CHERCHER SECONDARY SCHOOL

GRADE 12TH PHYSICS WORK SHEET FROM UNIT THREE

You May Refer the Information Given Below When You Work On Some Of The Questions

Constant	Symbol	value
Acceleration due to gravity	g	$10m/s^2$
density of mercury	ρHg-mm	$13.6g/cm^3$
Density of water	ρ	$1000kg/m^3$
atmospheric pressure	P_{atm}	1.01×10^5 pa

From The Given Alternatives Choose The Best Answer

1. An ideal fluid flows through a long horizontal circular pipe. In one region of the pipe, it has radius R. The pipe then widens to radius 2R. What is the ratio of the fluid's speed in the region of radius R to the speed of the fluid in region with radius 2R? **A.** 4 **B**. 2 **C.** ½ **D.** ¼
2. Suppose a glass cylinder containing four liquids of different densities. From top to bottom, the liquids are oil , water , salt water and mercury . The cylinder also contains, from top to bottom, a Ping-Pong ball, a piece of wood, an egg, and a steel ball. Which of these liquids has the lowest and greatest density respectively?

A. Oil, mercury **B.** Ping-Pong ball, steel ball **C**. salt water, water **D.** egg, a piece of wood

3. One piston in a hydraulic lift has an area that is twice the area of the other. When the pressure at the smaller piston is increases by Δp the pressure at the larger piston increases by **A**. Δp **B**. $\Delta p/2$ **C**. $2\Delta p$ **D**. $4\Delta p$
4. A piece of wood with a volume of 50 cm^3 is floating on water, and a piece of iron with a volume of 50 cm^3 is totally submerged. Which has the greater buoyant force on it? **A**. The wood. **B.** The iron. **C.** Both have the same buoyant force. **D**. Cannot be determined without knowing their densities.
5. Atmospheric pressure increases **A.** Air temperature Decreases **B.** Altitude decreases **C .**Air density decreases **D.** Latitude decreases

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6. An air pressure of 101kpa support a 76cm of mercury in a barometer column. What would be the height of the column of another liquid of density $10g/cm^3$ were used?
A. 55.88 cm **B.** 103.36 cm **C.** 79.6cm **D**.76cm

7. When the weight of object is equal to the buoyant force then, the object will be
A. Sinks **B.** Rises **C.** Float **D.** unknown

8. One of the following is correct about atmosphere pressures.
A. Atmospheric pressures decrease with increasing altitude.
B. Density of the atmosphere increasing with increasing altitude
C. atmospheric pressure increasing with increasing altitude
D. Density of the atmosphere decreasing with decreasing altitude

9. Water flows through a horizontal pipe. The diameter of the pipe at point **B** is larger than at point **A**. Where is the water pressure greater? **A.** Point A **B**. Point B
C. Same at both A and B **D.** cannot be determined from the information given.

10. Liquid flows through a 4 cm diameter pipe at 1.0 m/s. There is a 2 cm diameter constriction in the line. What is the velocity in this constriction? **A.** 0.25 m/s **B.** 0.50 m/s **C**. 2 m/s **D.** 4 m/s

11. A copper block is connected to a string and submerged in a container of water.
Position 1: The copper is completely submerged, but just under the surface of the water.
Position 2: The copper is completely submerged, mid-way between the water surface and the bottom of the container.
Position 3: The copper is completely submerged, but just above the bottom surface of the container. Assume that the water is incompressible. What is the ranking of the buoyant forces (*B*) acting on the copper blocks for these positions, from least to greatest?
A. $B_3 < B_2 < B_1$ **B.** $B_1 = B_2 = B_3$ **C.** $B_1 < B_2 < B_3$ **D.** $B_1 < B_2 = B_1$

12. From the following which one is the lowest density?
A. milk **B.** Stone **C.** Oxygen **D.** Water

13. Suppose Mr. X bloods flows a high velocity and its flow through larger diameter tube. Hence his blood flows in veins there is disruption b/n the veins. This bloods flows of Mr. X described as **A**. Laminar flows **B.** Equation of Continuity **C.** Viscosity **D**. Turbulent flow

14. Which of the following describes Pascal's principle?

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A. Pressure change in an enclosed liquid is transmitted to every part equally

B. Pressure at the same depth in a given liquid is the same everywhere

C. A body immersed in a liquid is pushed up by a force equal to the weight of water it displaces. **D.** In a given liquid, the greater the depth the greater is pressure

15. Which one of the following is not applications of high pressure system ?

A. To study physical properties of various materials **B.** To cook kitchen food

C. To diminishes microorganism activity **D.** To operator error due to lack of training

16. Pressure at the bottom of a liquid column is independent of: **A.** Shape of the column **B.** the depth of the point. **C**. the density of the fluid. **D.** the acceleration due to gravity

17. A cube of unknown material and uniform density floats in a container of water with 60% of its volume submerged. If this same cube were placed in a container of oil with density 800 kg/m^3, what portion of the cube's volume would be submerged while floating?

A. 33% **B**. 50% **C**. 58% **D**. 75%

18. Two solid spheres made of gold and silver having equal masses are suspended by strings and fully submerged in a tank of water. Given that the density of gold is greater than that of silver, which one of the following statements is true? **A.** The buoyant force on each sphere is the same. **B.** The volume of water displaced by the gold sphere is larger than that of the silver sphere. **C.** The tension in the string supporting each sphere is the same. **D.** The buoyant force on the silver sphere is greater than that on the gold sphere.

