

9 Builders work on a new house.



scaffolding

A builder carries a concrete block from the ground up to the top of the scaffolding.



- (a) (i) State the equation linking gravitational potential energy, mass,  $g$  and height.

(1)

- (ii) The concrete block has a mass of 18 kg.

Calculate the gravitational potential energy gained by the concrete block if the scaffolding is 5 m high.

(2)

Gravitational potential energy = ..... J



- (iii) What is the link between the gravitational potential energy gained by the concrete block and the work done by the builder to lift it?

(1)

- (b) The builders fit a layer of insulating material in the roof of the house.  
The diagram shows a section through the insulating material.



Explain how the insulating material reduces the amount of heat lost through the roof by conduction, convection and radiation.

(5)

conduction

convection

radiation

(Total for Question 9 = 9 marks)

