

CP Physics -- Exam #7 Practice

Name: _____ Class: _____ Date: _____

Write True or False in the space provided.

- 1) Pressure at the bottom of a lake depends on the weight density of the lake water and on the volume of the lake. 1) _____
- 2) The buoyant force on a submerged rock is equal to its weight in the water. 2) _____
- 3) An immersed object is buoyed up by a force equal to the volume of the fluid it displaces. 3) _____
- 4) An object will sink in water if its density is greater than the density of water. 4) _____
- 5) The weight of fluid displaced by a floating object is equal to the weight of the object. 5) _____
- 6) Pressure in a fluid is inversely proportional to the depth at which the pressure measurement is taken. 6) _____
- 7) Because concrete is much denser than water, a ship made of concrete won't float. 7) _____
- 8) A fluid can be either a gas or a liquid. 8) _____
- 9) Suppose gas molecules inside a box are held at the same temperature. As the volume of the box increases, the pressure increases also. 9) _____
- 10) An instrument used for measuring atmospheric pressure that uses a small metal box containing a partial vacuum is called an aneroid barometer. 10) _____
- 11) Where there is a narrow place in a river, water normally flows faster than usual. 11) _____
- 12) About 99 percent of the earth's atmosphere is below an altitude of 30 km. 12) _____
- 13) Bernoulli's principle helps explain why airplanes stay in the air. 13) _____

Choose the best answer to each question and write the appropriate letter in the space provided.

- 14) Pressure in a liquid depends on the _____. 14) _____
A) depth of the measuring point.
B) volume of the liquid.
C) density of the liquid.
D) mass of the liquid.
E) both A and C
- 15) Water pressure on a submerged object is greatest against the _____. 15) _____
A) Water pressure is the same against all surfaces of the object
B) top of the object
C) sides of the object
D) bottom of the object
E) none of the above
- 16) The pressure at the bottom of a jug filled with water does NOT depend on the _____. 16) _____
A) depth of the liquid
B) acceleration due to gravity
C) density of water
D) surface area of the water
E) none of the above
- 17) Archimedes' principle says that an object is buoyed up by a force that is equal to the _____. 17) _____
A) volume of the fluid displaced
B) weight of the fluid displaced
C) mass of the fluid displaced
D) mass of the object
E) none of the above
- 18) Where is the buoyant force on a submerged rock greater, near the surface of the fluid or 10 m below the surface? 18) _____
A) 10 m below the surface
B) Near the surface
C) Neither place -- the buoyant force is independent of depth
- 19) The reason objects immersed in a fluid experience an upward buoyant force is because fluid pressure on the bottom of the object is greater than fluid pressure on the top of the object. 19) _____
A) True
B) False

- 20) The reason a life jacket helps you float is that _____. 20) _____
A) the jacket repels water
B) the jacket has the same density as an average human
C) the jacket makes you weigh less
D) you and the jacket together have density less than your density alone.
- 21) An egg is placed at the bottom of a bowl filled with water. Salt is slowly added to the water until the egg rises and floats. From this experiment, one can conclude that _____. 21) _____
A) the density of salt water exceeds the density of egg.
B) salt sinks to the bottom.
C) calcium in the eggshell is repelled by sodium chloride.
D) buoyant forces do not always act upward.
E) none of the above
- 22) If an object has a density equal to the density of water, it will _____. 22) _____
A) float
B) neither float nor sink, but stay anywhere it is put
C) sink
- 23) The reason an iron ship doesn't sink is that _____. 23) _____
A) air inside decreases its weight
B) the iron displaces more water than it would if it were in a solid block
C) iron is less dense than water
D) Nonsense -- an iron ship will always sink
- 24) When first put in water, a plastic toy boat will sink until _____. 24) _____
A) it displaces a weight of water equal to its own weight
B) it displaces a volume of water equal to its own volume
C) the water density equals the density of the boat
D) the buoyant force equals the volume of the boat
E) the buoyant force equals the density of the boat
- 25) Two equal-sized buckets are filled to the top with water. One of the buckets has a piece of wood floating in it, making its total weight _____. 25) _____
A) equal to the weight of the other bucket
B) less than the weight of the other bucket
C) more than the weight of the other bucket

- 26) A block of balsa wood floats on water while a same-size block of lead lies submerged in the water. The buoyant force is _____. 26) _____
A) greater of the wood. B) greater on the lead. C) the same for both
- 27) A boat loaded with a barrel of water floats in a swimming pool. When the water in the barrel is poured overboard, the swimming pool level will _____. 27) _____
A) fall B) rise C) remain unchanged
- 28) When an ice cube in a glass of water melts, the water level _____. 28) _____
A) falls B) rises C) remains the same
- 29) Pascal's principle says that changes in pressure at any point in an enclosed fluid _____. 29) _____
A) are transmitted to all points in the fluid
B) remain only at the point
C) quickly diminish from point to point in the fluid
D) are transmitted only to points below it
E) are transmitted only to points close to it
- 30) A hydraulic arrangement consists of a water-filled U-tube that is wider on one end than on the other. Pistons are fitted in both ends. To multiply an input force, the input end should be the one having the _____. 30) _____
A) smaller-diameter piston
B) larger-diameter piston
C) It doesn't matter what relative size the piston is.
- 31) A hydraulic press multiplies a force by 100. This multiplication is done at the expense of _____. 31) _____
A) the distance through which the force acts.
B) energy, which decreases by a factor of 100.
C) the time over which the force acts, which is extended by a factor of 100.
D) the mechanism providing the force.
E) none of the above
- 32) Suppose a stone weighs 3 N in the air, but in water it weighs only 2 N. What is the buoyant force acting on the stone? 32) _____
A) 3 N B) 2 N C) 4 N D) 5 N E) 1 N

