

M. Puranen - Science 20F

Name: _____

Date _____

Weather Assignment 7 - Unit Review

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Part A. Fill in the blanks – 22 points

Word Bank (each word is only used once)

Condensation	Specific heat	Weather	Radiation
Conduction	Groundwater	Land Breeze	Convection
Evaporation	Sea Breeze	Infiltration	Barometer
Albedo	Climate	Runoff	El Nino
Meteorologists	Precipitation	Convection current	
Transpiration	Climatologists	Greenhouse gases	

1. _____: The amount of heat energy needed to raise 1 gram of a substance 1 degree Celsius.
2. _____: The daily atmospheric conditions we experience, such as: daily temperatures, cloudy conditions, wind chill, expected snow fall.
3. _____: Winds from oceans that blow towards the land during the day because the land is warmer than the water.
4. _____: The long-term weather patterns that are affecting our planet, which are studied over long periods of time.
5. _____: Water that changes from liquid to a gas and rises up into the atmosphere.
6. _____: A phenomenon that occurs every 3-8 years where the trade winds weaken and begin blowing in an easterly direction towards Peru instead of westerly towards Australia and Indonesia. (Causes major weather pattern reversals)
7. _____: People that study and attempt to predict weather.
8. _____: Specific gases that help to trap incoming solar radiation and not let it escape back into space once reflected by the earth.

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9. _____: People that study climate and long-term weather patterns.
10. _____: Water that falls from the clouds with the help of gravity in the form of either: rain, sleet, snow, or hail.
11. _____: An instrument to measure the atmospheric pressure of a region.
12. _____: Winds from land that blow towards the ocean at night because the water is warmer than the land.
13. _____: Water that changes from gas to a liquid in the upper troposphere and forms clouds.
14. _____: Heat energy that travels through empty space usually in the form of infra-red radiation.
15. _____: Melted snow or rain that runs along the surface of the earth.
16. _____: The up and down movement of water or gases as they heat and cool.
17. _____: Water that penetrates into the soil.
18. _____: Heat that is transferred through liquids and gases and causes convection currents.
19. _____: The reflection of energy from the earth's surface. (The lighter the surface the higher the value)
20. _____: Water that moves under the ground towards lakes and oceans.
21. _____: Heat that is transferred between substances that are in direct contact.
22. _____: Water that evaporates from plants and enters the atmosphere to rejoin the water cycle.

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Part B. Short Answer questions – 30 points

1. Which gas makes up 21% of the atmosphere? **(1)**
2. What percentage of the earth's water is fresh water? **(1)**
3. What percentage of all the water on the earth is salt water? **(1)**
4. What is ground water? **(1)**
5. What percentage of water on the earth is in a frozen state? **(1)**
6. The force of air molecules pushing on earth in all directions is? **(1)**
7. Which type of pressure system is associated with a clear sky? **(1)**
8. The lines on a map with similar atmospheric pressure are called what? **(1)**
9. Which type of pressure system is associated with: warm air, clouds and precipitation? **(1)**
10. How is heat transferred through a solid? **(1)**

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11. What form of energy travels through the atmosphere from the sun? **(1)**

12. How is heat transferred through a liquid or a gas? **(1)**

13. How do winds in a high-pressure systems turn / spiral? **(1)**

14. How do winds in a low-pressure system turn / spiral? **(1)**

15. Standard atmospheric pressure at sea level is: **(1)**

16. What causes the seasons to occur? **(1)**

17. Which gas varies from place to place on the earth? **(1)**

18. List three Greenhouse gases: **(3)**

19. List the 4 forms of precipitation: **(4)**

20. What do we call an instrument that is used to measure atmospheric pressure? **(1)**

21. What instrument measures temperature? **(1)**

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22. What is the percentage of solar energy that is absorbed by the earth only? (not including atmosphere: clouds, air) **(1)**

23. What is the percentage of solar energy that is reflected by the earth only? (not including atmosphere: clouds, air) **(1)**

24. Name the invisible force that causes objects to curve to the right in the Northern Hemisphere. **(1)**

25. What ocean current brings warm water to Great Britain and to the east coast of Canada? **(1)**

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Part C. Multiple Choice – 25 points

