

## **SS 1 PHYSICS ASSIGNMENT FOR WEEK 4**

**DEADLINE:**

**FRIDAY MAY 8<sup>TH</sup>, 2020**

**E MAIL:**

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- 1 (a) Explain heat capacity and specific heat capacity  
(b) With your knowledge of specific heat capacity, explain in concrete terms using physical illustrations, why water is used as coolant in car radiator engines
- 2 (a) When heat is applied to an object the object expands and when heat is absorbed from an object, the object contracts, explain the contradiction of this when a bottle that is completely filled with water is placed in a freezer  
(b) Give a biological application of this to our aquatic lives in very cold regions. Diagrams and mathematical analysis attract more marks.
- 3 Two thermos flasks of volume  $V_x$  and  $V_y$  are filled with liquid water at an initial temperature of  $0^\circ\text{C}$ . After some time the temperatures were found to be  $\theta_x$ ,  $\theta_y$  respectively. Given  $V_x/V_y = 2$  and  $\theta_x/\theta_y = \frac{1}{2}$ . What is the ratio of heat flow into the flasks?
- 4 How much heat is given out when a piece of iron of mass 50g and specific heat capacity  $460\text{Jkg}^{-1}\text{K}^{-1}$  cools from  $85^\circ\text{C}$  to  $25^\circ\text{C}$ ?
- 5 22000J of heat is required to raise the temperature of 1.5kg of paraffin from  $20^\circ\text{C}$  to  $30^\circ\text{C}$ . Calculate the specific heat capacity of paraffin.