Name : _____

1   Temperature is a property that determines

   A   how much heat a body contains.
   B   whether a body will feel hot or cold to the touch.
   C   how much heat must be removed to bring a body to 0 K.
   D   in which direction heat will flow between two bodies.

2   When two objects are in thermal equilibrium

   A   they need not contain the same amount of heat.
   B   they will undergo no measurable changes when placed in contact if they originally were also in mechanical equilibrium.
   C   their temperature are equal.
   D   All of the above.

3   The internal energy of a body consists of the _____.

   A   sum of kinetic energy and potential energy of the body
   B   sum of kinetic energy and potential energy of atoms in the body
   C   energy released when the body is completely burnt.
   D   energy released when its mass is completely destroyed

4   The internal energy of a body increases when its temperature increases because

	kinetic energy of its atoms	potential energy of its atoms
A	increases	decreases
B	decreases	increases
C	increases	increases
D	increase	no change

5   A piece of copper of heat capacity 25 J $°C^{-1}$ is heated, and its temperature increases from 40 $°C$ to 90 $°C$. What is the increase in internal energy of the copper piece?

   A   1000 J
   B   1250 J
   C   2125 J
   D   2250 J

6   A piece of metal of mass 0.20 kg requires 1800 J of heat to raise its temperature from 20 $°C$ to 30 $°C$. What is the specific heat capacity of the metal?

   A   300 J kg^{-1} $°C^{-1}$
   B   450 J kg^{-1} $°C^{-1}$
   C   900 J kg^{-1} $°C^{-1}$
   D   9000 J kg^{-1} $°C^{-1}$

7   In hot weather, people use electric fans to keep cool. Why do the fans make them feel cool?

A   They change one form of energy into another.
B   They cool the air in the room.
C   They increase the rate of evaporation from the skin.
D   They speed up the vibration of air molecules.

8   The diagram below represents two blocks of copper, P and Q , each receiving the same amount of energy W. The mass of P is twice the mass of Q. The temperature rise of P is half of Q.
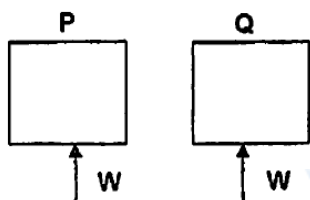

Which statement about P and Q is correct?

A   The heat capacity of P is half the heat capacity of Q.
B   The heat capacity of P is twice the heat capacity of Q.
C   The specific heat capacity of P is twice the specific heat capacity of Q.
D   The specific heat capacity of P is half the specific heat capacity of Q.

9   A 60 W heater is used to heat up a 0.5 kg block of copper. The temperature-time graph is plotted as shown below:
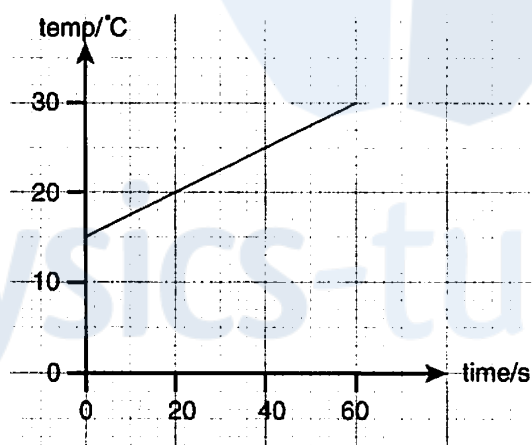
What is the heat capacity of the copper block?
A   240 J kg^{-1} $^{\circ}$C^{-1}
B   480 J kg^{-1} $^{\circ}$C^{-1}
C   240 J $^{\circ}$C^{-1}
D   480 J $^{\circ}$C^{-1}

10   100 g of water at 20°C is poured into 250 g of water at 55°C. Assume that no heat is exchanged with the surroundings. What is the resultant temperature in °C?
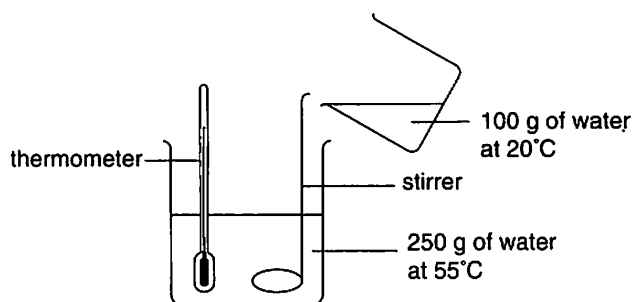

