

Fluid Dynamics Unit Test

Student Name _____

Class _____

WHMIS

For each of the following hazardous products match the correct **WHMIS** symbol

1 Flammable _____

A.



2 Corrosive _____

B.



3 Dangerously Reactive _____

C.



The Many Uses of Fluids

4. Anything that has no fixed shape and can flow and usually is a liquid or a gas is called a ...

- A. hydraulic
- B. pneumatic
- C. compressed gas
- D. fluid

5. To move a solid, like dirt, more easily, it is mixed with water making this - a ...

- A. mess
- B. sludge
- C. slurry
- D. colloid

6. Coal mining operations originally used conveyor belts to move the oil sand from the mine to the processing plant, but it proved to be very expensive to continue operating in this way. They now use ...

- A. a slurry pipeline
- B. transport trucks
- C. very large bulldozers
- D. monster dump trucks

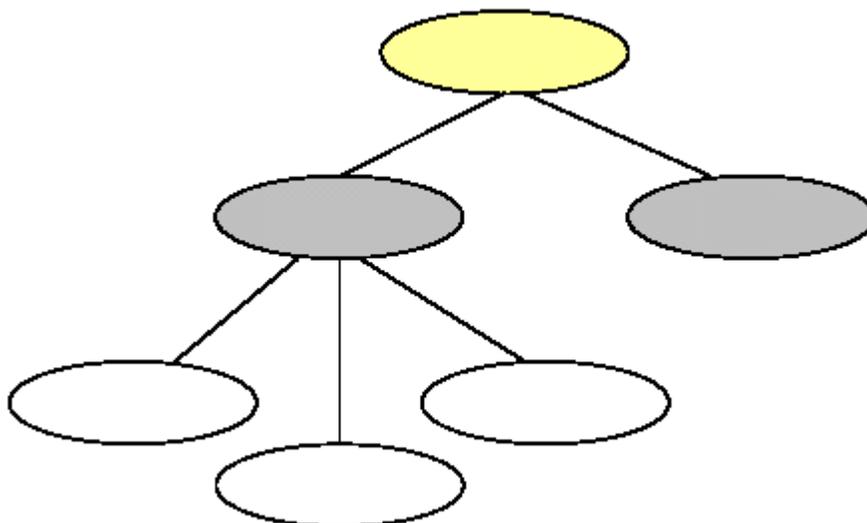
Pure Substances and Mixtures

7. Mixtures can be made with solids, liquids or gases. The kind of mixture or solution that is referred to as heterogeneous is a mixture or solution which ...

- A. is clear
- B. is cloudy
- C. appears as a single substance
- D. all the parts are visible

8. Use the following words to complete a visual organizer, showing the relationships between and among the words provided. **Use each word only once.**

**Pure Substances, Matter, Solutions, Mixtures,
Mechanical Mixtures, Suspensions and Colloids**



9. For some fluids, paper chromatography is a test that determines whether a substance is a ...
- mixture or a colloid
 - pure substance or a mixture
 - colloid or suspension
 - mixture or suspension
10. An insulating foam is sprayed into cracks to seal them. The gas and liquid together make a ...
- colloid
 - suspension
 - mechanical mixture
 - solution

Concentration and Solubility

11. Concentration amounts can be stated in many different ways. 50g per 100ml is one common way. Another way is to express it as a percent, like they do in juice containers. If an apple juice Tetra Pak had 20 grams of apple juice per 100ml, the concentration would be ...
- 2%
 - 8%
 - 20%
 - 80%
12. When comparing concentrations of different solutions, it is necessary to compare the concentrations in the same volume. Which of the following solutions would have the highest concentration?
- 5.6g per 10ml
 - 12g per 25ml
 - 25g per 50ml
 - 50%

13. The difference between a saturated and unsaturated solution is that an unsaturated solution can dissolve more ...
- A. solvent
 - B. solute
 - C. particles
 - D. spaces

