

Fluid Technologies

Name

Class**Technologies Based on Solubility**

1. The ingredient in detergent that makes detergent smell nice is called ...
 - A. a filler
 - B. a surfactant
 - C. a fragrance
 - D. an enzyme
2. A detergent is a substance that can remove dirt from different kinds of fabric. The cleaning agent in the detergent attaches itself to the dirt particles. It is called ...
 - A. detergent
 - B. suspension
 - C. surfactant
 - D. enzyme
3. The ingredient in detergent that removes protein stains is called ...
 - A. a filler
 - B. a surfactant
 - C. a fragrance
 - D. an enzyme
4. The reason that phosphates pollute the environment when they are present in large amounts is because they ...
 - A. make the water dirty
 - B. increase plant growth
 - C. kill fish and shrimp
 - D. remove the oxygen
5. The acronym 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
6. A diver can get a condition, known as 'the bends', which is treated in a special pressure chamber, called a hyperbaric chamber. The chamber enables nitrogen 'bubbles' to ...
 - A. evaporate from the body to ease the pain
 - B. re-dissolve back into the blood and tissues
 - C. escape out of the blood and tissues and enter other cells
 - D. cause extreme pain as they are re-dissolved out of the blood and tissues
7. Dry cleaning involves using a chemical that attaches itself to the dirt and then is removed. This modern day chemical is then reused over and over again (recycled). It is called ...
 - A. PERC
 - B. POTASSIUM
 - C. PETROLRUM
 - D. PHOSPHORUS

Technologies Based on Flow Rates and Moving Fluids

8. A device that uses rotational motion to move a liquid vertically called a ...
- A. pistol pump
 - B. diaphragm pump
 - C. Archimedes screw
 - D. pressure pump
9. A device that moves a fluid into or through something is called a pump. A pump operating in your body is your ...
- A. kidney
 - B. liver
 - C. spleen
 - D. heart
10. 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
11. Valves are important devices used in any system for moving fluids. The purpose of a valve is to ...
- A. control the flow of a fluid
 - B. provide pressure for the fluid to flow
 - C. enable fluids to flow unrestricted
 - D. maintain fluid consistency
12. 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. float
 - B. pump
 - C. valve
 - D. brass ring
13. A computerized pipeline pig is a device that ...
- A. monitors different densities in the fluids flowing in a pipeline
 - B. repairs fractures and cracks in a pipeline
 - C. uses chemicals to clean a pipeline
 - D. cleans a pipeline with brushes

Designing A Working model of a Fluid-Using Device

14. When air is added to a submerged submarine it is able to resurface because its overall ...
- A. buoyancy decreases
 - B. pressure increase
 - C. density decreases
 - D. viscosity increases

15.

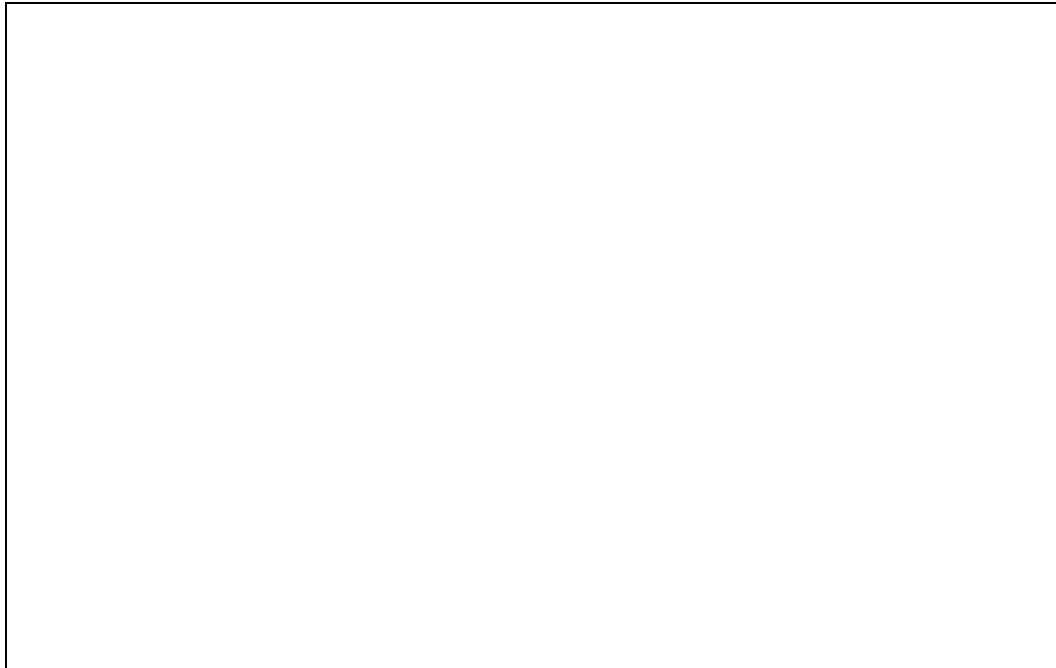


The '*Trieste*' consists of a large float with a metal sphere underneath

- It was able to submerge 11 km below the surface of the water to explore ...

