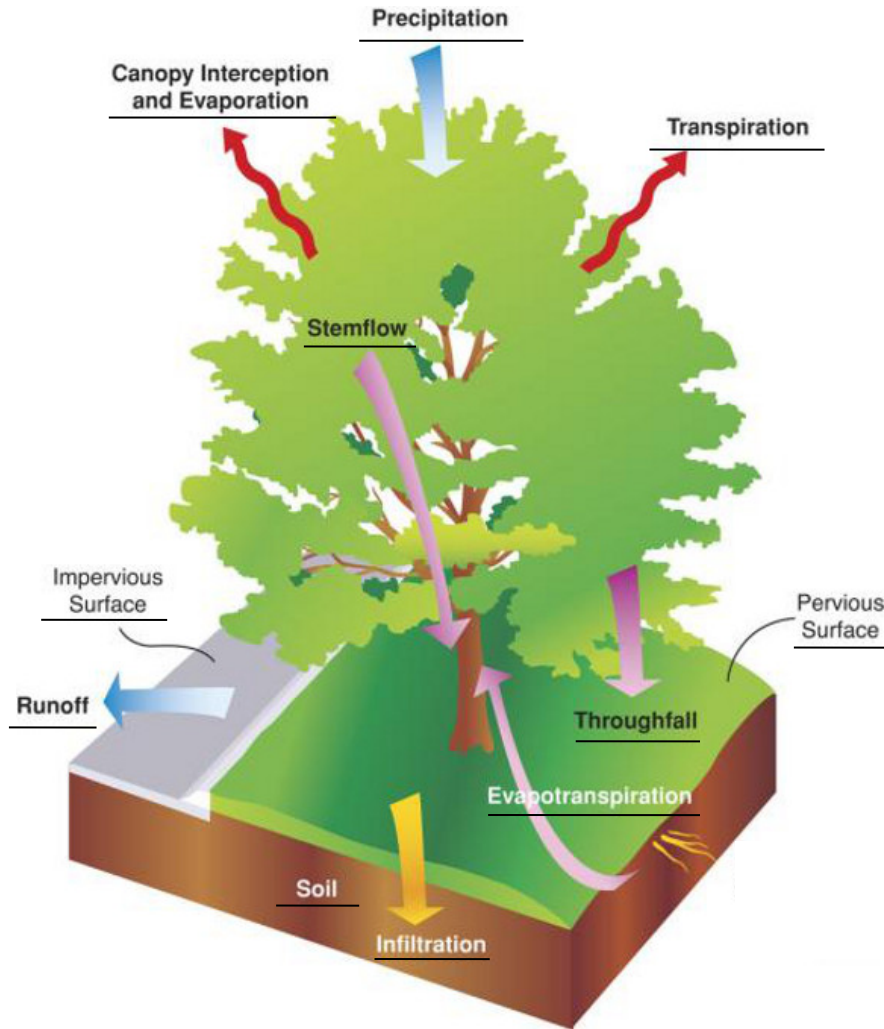


OREGON ENVIROTHON 2015 AQUATIC ECOLOGY TEST



Question 1 (3 points):

From the diagram on the left, list the underlined terms that help reduce stormwater runoff.

A: transpiration, canopy interception and evaporation, stemflow, evapotranspiration, infiltration, and pervious surface.

Question 2 (2 points):

Of the terms listed in question 1, list the mechanisms by which the **tree** helps reduce stormwater runoff.

A: transpiration, canopy interception, and evaporation, stemflow, and evapotranspiration.

Question 3 (1 point)

How do trees help provide stormwater benefits?

- a. Pollution reduction through interstitial reduction
- b. Pollution reduction through xylaphloem
- c. Pollution reduction through sweating
- d. Pollutant reduction through biological processes

Answer: D.

Question 4 (1 point)

The phase change process from ice to vapor is called _____.

- a. condensation
- b. evaporation
- c. sublimation
- d. vaporization

Answer: C

7/7 points

Question 5 (1 point)

Impervious surfaces, such as roads and roofs, inhibit which process of the water cycle most significantly?

- a. condensation
- b. evaporation
- c. infiltration
- d. precipitation

Answer: C

Question 6 (1 point)

Water that infiltrates into the ground can never become water that flows in a stream.

- a. True
- b. False

Answer: False

Question 7 (1 point)

According to the US EPA, non-point pollution is the nation's largest water quality problem.

- a. True
- b. False

Answer: True

Question 8 (3 points)

Water quality standards are established to protect beneficial uses of the State's waters.