The Particle Model and the Behavior of Mixtures

17. Diffusion occurs when the particles of a solute ...
- A. are heated and cooled very quickly
 - B. fill the spaces between the particles of the solvent
 - C. are dissolved by a change of state
 - D. attach to particles of the solvent
18. The particle model can explain how some substances dissolve. The attraction between particles of potassium permanganate and water is ...
- A. opposite
 - B. weak
 - C. strong
 - D. missing

Viscosity & Flow Rate

19. The viscosity of liquids can be compared by observing their ...
- A. clarity
 - B. volume
 - C. resistance to flow
 - D. resistance to acceleration
20. Using the ramp method to determine viscosity, a student found out that Fluid A has a flow rate of 10.5 ml, per second. Fluid B has a flow rate of 11.3 ml, per second. Compared to fluid A, fluid B is ...
- A. more viscous
 - B. less viscous
 - C. more dense
 - D. less dense
21. After your dad or mom has started the cold car in the morning, they may mention that the viscosity of the motor oil would be increased by ...
- A. letting the car idle
 - B. charging the battery
 - C. shutting off the engine
 - D. putting on their seatbelt

Density

22. The particles in a liquid cannot support the particles of a solid, unless the ...
- A. liquid is less dense
 - B. liquid particles have less attractive force between them
 - C. solid particles have more attractive force between them
 - D. solid is less dense
23. Which of the following statements best describes the correct difference, in terms of density
- A. liquids are less dense than gases
 - B. gases are less dense than liquids
 - C. gases are more dense than solids
 - D. liquids are more dense than solids

Buoyancy

24. Large ocean liners, and cargo ships, can float on the water because ...
- A. its average density is lower than saltwater
 - B. the metal it was made of is less dense than water
 - C. the metal is more dense and therefore can float
 - D. saltwater is more dense and can hold up steel
25. Fresh and saltwater systems have different densities. All cargo ships have a special line that shows how much the ship should be safely loaded so it won't sink as it goes from freshwater to saltwater. This line is called the ...
- A. Sinking Line
 - B. Buoyancy Line
 - C. Plimsoll Line
 - D. Density Line
26. Density and buoyant force are related. As the ...
- A. density of a fluid increases, the buoyant force decreases
 - B. density of a fluid decreases, the buoyant force increases
 - C. density of a fluid increases, the buoyant force remains the same
 - D. density of a fluid decreases, the buoyant force decreases

Compression

27. A gas can be compressed more than a liquid because the gas particles ...
- A. can increase their energy level more than the liquid particles
 - B. need extra energy to take up more space
 - C. have more space between them than the liquid particles do
 - D. need less energy to take up more space
28. When a force is applied to a substance and the particles cannot be forced closer together the substance is said to be incompressible. What happens to the force?
- A. It changes the volume
 - B. It is absorbed by the substance
 - C. It is applied throughout the substance
 - D. It changes direction

29. The incompressibility of a fluid enables it to be useful when the fluid is used in a ...
- A. bicycle air pump
 - B. closed system
 - C. garden hose
 - D. open system

Pressure

30. Pressure is the amount of force applied to a given area. This is measured in ...
- A. Newtons
 - B. Meters squared
 - C. Pascal
 - D. Compression
31. When we suck on a straw in a Tetra Pak juice container, the sides of the container collapse. This happens because ...
- A. we are increasing the pressure inside the container
 - B. the atmospheric pressure is collapsing the walls of the container
 - C. the pressure inside the container is increased and collapses from the added pressure
 - D. we are lowering the strength of the container when we suck on the straw
32. Pascal's Law states that an enclosed fluid transmits pressure in ...
- A. an upward direction
 - B. a downward direction
 - C. a sideways direction
 - D. all directions equally

