample of lead(II) nitrate, $Pb(NO_3)_2$. Write your answer using proper significant digits and units. Show all your work. (you can still receive full marks for this question if you get question 19 incorrect.)

Total 30

Unit C

Use the following information to answer question 21.

Descriptions of Types of Energy

1. energy due to an object's motion and position
2. energy of motion
3. energy due to an object's position above Earth's surface
4. energy due to fusion of hydrogen nuclei in the sun
5. potential energy stored in the chemical bonds of compounds
6. potential energy stored in the nuclei of atoms

(1) 21. Match each description above with its correct type of energy below.

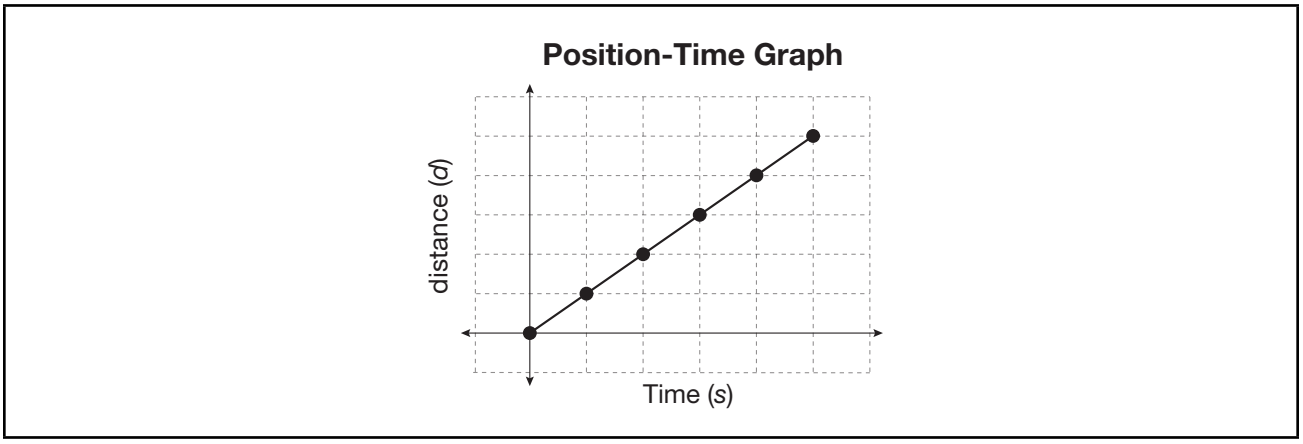
_____	_____	_____	_____
chemical potential energy	mechanical energy	kinetic energy	solar energy

(2) 22. State the second law of thermodynamics. What does it mean?

(4) 23. For each of the following, state the type of input energy and the useful output energy.

a. battery
b. gas-powered weed-eater
c. bedside lamp
d. horn on a bicyle

Use the following graph to answer question 24.



(1) _____ 24. What does the slope of the line of this graph represent?

A. acceleration
B. average speed
C. elapsed time
D. distance travelled

(1) _____ 25. The slope of which kind of graph represents acceleration?

A. Acceleration – Time graph
B. Speed – Time graph
C. Distance – Time graph
D. Displacement – Time graph

26. An archer uses an average force of 50.0 N to draw the string of his bow through a distance of 0.412 m. Then, he fires a 297 g arrow straight up into the air. Make sure you show all your work for all of your answers.

(3) a. How much work did the archer do?

(3) b. What is the maximum speed of the arrow at the instant it leaves the bow?

(3) c. What is the maximum height reached by the arrow in its flight into the air?

(1) _____ 27. Which flowchart best represents the energy conversions in a natural gas power station in Alberta?

A. chemical energy ⟶ thermal energy ⟶ kinetic energy ⟶ electrical energy
B. chemical energy ⟶ kinetic energy ⟶ thermal energy ⟶ electrical energy
C. thermal energy ⟶ chemical energy ⟶ kinetic energy ⟶ electrical energy
D. kinetic energy ⟶ chemical energy ⟶ thermal energy ⟶ electrical energy

(2) 28. Comparing the four most common types of power plants in Alberta (coal, natural gas, wind, and hydroelectric), which has the lowest efficiency in electricity generation? Why?

(3) 29. An internal combustion engine has an efficiency of 22.3%. This engine is used to deliver 6.25×10^4 J of work to drive the motion of the train. What is the total energy that needs to be put into the engine?

(6) 30. A utilities company is planning to build a new power station in Alberta. The company is looking at all the alternative ways to generate power in Alberta. You are asked to advise the utilities company about the drawbacks and benefits associated with the use of alternative power to generate electricity in Alberta. For each type of alternative power listed, find two drawbacks and two benefits.