Beneficial uses are designated for each water of the state, many for all waters in a basin, in the Oregon Administrative Rules for water quality standards

List **six** beneficial uses of the State's waters (lakes, rivers, and streams)

Answer can include any of the following beneficial uses:

- | | |
|--------------------------|--|
| domestic water supply | livestock watering |
| fishing | aesthetic quality |
| industrial water supply | fish and aquatic life |
| boating | hydropower |
| irrigation | wildlife and hunting |
| water contact recreation | commercial navigation and transportation |

6/13 points

Question 9 (2 points):

Oncorhynchus tshawytscha is Oregon's state fish. What is the common name of this fish and what is its conservation status in Oregon?

Answer: Common names: Chinook salmon (also known as spring, king and tyee salmon) Status: Threatened

Question 10 (1 point):

Salmon are anadromous. What does this mean?

Answer: Migrating from the sea to fresh water to spawn.

Question 11 (3 points)

How do trees help play a role in pollution reduction for aquatic animals regarding the following pollutants?

Temperature	
Turbidity/total suspended solids	
Nutrients	

Answer:

Temperature	Trees shade the water, helping to keep it cool
Turbidity/total suspended solids	Tree roots hold stream banks, helping reduce erosion and limiting turbidity and TSS events
Nutrients	Trees can form buffers that help reduce input from nutrients and other chemicals

Question 12 (2 points)

List two ways that trees provide instream benefits to aquatic animals.

- 1.
- 2.

Answers: provide food source, structural habitat, other

Total 8/21 points

Question 13 (2 points)

Which of the following are considered Green Stormwater Infrastructure that help mitigate stormwater pollution?

- a. green roof
- b. oxbow chain
- c. rain drain
- d. rain garden

Answers: a and d

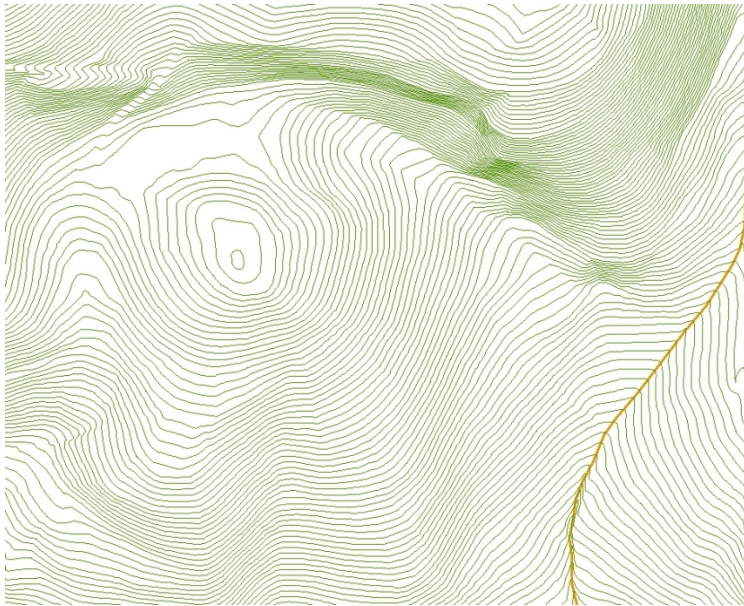
Question 14 (2 points)

Name two factors that influence the water level in a well.

- 1.
- 2.

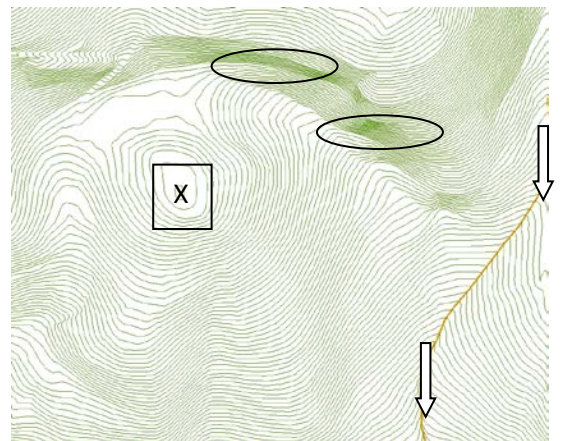
Possible answers: depth of the well, the type (confined or unconfined) of aquifer the well taps, the amount of pumping that occurs in this aquifer, and the amount of recharge occurring.

Question 15 (3 points):



- a. Place an X on the top of the hill
- b. Circle one of the two steepest slopes
- c. Place arrow(s) indicating the directional flow of the brook.

Answer:



7/28 points

Question 16 (3 points):

List the common name for the macroinvertebrates.

The macroinvertebrate labeled A is _____

The macroinvertebrate labeled B is _____

The macroinvertebrate labeled C is _____

Question 17 (3 points).

What is the temperature of your sample water? _____

What is the amount of phosphate in your sample water? _____

What is the amount of nitrate in your sample water? _____

Question 18(1 point)

Based on your results to question 16, what is the rating of the water?

Question 18 (2 points):

Which of the following are considered aquatic nuisance species?

