

SECTION B

Answer ALL questions in the spaces provided.

- 11 The engine of a motor boat provides a constant horizontal force. As the velocity of the boat increases, the resultant horizontal force on the boat decreases. Eventually the boat will travel at its terminal velocity.

The constant horizontal force from the engine is 5.5 kN.

- (a) State what is meant by a resultant force.

(1)

- (b) At a certain time the drag force on the boat is 3.1 kN.

Calculate the acceleration of the boat at this time.

mass of boat = 7.5×10^3 kg

(2)

Acceleration =

- (c) The terminal velocity of the boat is 4.8 m s^{-1} .

Calculate the output power of the engine.

(2)

Output power =

(Total for Question 11 = 5 marks)

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