Of course. Here is a comprehensive practice set with 10 numerical, 10 multiple-choice, and 10 subjective theory questions based on the "Pressure" chapter you provided.

Numerical Questions

Instructions: Show your working for all calculations. Use $g = 9.8N/kg$ where necessary.

1. A force of 200 N is applied to an area of $4.0\ m^2$. Calculate the pressure exerted.
2. The pressure on a surface is 500 Pa. If the area of the surface is $0.2\ m^2$, what is the force acting on it?
3. Calculate the pressure at a depth of 20 m below the surface of a lake. The density of water is $1000\ kg/m^3$.
4. A deep-sea submersible is designed to withstand a pressure of $5.0 \times 10^6\ Pa$. Calculate the maximum depth it can reach in seawater of density $1020\ kg/m^3$.
5. In a hydraulic lift, a force of 100 N is applied to a small piston of area $0.05\ m^2$. If the large piston has an area of $1.0\ m^2$, what is the maximum load that can be lifted?
6. A hydraulic car brake system needs to exert a force of 800 N on the brake pistons, which have a total area of $0.04\ m^2$. If the piston in the master cylinder has an area of $0.002\ m^2$, calculate the force the driver must apply.
7. An elephant has a mass of 4000 kg. If the total area of its four feet in contact with the ground is $0.8\ m^2$, what is the pressure the elephant exerts on the ground?
8. A rectangular block weighing 60 N has dimensions of 0.2 m x 0.3 m x 0.5 m. Calculate the maximum and minimum pressure it can exert when resting on a horizontal surface.
9. A force of 25 N is applied to a piston of area $0.1\ m^2$ in a hydraulic jack. Calculate the pressure transmitted through the liquid.
10. A water tank contains water to a depth of 5.0 m. Calculate the force exerted by the water on the base of the tank if the base has an area of $2.5\ m^2$. (Density of water = $1000\ kg/m^3$)

Multiple Choice Questions

Instructions: Choose the one correct answer (A, B, C, or D) for each question.

1. **Pressure is defined as...**
   A. the total force on a surface.
   [cite_start]B. the force per unit area. [cite: 1122, 1125]
   C. the area divided by the force.
   D. the density per unit volume.

2. **The SI unit for pressure is the...**
   A. Newton (N)
   B. Kilogram (kg)
   [cite_start]C. Pascal (Pa) [cite: 1126]
   D. Joule (J)
3. **A tractor has large, wide wheels in order to...**
   A. increase the pressure on the ground.
   B. increase the force on the ground.
   [cite_start]C. decrease the pressure on the ground. [cite: 1129]
   D. decrease its weight.
4. **Why must a dam be built thicker at the bottom than at the top?**
   A. Because water density is greater at the bottom.
   B. To make it look more stable.
   [cite_start]C. Because water pressure increases with depth. [cite: 1200, 1205]
   D. Because the speed of the water is higher at the bottom.
5. **Which principle explains how a hydraulic jack works?**
   [cite_start]A. Pressure in a liquid acts equally in all directions. [cite: 1170]
   [cite_start]B. Liquids are almost incompressible and transmit pressure. [cite: 1219]
   C. The pressure in a liquid depends on its density.
   [cite_start]D. A liquid always finds its own level. [cite: 1178]
6. **At a certain depth in a liquid, the pressure acts...**
   A. only downwards.
   B. only upwards.
   C. only sideways.
   [cite_start]D. equally in all directions. [cite: 1170]
7. **Which statement about pressure in a liquid is correct?**
   A. It is greater at the surface than at the bottom.
   B. It depends on the volume of the liquid.
   [cite_start]C. It increases as the density of the liquid increases. [cite: 1192]
   D. It is independent of depth.
8. **A sharp knife cuts more easily than a blunt one because...**
   A. it is heavier.
   B. it exerts a greater force.
   C. it can be moved faster.
   [cite_start]D. it exerts a greater pressure for the same force. [cite: 1130]
9. **Two containers of different shapes are filled with water to the same height. The pressure at the bottom of the containers is...**
   A. greater in the wider container.

B. greater in the narrower container.
[cite_start]C. the same in both containers. [cite: 1180]
D. dependent on the volume of water.

10. **What does a simple mercury barometer directly measure?**
A. Gas pressure
B. Wind speed
C. Humidity
[cite_start]D. Atmospheric pressure [cite: 1306]

Subjective Theory Questions

Instructions: Write your answers in complete sentences.

1. Define pressure and state the formula used to calculate it.
2. [cite_start]Using the concept of pressure, explain why wearing skis prevents a person from sinking into soft snow. [cite: 1120]
3. State two properties that describe how pressure varies within a liquid.
4. Explain the main principle of a hydraulic machine that allows it to act as a force multiplier.
5. [cite_start]What key property of liquids makes them suitable for use in hydraulic systems? [cite: 1219]
6. [cite_start]Describe a simple experiment you could perform to demonstrate that pressure increases with depth. [cite: 1169]
7. [cite_start]Why is the base of a dam for a hydroelectric power station built to be very thick? [cite: 1200]
8. Give one example where high pressure is useful and one example where low pressure is useful.
9. [cite_start]Explain why a liquid in connected tubes of different shapes will settle at the same level in each tube. [cite: 1178, 1180]
10. [cite_start]What is a Bourdon gauge used for? [cite: 1294, 1297]