- a. hydrilla
- b. nutria
- c. purple loosestrife
- d. rusty crayfish

Answer: a-d

Question 19 (2 points):

Aquatic nuisance species can cause economic and ecological impacts. List two ecological impacts.

1.

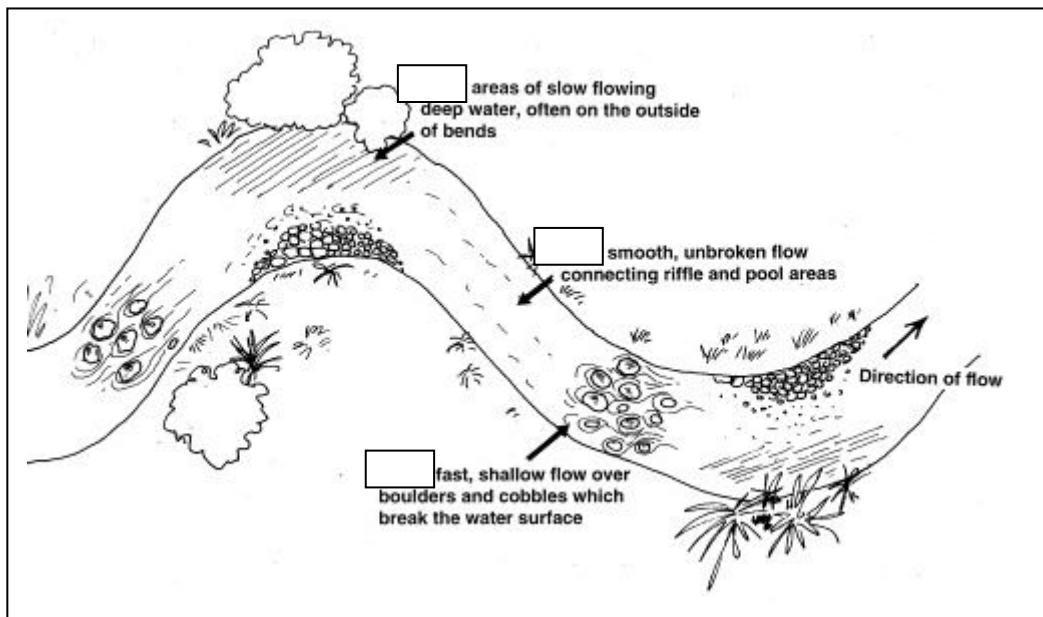
2.

Answers vary:

impacts include food-web disruptions, native species reduction or loss (and dependent species), water quality degradation, and the introduction of pathogens. Furthermore, ecosystem disruptions and imbalances can result in increased danger to human health. Other. The impacts of invasive species are second only to habitat destruction as a cause of global biodiversity loss. In fact, introduced species are a greater threat to native biodiversity than pollution, harvest, and disease combined. ANS cause severe and permanent damage to the habitats they invade by reducing the abundance of native species and altering ecosystem processes. They impact native species by preying upon them, competing with them for food and space, interbreeding with them, or introducing harmful pathogens and parasites. ANS may also alter normal functioning of the ecosystem by altering fire regimes, hydrology, nutrient cycling and productivity.

Question 20 (3 points)

Label the pool, riffle, and run in the diagram.



5 /42 points

Question 21 (4 points):

Match the source of pollutant (right-hand column) to the pollutant (left-hand column).

High levels of *E. coli* bacteria _____

High levels of nitrogen _____

High turbidity level _____

Low dissolved oxygen _____

A. Fertilizer

B. Dirt

C. Warm water

D. Raw sewage; pet waste

Answer:

E. coli D

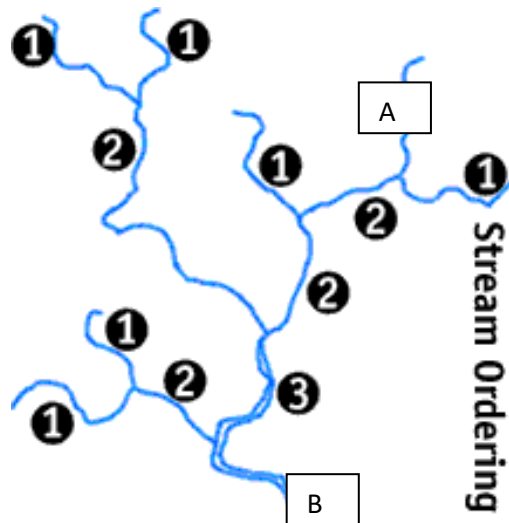
Nitrogen: A

Turbidity: B

DO: C

Question 22 (2 points):

Draw the watershed boundary in the diagram below.



Question 23 (1 point):

What is the stream order of this headwater stream that is missing from box A?

Answer: 1

Question 24 (1 point):

What is the stream order that is missing from box B?

Answer: 3

Total 8/50 points