

4 Photograph 1 shows an outdoor swimming pool.



Photograph 1

(a) The water in the swimming pool is heated by the Sun during the day.

(i) State how energy is transferred from the Sun to the water.

(1)

(ii) State what happens to the average speed of the water molecules as the water is heated.

(1)

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(b) The water in the swimming pool cools down at night.

(i) Suggest why the water cools down at night.

(1)

(ii) Photograph 2 shows the swimming pool with a plastic cover over the water.



Photograph 2

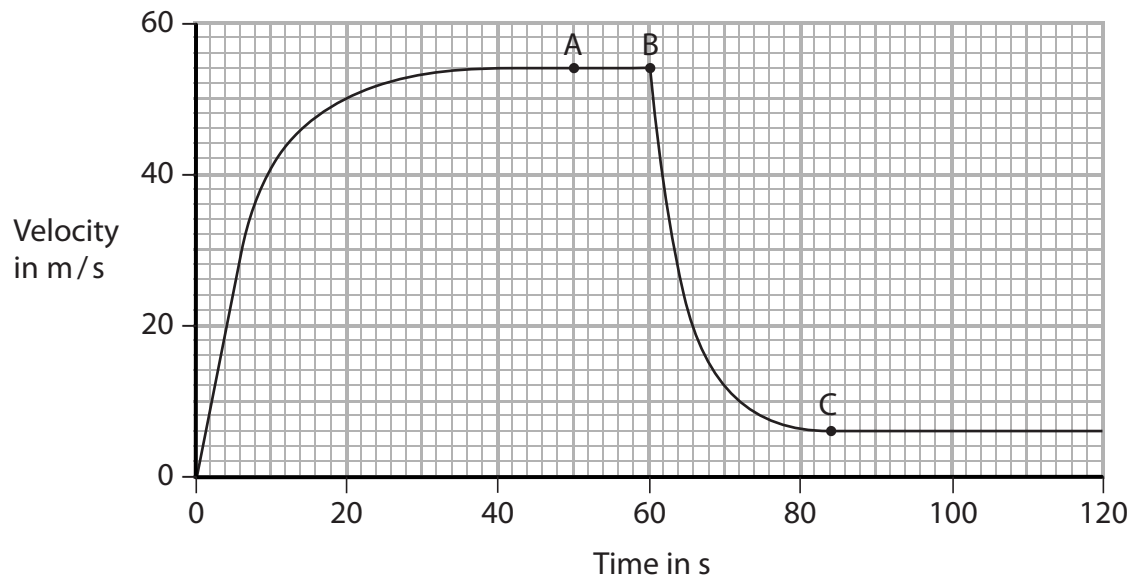
Explain why the plastic cover reduces how much the water cools down at night.

(4)

(Total for Question 4 = 7 marks)



8 The graph shows how the velocity of a parachute jumper changes with time.



(a) At point A, the parachute jumper is falling at terminal velocity and has not yet opened her parachute.

(i) Which statement is correct about the parachute jumper at point A?

(1)

- ☐ A acceleration and air resistance are equal
- ☐ B acceleration and velocity are equal
- ☐ C weight and acceleration are equal
- ☐ D weight and air resistance are equal

(ii) Which is the best estimate of the distance fallen by the parachute jumper from the start until point A?

(1)

- ☐ A 50 m
- ☐ B 1300 m
- ☐ C 2300 m
- ☐ D 2700 m



(b) The parachute jumper opens her parachute at point B.

Her velocity decreases until she reaches terminal velocity again at point C.

Explain this change in velocity.

(4)

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(c) After point C, the parachute jumper continues to fall at a constant velocity.

As she falls, energy is transferred from a gravitational store.

Which store is the energy transferred into?

(1)

- ☐ **A** chemical store
- ☐ **B** gravitational store
- ☐ **C** kinetic store
- ☐ **D** thermal store

(Total for Question 8 = 7 marks)



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