Do not write outside the box

1 A hot water bottle is a container filled with hot water and sealed with a stopper. It used for applying heat to a specific part of the body.

Hot water bottle

Specific heat capacity of water = 4200 J/Kg/^{o}C

Boiling point of water = 100 ^{O}C

1 (a) (i) Water has a high specific heat capacity.

Why does this fact make water a suitable substance to use in a hot water bottle?

[2 marks]

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1 (a) (ii) A hot water bottle is filled up with 0.75 kg of water at 90^{O}C. It is used for 30 minutes over which time the temperature reduces to 30^{O}C.

Calculate the energy released from the water over 30 minutes.

Use the information from the question, the diagram and the correct equation from the equation sheet.

Give the correct unit.

[3 marks]

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Energy released = ……

1 (b) (i) Vegetable oil has a specific heat capacity of 1670 J/Kg/^{o}C and is quicker to heat than water.

Use this information and your own knowledge to suggest why vegetable oil should not be used in a hot water bottle. **[2 marks]**

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(Total 7 marks)

End

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