Fluids Review:

1. Top surface is curved upward, while the lower surface is flat. Therefor the top surface is longer than the lower surface, so air must travel faster over the top surface of the wing than it travels over the lower surface. According to the Bernoulli equation, the pressure is lower in the faster moving air. The higher pressure on the lower surface of the wing thus creates a net upward force on the wing.

2. 166kPa 3. 2.1cm 4. 3.9kPa

5. 65 6. 60.0 7. 2100kg/m3

8. 37N, UP 9. 1100kg/m3 10. 290kg/m3

11. 1100kg 12. 0.707m/s 13. 100.8kPa

14. 29.5g 15. 0.026m 16. 1.7m

17. 0.45N 18. 0.19m 19. 2.6m/s2 left

20. 0m/s2

21. Which of the following is the best statement of Pascals Law?

A) pressure on a confined liquid is transmitted equally in all directions

22. When submerged under water, the apparent mass of one cubic meter of pure gold is 18300 kg. What would be its mass in air?

D) 19300 kg

23. 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 fluids speed in the region of radius R to the speed of the fluid in region with radius 2R

E) 4

24. A fluid is forced through a pipe of changing cross section as shown. In which section would the pressure of the fluid be a minimum



B) II

25. A hydraulic press allows large masses to be lifted with small forces as a result of which principle?

A) Pascal’s

26. Three fishing bobbers all float on top of water. They have the following relationships:

-A,B: same mass, same density, different shapes

-B,C: same size, same shape,

-mass & density C < mass & density B

Three identical weights are tied to each bob, and each is pulled completely beneath the water. Which bob will displace the greatest amount of water

E) All displace the same amount of water.

27. A 500 N weight sits on the small piston of a hydraulic machine. The small piston has an area of 2 cm2 . If the large piston has an area of 40 cm2, how much weight can the large piston support?

C) 10000 N

28. As a rock sinks deeper and deeper into water of constant density, what happens to the buoyant force on it?

 B) It remains constant.

29. 50 cm3 of wood is floating on water, and 50 cm3 of iron is totally submerged. Which has the greater buoyant force on it?

 B) The iron.

30. Salt water is more dense than fresh water. A ship floats in both fresh water and salt water. Compared to the fresh water, the amount of water displaced in the salt water is

 B) less.

31. A liquid has a specific gravity of 0.357. What is its density?

A) 357 kg/m3

32. Water flows through a pipe. The diameter of the pipe at point B is larger than at point A. Where is the water pressure greater?

B) Point B

33. Liquid flows through a 4 cm diameter pipe at 1.0 m/s. There is a 2 cm diameter restriction in the line. What is the velocity in this restriction?

D) 4 m/s