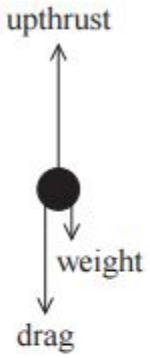
Fluids MCQ QP2

1 A bubble moves upwards through a fluid at a steady speed. The forces acting on the bubble are as shown.



Which equation correctly describes the forces acting on the bubble?

☒ **A** drag + upthrust = weight

☒ **B** weight + upthrust = drag

☒ **C** drag + weight – upthrust = 0

☒ **D** weight – drag + upthrust = 0

2 A swimmer jumps from a diving platform into a swimming pool. The swimmer is slowed to a stop by friction with the water.

The total work done by the water on the swimmer does **not** depend on

☒ **A** the mass of the swimmer.

☒ **B** the speed of the swimmer on entering the water.

☒ **C** the depth of the swimming pool.

☒ **D** the height of the diving platform.

3 The surface of a golf ball is covered in small dimples. These dimples enable the ball to travel a greater distance when struck by a golf club.

Which of these statements is true?

☒ **A** The dimples result in only turbulent flow.

☒ **B** The dimples result in only laminar flow.

☒ **C** The dimples reduce drag.

☒ **D** The dimples increase drag.

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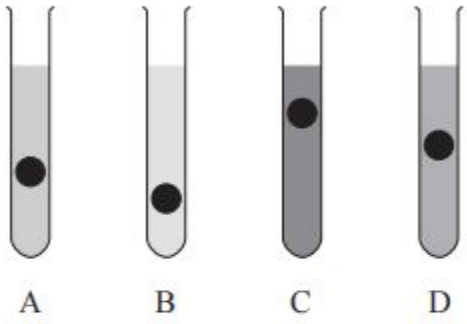
Use the following Information to answer question 4 and 5

Four identical steel balls are dropped simultaneously into test tubes filled with different motor oils. The diagram shows the positions of the balls after a short time.



4 Which test tube, A, B, C or D, contains the oil with the lowest viscosity?

- ☒ **A**
- ☒ **B**
- ☒ **C**
- ☒ **D**

5 Test tube D is heated and the ball is dropped into it in the same way.

Compared with the previous experiment, the position of the ball in test tube D, after the same short time, is

- ☒ **A** higher up because the viscosity of the oil is greater.
- ☒ **B** higher up because the viscosity of the oil is lower.
- ☒ **C** lower down because the viscosity of the oil is greater.
- ☒ **D** lower down because the viscosity of the oil is lower.

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6 A table tennis ball is released beneath the surface of water and moves upwards.

The relationship between the forces acting on the ball when it reaches terminal velocity is

- ☒ **A** weight = upthrust
- ☒ **B** weight + drag = upthrust
- ☒ **C** weight = upthrust + drag
- ☒ **D** weight = drag