- A. Marianas Mountains
 - B. Marianas Trench
 - C. Marianas Abyss
 - D. Marianas Faults
16. The '*Trieste*' is designed to go extremely deep in the ocean. This type of submersible is called a ...
- A. submarine
 - B. SCUBA
 - C. bathyscaph
 - D. trencher
17. Fish can change their buoyancy naturally. This is done with a *special gas-filled sac* called a ...
- A. ballast
 - B. bender
 - C. buoy
 - D. bladder
18. When air is released in a submarine it is able to dive. This process enables the submarine to ...
- A. increase its buoyancy
 - B. decrease its viscosity
 - C. increase its density
 - D. decrease its pressure
19. 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
20. For a submarine or submersible to re-surface, this is forced back into the tanks through valves at the top ...
- A. seawater
 - B. hydrogen
 - C. compressed air
 - D. carbonated water

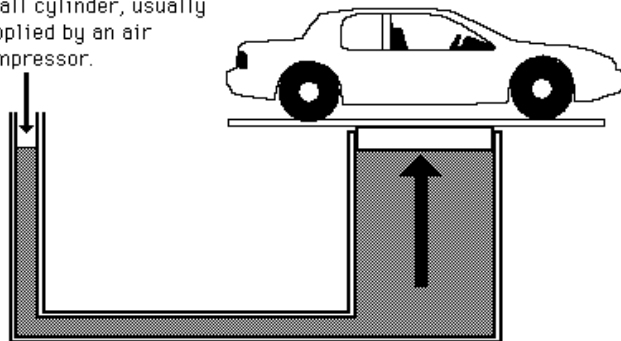
21. Illustrate how '*Archimedes Screw*' is used as a pump to remove water from the hole of a ship. (4 marks)



22. Explain in detail how science principles are used to operate a hydraulic lift.

Hydraulic Lift

Pressure on fluid in small cylinder, usually supplied by an air compressor.



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ANSWER KEY

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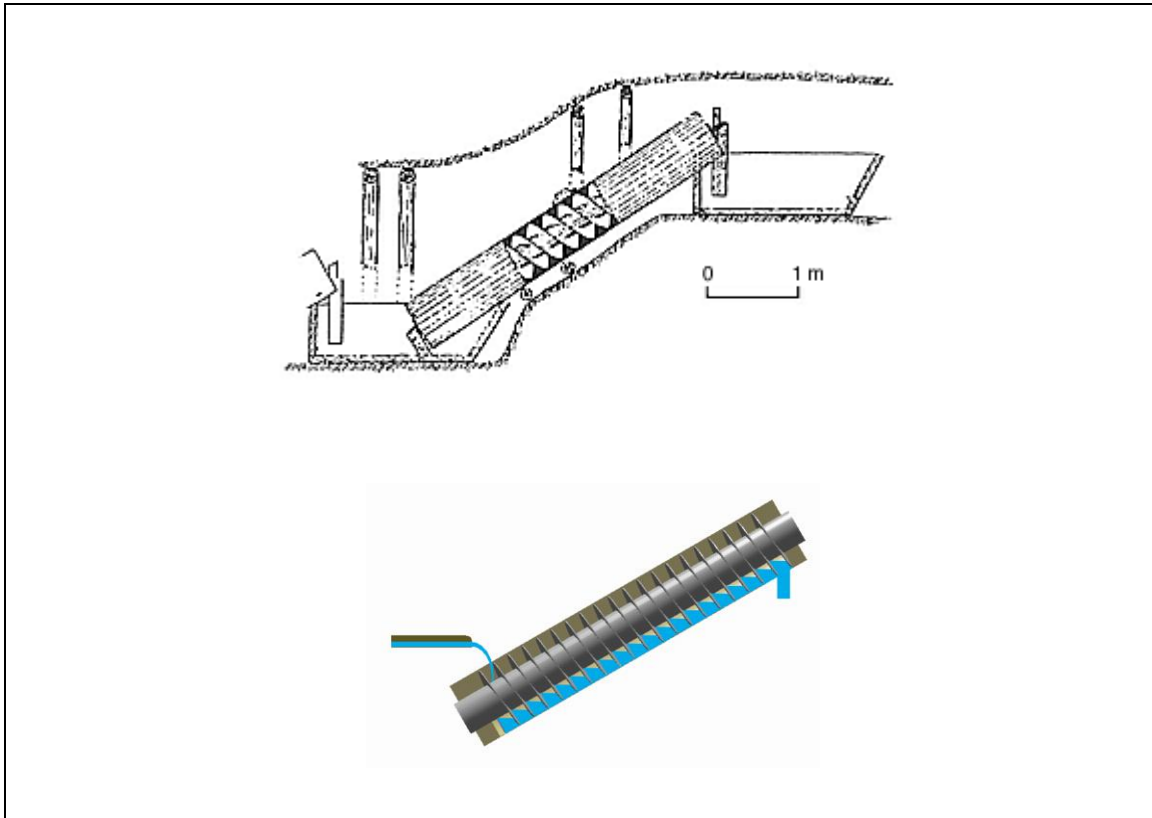
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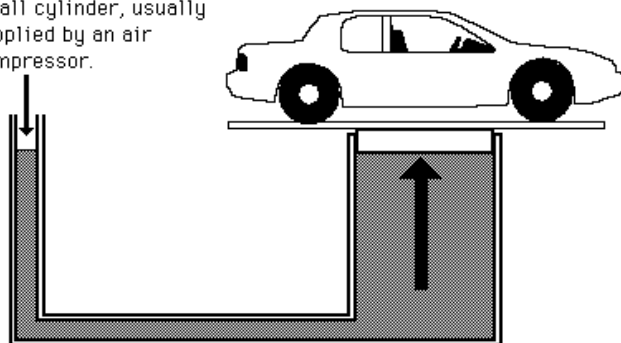
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Hydraulic Lift

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- 1 Mark for showing different size pistons
- 1 Mark for showing arrows going in all directions
- 1 Mark for identifying **Pascal's Law**

1 Mark for indicating the force us applied equally in all directions throughout the fluid

1 Mark for indicating the advantage gained is Force (the disadvantage is distance)