**Governor Stirling Senior High School**

**Task 1: Test 1B - Heating and Cooling**

**HEATING AND COOLING**

**TEST**

**ANSWER ALL QUESTIONS IN THE SPACES PROVIDED**

**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Short answer /30

**Formulae and Selected Constants**

**Specific heat of ice = 2.10 x 103 J kg-1 K-1**

**Specific heat of steam = 2.00 x 103 J kg-1 K-1**

**Specific heat of water = 4.200 x 103 J kg-1 K-1**

**Specific heat of stainless steel = 445** **J kg-1 K-1**

**Specific heat of aluminium = 900 J kg-1 K-1**

**Latent heat of fusion of water = 3.34 x 105 J kg-1**

**Latent heat of vaporisation of water = 2.25 x 106 J kg-1**

**Absolute zero: 0 K = -273 K**

**Q = mc**∆**T**

**Q = mL**

Section A Short answer (30 marks)

Section A consists of seven questions. Write your answers in the spaces provided.

1 Using the kinetic particle model, explain how humans keep cool by sweating.

(4 Marks)

2 220 g of ice is taken from a freezer where it is kept at 270°K. It is heated till it becomes steam at 4.0 x 102 °K. Calculate how much energy it has absorbed.

(4 Marks)

3 How do clothes from the washing line get dry when there is not direct light on them?

(3 Marks)

4 A solid substance is heated but its temperature does not change. Explain what is occurring.

(2 Marks)

5 A block of iron (specific heat capacity of 440 J kg-1 K-1 was heated for an hour absorbing 350 J/min, if the block was 2.3kg, how much was the temperature increased by?

(5 Marks)

6 A 60kg athlete takes in 8 MJ of energy from her food per day. If this energy were converted to heat what would be the theoretical temperature rise of her body if her Specific Heat Capacity is 3.49 kJ/kg/K°

(5 Marks)

7 An airport worker uses a steam gun to melt the ice off the wheels of a plane in the Antarctic.

(7 Marks)

1. Calculate the mass of steam at 115°C required to convert 2.5kg of ice at -12.5°C into water at 55°C.

(4 Marks)

1. Draw a graph showing the **temperature** change over time.

(3 Marks)

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