Pressure in Fluids MS

Q1 (1 mark)
Force per unit area (1)

Q2 (1 mark)
Pascal (Pa) (1)

Q3 (1 mark)
It decreases (1)

Q4 (1 mark)
Weight of air above (1)

Q5 (2 marks)
Force (1)
Area (1)

Q6 (2 marks)
Upward force in a fluid (1)
Opposes weight (1)

Q7 (3 marks)
Less air above (1)
Less weight of air (1)
Lower pressure at height (1)

Q8 (3 marks)
More liquid above (1)
Greater weight pressing down (1)
Pressure increases (1)

Q9 (3 marks)
Upthrust acts upwards (1)
Object floats if upthrust = weight (1)
Sinks if weight > upthrust (1)

Q10 (3 marks)

In a fluid, pressure is caused by particles moving and colliding in all directions (1)

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When the fluid touches a surface, the force from the pressure acts at right angles/perpendicular (normal) to the surface

This means the surface is pushed straight inwards or outwards, not along the surface (1)

Q11 (3 marks)
60 ÷ 12 (1)
5 (1)
Pa (1)

Q12 (3 marks)
150 ÷ 30 (1)
5 (1)
Pa (1)

Q13 (3 marks)
200 ÷ 40 (1)
5 (1)
Pa (1)

Q14 (3 marks)
300 ÷ 15 (1)
20 (1)
Pa (1)

Q15 (4 marks)
50 × 6 (1)
300 (1)
N (1)
Correct rearrangement (1)

Q16 (4 marks)
180 ÷ 60 (1)
3 (1)
m^2 (1)
Correct rearranged formula (1)

Q17 (6 marks)
Level 1 (1–2 marks)
Basic statements about pressure, height or depth

Level 2 (3–4 marks)
Explains atmospheric pressure decreases with height and liquid pressure increases with depth

Pressure in Fluids MS

Level 3 (5–6 marks)
Clear linked explanation of atmospheric pressure, liquid pressure and upthrust with correct physics terminology

- Atmospheric pressure decreases with height due to less air above (1)
- Liquid pressure increases with depth due to more liquid above (1)
- Pressure is caused by force over area (1)
- Pressure acts in all directions / normal to surfaces (1)
- Upthrust is an upward force in a fluid (1)
- Floating occurs when upthrust = weight and sinking when weight > upthrust (1)

Model answer:
Atmospheric pressure decreases with height because there is less air above, so the weight of air pressing down is smaller. In liquids, pressure increases with depth because there is more liquid above, increasing the force on an object. Pressure acts in all directions and is caused by force over area. Upthrust is an upward force in a fluid that acts against weight. Objects float when upthrust equals their weight and sink when their weight is greater than upthrust.