The City School

North Nazimabad Boys Campus

**1. A mass of 0.20kg of water at 0°C is placed in a vessel of negligible heat capacity. An electric**

**heater with an output of 24 W is placed in the water and switched on. When the temperature of the**

**water reaches 12°C, the heater is switched off.**

**a) Calculate the time for which the heater is switched on. Assume that the heat capacity of water**

**is 4200J/kgK**

**b) An ice cube of mass 0.020kg is added to the 0.20kg of water at 0°C in the same vessel and the**

**heater is switched on. Assuming that all the ice is at 0°C, calculate how long it will take for the**

**water to reach 12°C. Assume that the specific latent heat of fusion on ice is 0.34 MJ/kg**

*MCQ*

**1. When the temperature of a body increases, its**

a. internal energy decreases

b. internal energy remains constant

c. internal energy increases

d. heat capacity increases

**2. The internal energy of a body is measured in**

a. kg

b. °C

c. J

d. JK-1

**3. The heat capacity of a bottle of water is 2100 J°C. What is the amount of heat required to heat the water from 30°C to 50°C?**

a. 2100J

b. 4200J

c. 42000J

d. 63000J

**4. If the same amount of heat is supplied to 2 metal rods, A and B, rod B shows a smaller rise in temperature. Which of the following statements is true about the heat capacity of rods A and B?**

a. The heat capacity of A is less than that of B

b. The heat capacity of B is less than that of A

c. The heat capacity of A is zero

d. The heat capacity of B is zero

**5. The heat capacities of 10g of water and 1kg of water are in the ratio**

a. 1 : 10

b. 10 : 1

c. 1 : 100

d. 100 : 1

**6. 1 kg of substance X of specific heat capacity 2 kJ kg -1 °C -1 is heated from 30°C to 90°C. Assuming no heat loss, the heat required is**

a. 7.5 kJ

b. 18 kJ

c. 80 kJ

d. 120 kJ

**7. How much heat is required to raise the temperature of 20g of water from 10°C to 20°C if the specific heat capacity of water is 4.2 Jg?**

a. 1.68 J

b. 84 J

c. 840 J **-1°C-1**88

d. 1680 J

**8. 4000 J of energy are given out when 2kg of a metal is cooled from 50°C t0 40°C. The specific heat capacity of the metal, in Jg-1, is**

a. 40

b. 50

c. 200

d. 400**°C-1**

**9. What is the temperature rise when 42 kJ of energy is supplied to 5kg of water? (specific heat capacity of water is 4200 Jkg**

a. 2°C

b. 5°C

c. 8.4°C

d. 10°C **-1°C-1**

**10. A piece of copper of mass 2kg is cooled from 150°C to 50°C. The specific heat capacity of**

**copper is 400 Jkg-1°C-1 . The heat loss is**

a. 800J

b. 4000J

c. 40000J

d. 80000J