Alternative Power	2 Drawbacks	2 Benefits
Wind		
Hydroelectric		
Biogas		

Total 21

Unit D

(1) _____ 31. Which of the following events has the potential to **decrease** Earth's temperature

A. an increase in the relative percent of greenhouse gases
B. the planting of more trees
C. widespread removal of tropical forests
D. an increase in the use of fossil fuels

(1) 32. Which greenhouse gas in the atmosphere has increased the most since the industrial revolution? Which one has the greatest impact on the greenhouse effect?

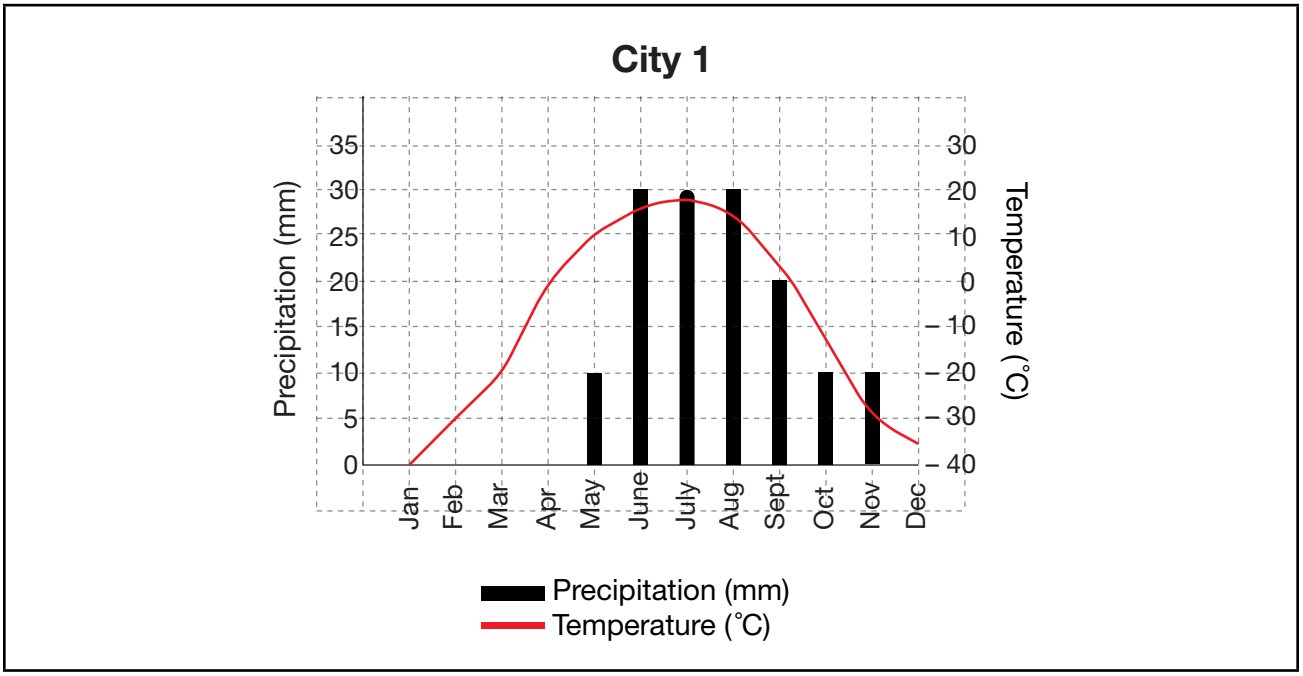
(2) 33. Are there strict boundaries between the lithosphere, hydrosphere, and atmosphere or do they interact? Give examples to support your answer.

(3) 34. A 50.0 g mass of copper at 58.0 °C is heated to 135 °C. The theoretical specific heat capacity of copper is 0.385 J/g•°C. How much thermal energy was added to the copper? Write your answer using three significant digits and proper scientific notation.

(3) 35. Compare the relative albedo of Earth's surface in the snow cover of northern latitudes to the Sahara desert of Africa. How does this affect each climate? How is this effect increased due to the amount of insolation each location receives?

(3) 36. Explain how the ocean currents move thermal energy from warm areas to cooler ones. Make sure to include convection currents, the Coriolis effect, land masses, and the effect of the global wind patterns in your answer.

Use the following information to answer question 37.



(3) 37. Using the Climatograph provided, which biome is this city 1 located in? Provide two pieces of evidence for your choice.

(2) 38. List two impacts that would be expected if global temperature continues to rise as it is.

(2) 39. Provide two examples of scientific evidence that Earth's climate is changing due to human activities.

(1) _____ 40. The goal of the Paris Agreement is to

A. stabilize greenhouse gas emissions
B. see a 5% reduction in greenhouse gas emissions
C. identify countries producing the most greenhouse gases
D. keep the global temperature rise this century to below 2 ˚C

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