Technologies Based on Solubility

33. There are many ingredients in detergents that have a very important role. This ingredient removes protein stains. It is called ...
- A. a filler
 - B. a surfactant
 - C. a fragrance
 - D. an enzyme
34. ' S C U B A ' stands for ...
- A. Special Cell Used By Aquanauts
 - B. Submerging Cubicle Used Below Air
 - C. Self Contained Underwater Breathing Apparatus
 - D. Submerged Container Using Breathable Air
35. When a diver rises too quickly, the nitrogen in the body bubbles out of the blood and tissues, which can collect in different parts of the body causing extreme pain and eventually death. This condition, known as 'the bends' is treated in a special pressure chamber. The chamber enables the nitrogen 'bubbles' to re-dissolve back into the blood and tissues. It is called a ...
- A. bends chamber
 - B. pressure chamber
 - C. nitrogen chamber
 - D. hyperbaric chamber

Technologies Based on Flow Rates and Moving Fluids

36. A pump that uses an upward stroke to suck the liquid in and then a downward stroke to force the liquid out is called a ...
- A. piston pump
 - B. diaphragm pump
 - C. Archimedes screw
 - D. pressure pump
37. A computerized device that cleans a natural gas pipeline with brushes, as it moves through it, is called a pipeline ...
- A. dog
 - B. pig
 - C. cow
 - D. rat
38. When you flush your toilet, a string or chain is attached to the handle, which opens this device, allowing water to enter, and closes this device, allowing water to refill the tank. The device indicated in the diagram by the arrow is called a 'flapper ...
- A. handle
 - B. toilet seat
 - C. brass ring
 - D. valve

Designing A Working model of a Fluid-Using Device

39. When air is released in a submarine it is able to dive. This process enable the submarine to ...
- A. increase its buoyancy
 - B. decrease its viscosity
 - C. increase its density
 - D. decrease its pressure
40. Tanks, which fill up and empty with compressed air, enable a submarine to move up and down in the water. These **tanks** are called ...
- A. bulged
 - B. ballast
 - C. balloon
 - D. breakwater

Fluid Dynamics Unit Test

ANSWER KEY

Student Name _____

Class _____

WHMIS

For each of the following hazardous products match the correct **WHMIS** symbol1 Flammable (**C**)

A.

2 Corrosive (**A**)

B.

3 Dangerously Reactive (**B**)

C.



The Many Uses of Fluids

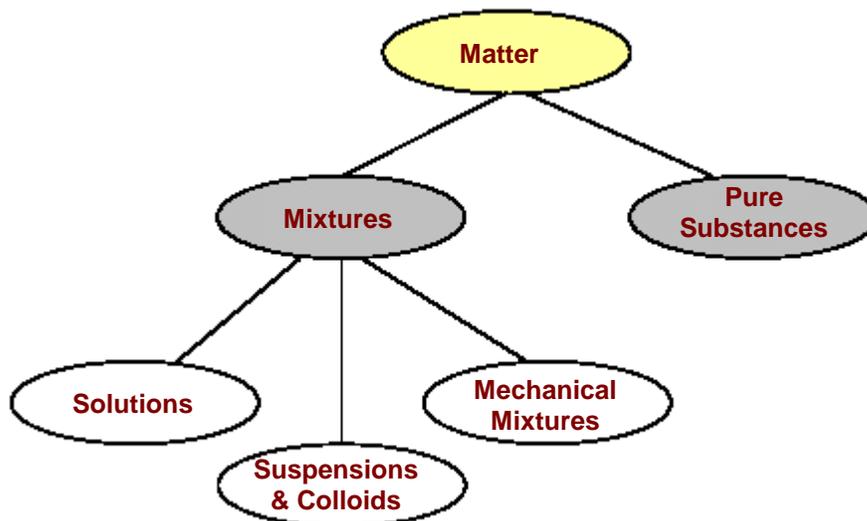
4. Anything that has no fixed shape and can flow and usually is a liquid or a gas is called a ...
- A. hydraulic
 - B. pneumatic
 - C. compressed gas
 - D. fluid
5. To move a solid, like dirt, more easily, it is mixed with water making this - a ...
- A. mess
 - B. sludge
 - C. slurry
 - D. colloid
6. Coal mining operations originally used conveyor belts to move the oil sand from the mine to the processing plant, but it proved to be very expensive to continue operating in this way. They now use ...
- A. a slurry pipeline
 - B. transport trucks
 - C. very large bulldozers
 - D. monster dump trucks