A   25
B   35
C   40
D   45

11   The diagram shows a cross-section through a rain-water puddle formed in a shallow depression in a road surface.
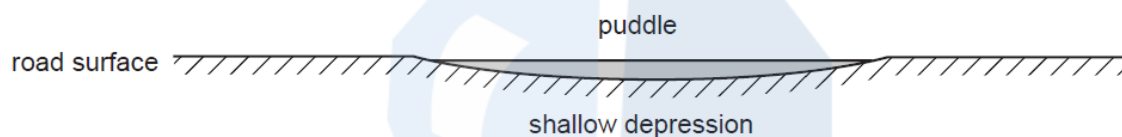
Over a period of time, the air temperature, wind speed and wind direction all remain constant. What happens to the rate of evaporation of water from the puddle?

A   It decreases, because the surface area decreases.
B   It increases, because the puddle gets shallower.
C   It increases, because the surface area decreases.
D   It remains constant.

12   A hot liquid is allowed to cool. The graph shows the cooling curve.
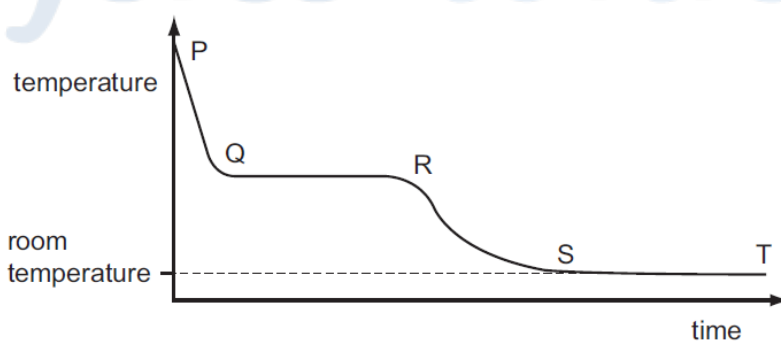
In which part of the curve is latent heat released?

A   PQ
B   QR
C   RS
D   ST

Name : _____

1   What mass of ice that should be added to 500 g of water to reduce its temperature from 25 °C to 0 °C?

(Specific heat capacity of water = 4.2 J g^{-1} °C^{-1}, specific latent heat of fusion of ice = 334 J g^{-1})

    A   6.3 g
    B   157 g
    C   393 g
    D   1590 g

2   What is the mass of water at 100 °C that is required to raise the temperature of 2.5 kg of water from 32 °C to 48 °C?

    A   0.40 kg
    B   0.77 kg
    C   0.83 kg
    D   3.75 kg

3   What is the amount of energy required to heat substance X of mass 4.0 kg from 20°C to 60°C if X has a specific heat capacity of 600 J kg^{-1} ^{o}C^{-1}.

    A   45 kJ
    B   78 kJ
    C   96 kJ
    D   103 kJ

4   200 g of water of temperature 80°C is poured into 140 g of water of temperature 30 ^{o}C and the mixture is stirred uniformly. What is the final temperature of the mixture? The specific heat capacity of water is 4200 J kg^{-1} ^{o}C^{-1}.

    A   47.6 ^{o}C
    B   59.4 ^{o}C
    C   65.3 ^{o}C
    D   69.8 ^{o}C

5   A 40 W heater is used to heat up an aluminium block. After 150 s, the temperature of the block rises from 0°C to 25°C. If the heat capacity of the block is 220 J ^{o}C^{-1}, what is the energy loss in J to the surroundings.

    A   250
    B   500
    C   1000
    D   6000

6   Equal masses of four different liquids are separately heated at the same rate. The initial temperature of all the liquids was 25°C. The boiling points and specific heat capacities, c, of the liquids are shown below. Which of the liquids will be the first to boil?