- 33) One liter of water weighs about 10 N. Suppose a 2-liter container is filled with 266 N of mercury and then lowered into a container of water. Assuming the container is completely submerged, what is the buoyant force acting on it? 33) _____
 A) 26.6 N B) 266 N C) 133 N D) 20 N E) 10 N
- 34) A 5000-N car is lifted on a hydraulic piston of area 2000 square centimeters. How much force on a 20-square-centimeter piston is needed to lift the car? 34) _____
 A) 250 N B) 5000 N C) 50 N D) 2000 N E) 500 N

Choose the best answer to each question and write the appropriate letter in the space provided.

- 35) The main difference between gases and liquids is that in a gas _____. 35) _____
 A) molecules collide more often.
 B) forces between molecules are larger.
 C) molecules are moving faster.
 D) distances between molecules are larger.
 E) all of the above
- 36) In the top of a barometer there is a space that is filled with _____. 36) _____
 A) dense mercury vapor.
 B) air.
 C) water vapor.
 D) helium.
 E) none of the above
- 37) A barometer that uses water instead of mercury will be _____. 37) _____
 A) shorter B) taller C) the same height
- 38) About how high can water theoretically be lifted by a vacuum pump at sea level? 38) _____
 A) Less than 10.3 m B) More than 10.3 m C) 10.3 m
- 39) If you squeeze a balloon to one half its original size, the pressure inside _____ 39) _____
 A) increases by a factor of 2
 B) increases by a factor of 4
 C) stays the same
 D) decreases by a factor of 2
 E) decreases by a factor of 4

- 40) Gas pressure inside an inflated stretched balloon is _____. 40) _____
A) less than air pressure outside the balloon
B) greater than air pressure outside the balloon
C) equal to air pressure outside the balloon
- 41) As a woman holding her breath swims deeper and deeper beneath the water's surface, her density _____. 41) _____
A) decreases B) remains the same C) increases
- 42) In a vacuum on earth, an object has no _____. 42) _____
A) heat
B) temperature
C) mass
D) weight
E) buoyant force
- 43) Consider an air-filled balloon, weighted with a stone, that just barely floats in water. When the balloon is pushed beneath the surface, say about a meter deep, and then released, it will _____. 43) _____
A) stay where it is
B) sink
C) float back to the surface
- 44) Which has the larger buoyant force, a balloon filled with helium or the same size balloon filled with air? 44) _____
A) The helium balloon
B) The air balloon
C) Neither -- they both experience the same buoyant force.
- 45) Which has more weight, a balloon filled with helium or the same size balloon filled with air? 45) _____
A) The air balloon
B) The helium balloon
C) Neither -- they both have the same weight.
- 46) A 1-ton dirigible hovers in the air. The buoyant force acting on it is _____. 46) _____
A) less than 1 ton B) 1 ton
C) zero D) more than 1 ton

- 47) If you are standing on the moon and release a balloon filled with helium gas, the balloon will _____. 47) _____
A) neither rise nor fall B) rise C) fall
- 48) The lift that supports an airplane wing is a consequence of _____. 48) _____
A) Bernoulli's principle. B) Newton's third law.
C) both A and B. D) none of the above
- 49) The reason a shower curtain will pull to the inside of a bathtub during a shower is that _____. 49) _____
A) there is less air inside the curtain
B) there is more water inside the curtain
C) there is more pressure inside the curtain
D) there is more air inside the curtain
E) there is less pressure inside the curtain
- 50) A car with closed windows makes a left-hand turn. A helium-filled balloon in the car will _____. 50) _____
A) move to the right
B) move to the front
C) move to the back
D) move to the left
E) stay in the same place

Answer Key

Testname: EXAM_7_PRACTICE.TST

- 1) Answer: FALSE
- 2) Answer: FALSE
- 3) Answer: FALSE
- 4) Answer: TRUE
- 5) Answer: TRUE
- 6) Answer: FALSE
- 7) Answer: FALSE
- 8) Answer: TRUE
- 9) Answer: FALSE
- 10) Answer: TRUE
- 11) Answer: TRUE
- 12) Answer: TRUE
- 13) Answer: TRUE
- 14) Answer: E
- 15) Answer: D
- 16) Answer: D
- 17) Answer: B
- 18) Answer: C
- 19) Answer: A
- 20) Answer: D
- 21) Answer: A
- 22) Answer: B
- 23) Answer: B
- 24) Answer: A
- 25) Answer: A
- 26) Answer: B
- 27) Answer: C
- 28) Answer: C
- 29) Answer: A
- 30) Answer: A
- 31) Answer: A
- 32) Answer: E
- 33) Answer: D
- 34) Answer: C
- 35) Answer: D
- 36) Answer: E
- 37) Answer: B
- 38) Answer: C
- 39) Answer: A
- 40) Answer: B
- 41) Answer: C

Answer Key

Testname: EXAM_7_PRACTICE.TST

- 42) Answer: E
- 43) Answer: B
- 44) Answer: C
- 45) Answer: A
- 46) Answer: B
- 47) Answer: C
- 48) Answer: C
- 49) Answer: E
- 50) Answer: D