Pure Substances and Mixtures

7. Mixtures can be made with solids, liquids or gases. The kind of mixture or solution that is referred to as heterogeneous is a mixture or solution which ...
- A. is clear
 - B. is cloudy
 - C. appears as a single substance
 - D. all the parts are visible

8. Use the following words to complete a visual organizer, showing the relationships between and among the words provided. **Use each word only once.**

**Pure Substances, Matter, Solutions, Mixtures,
Mechanical Mixtures, Suspensions and Colloids**



9. For some fluids, paper chromatography is a test that determines whether a substance is a ...
- mixture or a colloid**
 - pure substance or a mixture**
 - colloid or suspension**
 - mixture or suspension**
10. An insulating foam is sprayed into cracks to seal them. The gas and liquid together make a ...
- colloid**
 - suspension**
 - mechanical mixture**
 - solution**

Concentration and Solubility

11. Concentration amounts can be stated in many different ways. 50g per 100ml is one common way. Another way is to express it as a percent, like they do in juice containers. If an apple juice Tetra Pak had 20 grams of apple juice per 100ml, the concentration would be ...
- 2%**
 - 8%**
 - 20%**
 - 80%**
12. When comparing concentrations of different solutions, it is necessary to compare the concentrations in the same volume. Which of the following solutions would have the highest concentration?
- 5.6g per 10ml**
 - 12g per 25ml**
 - 25g per 50ml**
 - 50%**

13. The difference between a saturated and unsaturated solution is that an unsaturated solution can dissolve more ...
- A. solvent
 - B. solute**
 - C. particles
 - D. spaces

The Particle Model and the Behavior of Mixtures

17. Diffusion occurs when the particles of a solute ...
- A. are heated and cooled very quickly
 - B. fill the spaces between the particles of the solvent**
 - C. are dissolved by a change of state
 - D. attach to particles of the solvent
18. The particle model can explain how some substances dissolve. The attraction between particles of potassium permanganate and water is ...
- A. opposite
 - B. weak
 - C. strong**
 - D. missing

Viscosity & Flow Rate

19. The viscosity of liquids can be compared by observing their ...
- A. clarity
 - B. volume
 - C. resistance to flow**
 - D. resistance to acceleration
20. Using the ramp method to determine viscosity, a student found out that Fluid A has a flow rate of 10.5 ml, per second. Fluid B has a flow rate of 11.3 ml, per second. Compared to fluid A, fluid B is ...
- A. more viscous
 - B. less viscous**
 - C. more dense
 - D. less dense
21. After your dad or mom has started the cold car in the morning, they may mention that the viscosity of the motor oil would be increased by ...
- A. letting the car idle**
 - B. charging the battery
 - C. shutting off the engine
 - D. putting on their seatbelt

Density

22. The particles in a liquid cannot support the particles of a solid, unless the ...
- A. liquid is less dense
 - B. liquid particles have less attractive force between them
 - C. solid particles have more attractive force between them
 - D. solid is less dense
23. Which of the following statements best describes the correct difference, in terms of density
- A. liquids are less dense than gases
 - B. gases are less dense than liquids
 - C. gases are more dense than solids
 - D. liquids are more dense than solids