Circle the right answer

1. The most abundant element (gas) in our atmosphere is:

- a) Argon
- b) Nitrogen
- c) Oxygen
- d) Carbon dioxide

2. Low atmospheric pressure is generally associated with:

- a) Precipitation
- b) Clear skies
- c) Low tides
- d) Global Warming

3. What is the name of the event that results in warming of the waters off the coast of Peru?

- a) Gulf Stream
- b) Ocean Conveyor
- c) Trade winds
- d) El Nino

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4. Which of the following surfaces would have the highest albedo?
 - a) Snow
 - b) Dirty snow
 - c) Black soil
 - d) Grey clouds

5. An increase of carbon dioxide in the atmosphere may have increased the
 - a) Coriolis Effect
 - b) Greenhouse Effect
 - c) Depletion of ozone
 - d) Gulf Stream

6. The Coriolis effect is the result of:
 - a) The earth's rotation
 - b) Trade winds
 - c) Temperature differences on Earth
 - d) Jet stream

7. The change from summer to winter seasons is primarily caused by which of the following factors?
 - a) Changing ocean currents
 - b) Changing trade winds
 - c) The tilt of Earth's axis as Earth travels around the Sun
 - d) Earth moving farther away from the Sun

8. The process of trapping heat by gases such as water vapour, carbon dioxide, and methane in the atmosphere is called which of the following names?
 - a) Scattering
 - b) Photosynthesis
 - c) Albedo
 - d) Greenhouse Effect

9. A tropical disturbance over the eastern Atlantic may eventually become a severe weather event. Which of the following events might it become?
 - a) Monsoon
 - b) Tornado
 - c) Tsunami
 - d) Hurricane

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10. The Electromagnetic wavelength with the most energy is
- Ultraviolet
 - Infrared
 - ROYGBIV
 - Gamma
11. From which of the following atmospheric gases is ozone formed?
- Oxygen
 - Carbon dioxide
 - nitrogen
 - Water vapour
12. The Earth is rotating fastest at the:
- Equator
 - The poles
 - The Tropic of Cancer
 - The Tropic of Capricorn
13. What type of heat transfer is responsible for the formation of sea breeze and land breeze?
- Conduction
 - Convection
 - Radiation
 - Albedo
14. Specific heat is
- The amount of heat energy required to raise the temperature of 1gm of substance 1°C.
 - The amount of heat energy required to lower the temperature of 1gm of substance 1°C.
 - The amount of heat energy required to change the temperature of 1gm of substance .
 - The amount of heat energy required to change the temperature of any liquid.
15. A plane flying from west to east in Canada, (example from Calgary to Winnipeg) flies faster from west to east than it does from east to west because of:
- | | | |
|----------------|------------------|--------------------|
| a) Tail winds | b) Chinook winds | c) Jet Stream |
| d) Gulf Stream | e) Trade winds | f) Coriolis Effect |

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16. Heat energy that travels through space