Liquid	Boiling point / °C	c / $J\,kg^{-1}K^{-1}$
A	50	900
B	60	530
C	70	870
D	100	120

7   The ratio of the masses of two metal blocks M and N is 1:2. They are both heated uniformly using identical heaters. The temperature-time graphs of the blocks are shown below.
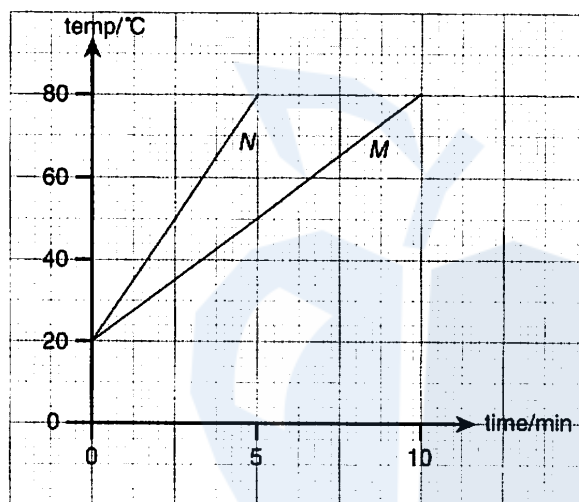
What is the ratio between the specific heat capacities of M and N?

A   4 : 1
B   2 : 1
C   1 : 2
D   1 : 1

8   Some steamboat restaurants use paper pots for their customers to boil the food themselves. What is the reason for the paper not to catch fire when in contact with the flame?
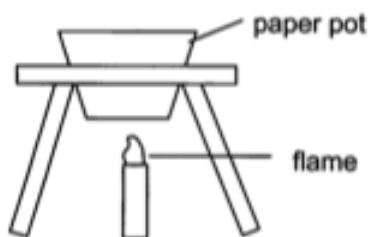
(1) Water has a boiling point lower than the burning temperature of the paper.
(2) The paper is thin and therefore heat is conducted quickly to the water in the paper pot.
(3) The paper is thick enough to withstand the high temperature of the flame.

A   (1) and (2) only
B   (1) and (3) only
C   (2) and (3) only
D   All of the above

9   When an object is being heated, which of the following statements is/are correct?
    (1) Its temperature always increases
    (2) Its internal energy always increases
    (3) Its kinetic energy and potential energy cannot rise at the same time.

    A   (2) only
    B   (1) and (2) only
    C   (2) and (3) only
    D   All of the above

10 A polystyrene cup is often used to hold the water for heat experiment. Which of the following
    statements is/are the reason(s) for using the polystyrene cup?

    (1) It is a good insulator.
    (2) It can withstand a high temperature
    (3) It has a small heat capacity

    A   (1) only
    B   (2) only
    C   (1) and (3) only
    D   (1), (2) and (3)

11 Specific latent of vaporization is usually much greater than that of fusion. Which of the following
    statements gives the best explanation?

    A   The K.E. of gas molecules is much greater than that of liquid molecules.
    B   Solid molecules are usually strongly bonded.
    C   Gas molecules are weakly attracted towards each other.
    D   Gas molecules have to push their way out against the external pressure.

12 Two liquids of equal masses are cooled under identical situations. Their cooling curves are shown
    below:
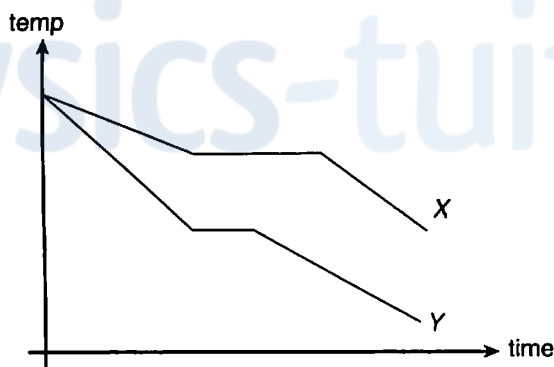
    (1) X has a higher melting point.
    (2) Liquid X has a higher specific heat capacity than liquid Y.
    (3) X has a smaller specific latent heat of fusion than Y.

    A   (1) only
    B   (3) only
    C   (1) and (2) only
    D   (2) and (3) only