Buoyancy

24. Large ocean liners, and cargo ships, can float on the water because ...
- A. its average density is lower than saltwater
 - B. the metal it was made of is less dense than water
 - C. the metal is more dense and therefore can float
 - D. saltwater is more dense and can hold up steel
25. Fresh and saltwater systems have different densities. All cargo ships have a special line that shows how much the ship should be safely loaded so it won't sink as it goes from freshwater to saltwater. This line is called the ...
- A. Sinking Line
 - B. Buoyancy Line
 - C. Plimsoll Line
 - D. Density Line
26. Density and buoyant force are related. As the ...
- A. density of a fluid increases, the buoyant force decreases
 - B. density of a fluid decreases, the buoyant force increases
 - C. density of a fluid increases, the buoyant force remains the same
 - D. density of a fluid decreases, the buoyant force decreases

Compression

27. A gas can be compressed more than a liquid because the gas particles ...
- A. can increase their energy level more than the liquid particles
 - B. need extra energy to take up more space
 - C. have more space between them than the liquid particles do
 - D. need less energy to take up more space
28. When a force is applied to a substance and the particles cannot be forced closer together the substance is said to be incompressible. What happens to the force?
- A. It changes the volume
 - B. It is absorbed by the substance
 - C. It is applied throughout the substance
 - D. It changes direction

29. The incompressibility of a fluid enables it to be useful when the fluid is used in a ...
- A. bicycle air pump
 - B. closed system**
 - C. garden hose
 - D. open system

Pressure

30. Pressure is the amount of force applied to a given area. This is measured in ...
- A. Newtons
 - B. Meters squared
 - C. Pascal**
 - D. Compression
31. When we suck on a straw in a Tetra Pak juice container, the sides of the container collapse. This happens because ...
- A. we are increasing the pressure inside the container
 - B. the atmospheric pressure is collapsing the walls of the container**
 - C. the pressure inside the container is increased and collapses from the added pressure
 - D. we are lowering the strength of the container when we suck on the straw
32. Pascal's Law states that an enclosed fluid transmits pressure in ...
- A. an upward direction
 - B. a downward direction
 - C. a sideways direction
 - D. all directions equally**

Technologies Based on Solubility

33. There are many ingredients in detergents that have a very important role. This ingredient removes protein stains. It is called ...
- A. a filler
 - B. a surfactant
 - C. a fragrance
 - D. an enzyme**
34. ' S C U B A ' stands for ...
- A. Special Cell Used By Aquanauts
 - B. Submerging Cubicle Used Below Air
 - C. Self Contained Underwater Breathing Apparatus**
 - D. Submerged Container Using Breathable Air
35. When a diver rises too quickly, the nitrogen in the body bubbles out of the blood and tissues, which can collect in different parts of the body causing extreme pain and eventually death. This condition, known as 'the bends' is treated in a special pressure chamber. The chamber enables the nitrogen 'bubbles' to re-dissolve back into the blood and tissues. It is called a ...
- A. bends chamber
 - B. pressure chamber
 - C. nitrogen chamber
 - D. hyperbaric chamber**

Technologies Based on Flow Rates and Moving Fluids

36. A pump that uses an upward stroke to suck the liquid in and then a downward stroke to force the liquid out is called a ...
- A. piston pump
 - B. diaphragm pump**
 - C. Archimedes screw
 - D. pressure pump
37. A computerized device that cleans a natural gas pipeline with brushes, as it moves through it, is called a pipeline ...
- A. dog
 - B. pig**
 - C. cow
 - D. rat
38. When you flush your toilet, a string or chain is attached to the handle, which opens this device, allowing water to enter, and closes this device, allowing water to refill the tank. The device indicated in the diagram by the arrow is called a 'flapper ...
- A. handle
 - B. toilet seat
 - C. brass ring
 - D. valve**

Designing A Working model of a Fluid-Using Device

39. When air is released in a submarine it is able to dive. This process enable the submarine to ...
- A. increase its buoyancy
 - B. decrease its viscosity
 - C. increase its density**
 - D. decrease its pressure
40. Tanks, which fill up and empty with compressed air, enable a submarine to move up and down in the water. These **tanks** are called ...
- A. bulged
 - B. ballast**
 - C. balloon
 - D. breakwater