- a) Conduction b) Convection c) Radiation

17. The method of heating the oceans on earth

- a) Conduction b) Convection c) Radiation

18. The “domino effect” of transferring heat.

- a) Conduction b) Convection c) Radiation

19. The level of the atmosphere with the northern lights

- a) mesosphere b) troposphere c) stratosphere d) thermosphere

20. The layer where meteorites burn up

- a) mesosphere b) troposphere c) stratosphere d) thermosphere

21. The layer that contains the ozone layer

- a) mesosphere b) troposphere c) stratosphere d) thermosphere

22. The layer of the atmosphere where weather happens

- a) mesosphere b) troposphere c) stratosphere d) thermosphere

23. The layer of the atmosphere that has a temperature of over 600°C

- a) mesosphere b) troposphere c) stratosphere d) thermosphere

24. The layer of the atmosphere immediately above the stratosphere

- a) mesosphere b) troposphere c) stratosphere d) thermosphere

25. This layer extends about 12km above the earth’s surface

- a) mesosphere b) troposphere c) stratosphere d) thermosphere

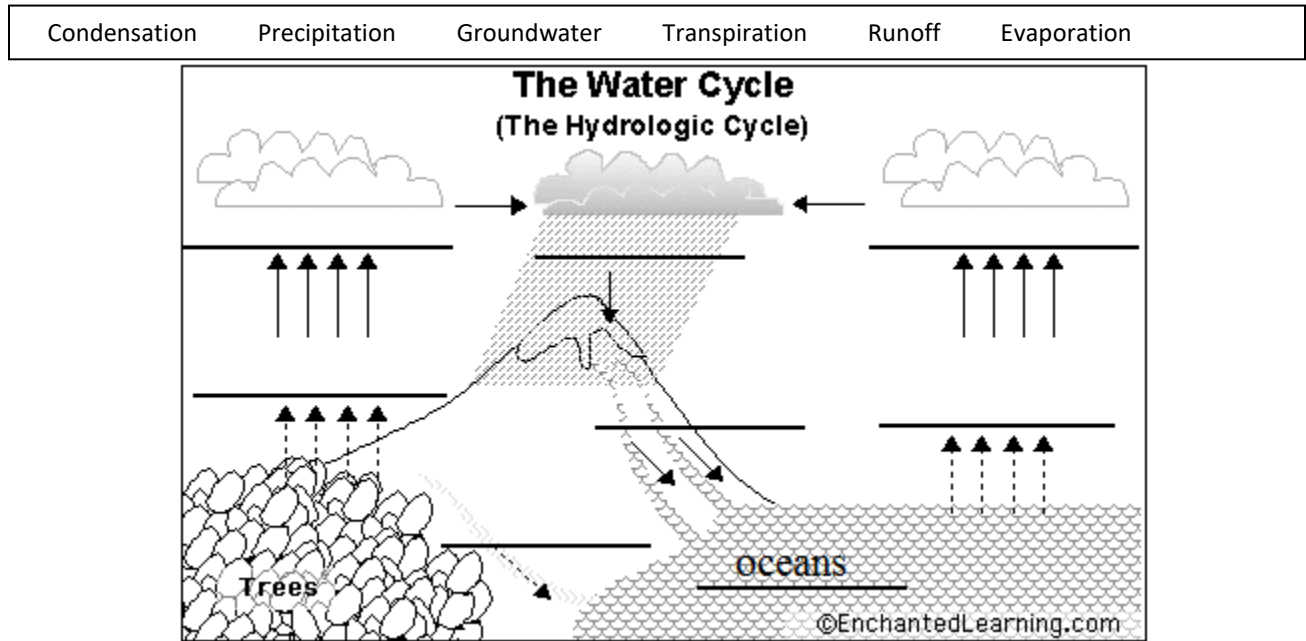
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Part D. Diagrams - 18 points

1. Label the diagram of the water cycle using the diagram below. One term will be used more than once. **(7 points)**



2. a) In the space below arrange the following wavelengths in the electromagnetic spectrum from the longest to the shortest. (visible light, microwaves, infrared, radio waves, gamma, X-rays, ultra violet waves) **(7 points)**

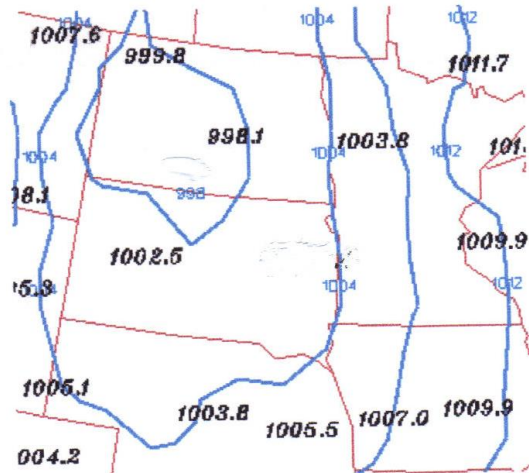
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>Longest wavelength</p> <p>↑</p> <p>↓</p> <p>Shortest wavelength</p>
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3. Use the diagram below to identify if it is showing a high pressure or low-pressure system and explain how you know. (2 points)



4. Identify whether this is a picture of a normal year or an El Niño year and how you know. (2 points)