19. A very large open tank is full of oil whose density is $800kg/m^3$. If the absolute pressure at the bottom of the tank is 1 .81 x 1 0^5 pa, then what is the depth of the oil?

A. 1 00m **B.** 75 m **C.** 10 m **D.** 9.5m

20. What pressure acts an 80kg person on their foot surface, by standing on one foot and the area considered is a $100m^2$? **A**. 0.8pa **B.** 8pa C. 80pa D. 0.08pa

21. The density of unknown liquid is $500kg/m^3$. What is the relative density of the liquid?

A. 0.5 **B.** 2 **C.** 5 **D**. 0.2

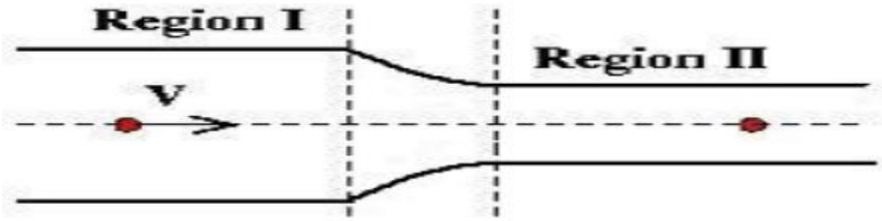
22. Which of the following is **true**? **A.** The buoyant force on a floating object is less than its weight. **B**. A pressure applied to a confined fluid increases the pressure throughout the fluid by the same amount. **C.** The buoyant force on an object immersed in a fluid is equal to the

weight of the object. **D**. The downward pressure on the top surface of a block immersed in a fluid is greater than the upward pressure on its bottom surface.

23. If you stand on one foot on the floor of your class room, what will be the pressure exert on the floor? **A.** Twice the pressure you exert if you stand on two feet. **B.** Half the pressure you exert if you stand on two feet. **C**. The same as the pressure you exert if you stand on two feet. **D.** Half the pressure you exert if you sit on the floor.

24. An egg is placed at the bottom of a vessel filled with water. Common salt is slowly added and dissolved in the water until the egg rises and floats at the surface. From this information what you could conclude? **A.** The density of the salt exceeds the density of the egg. **B.** There is a tendency for Calcium in the egg shell to be repelled by sodium chloride. **C.** Salt sinks to the bottom. **D.** There is no physical explanation.

25. The speed of an ideal fluid is marked as it moves along a horizontal streamline through a pipe, as shown in the figure. In **Region I**, the speed of the fluid on the streamline is ***V***. The cylindrical, horizontal pipe narrows so that the radius of the pipe in **Region II** is half of what it was in Region I. What is the speed of the marked fluid when it is in Region II?



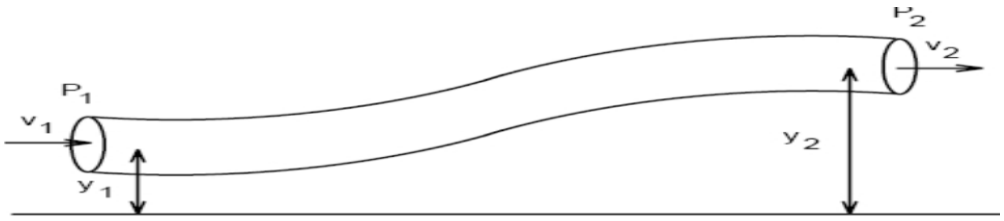
A. 4V **B.** 2V **C.** V/2 **D.** V/4

26. Which of the following describes Pascal's principle? **A**. Pressure change in an enclosed liquid is transmitted to every part equally. **B**. Pressure at the same depth in a given liquid is the same everywhere. **C**. A body immersed in a liquid is pushed up by a force equal to the weight of water it displaces. **D**. In a given liquid, the greater the depth the greater is pressure.

27. A horizontal pipe of radius 7R carries a uniformly dense liquid to a spigot of radius R, where it has a speed of v. what is the speed of the liquid in the larger diameter pipe ?

A. 0.02V **B**. 0.11V **C**.V **D.**49V

28. Water flows in a pipe of uniform cross-sectional area A.



The pipe changes height from $y_1 = 2$ meters to $y_2 = 3$ meters. Since the areas are the same, we can say $V_1 = V_2$. Which of the following is true?

A. $P_1 = P_2 + \rho g(y_2 - y_1)$ **B.** $P_1 = P_2$ **C.** $P_1 = 0$ **D.** $P_2 = 0$

29. A small airplane has wings with surface area 9 m^2 each. The speed of the air across the top of the wing is 50 m/s, and across the bottom of the wing, 40 m/s. Take the density of air to be 1.2 kg/m^3. What is the difference in the pressure between the top and the bottom of the wing?

A. 1125pa **B**. 900pa **C.** 2500pa **D.** 540pa

30. A swimming pool has dimensions 30m X 10m and a flat bottom. When the pool is filled to a depth of 2.m with fresh water, what is the force caused by the water on each end and each side respectively?

A. 19.6kN ,5.88 $x10^6$N **B.** 196kN, 588kN **C.** 600N,20kN **D.** 19600N, 6kN