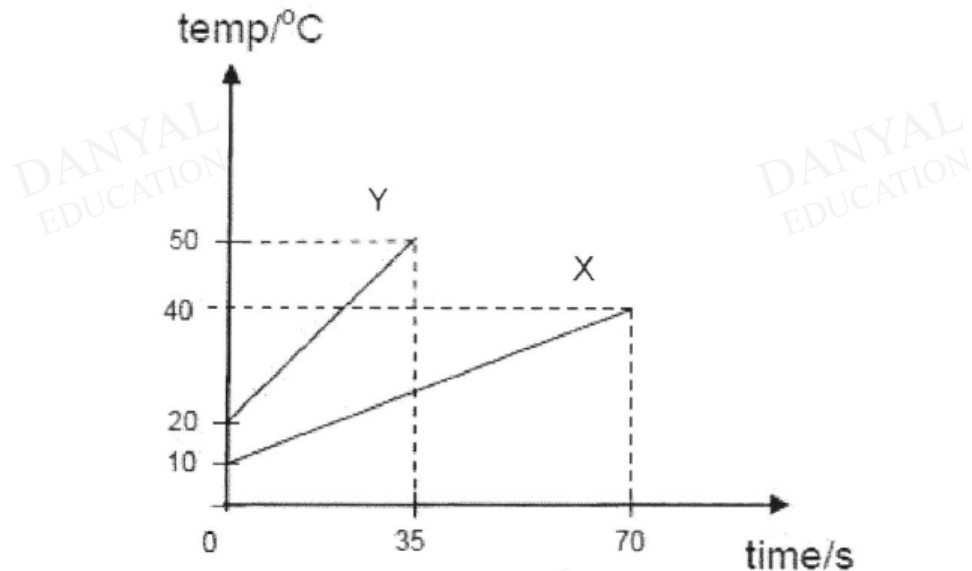


O Level Pure Physics MCQs

Thermal Properties of Matter Test 2.0

Q1

An electric heater is used to heat up two blocks, X and Y. Their temperature – time graphs are plotted as shown below.



What is the ratio of heat capacities of X to Y?

- A 0.50 B 0.80 C 1.0 D 2.0

Q2

Which of the following sentence about internal energy is correct?

- A When water at 100°C boils to become steam at 100°C, its internal kinetic energy increases.
- B When water is heated such that its temperature rises from 30°C to 80°C, its internal potential energy increases.
- C The internal energy is a measure of the total kinetic and potential energies of the molecules in the body.
- D Two substances at the same temperature must have the same amount of internal energy.

Q3

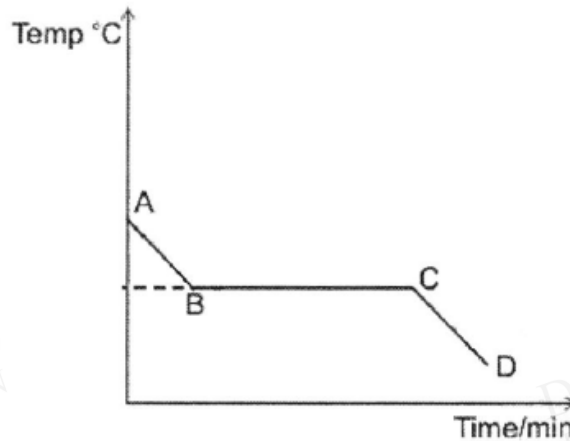
A 5.0 g bullet travelling at 400 m/s penetrates a copper block of mass 2.0 kg. Assume that there is no loss of thermal energy to the surroundings and that all the thermal energy generated during the penetration was absorbed by the copper block, what is the increase in temperature of the copper block after the bullet has stopped?

(Specific heat capacity of copper = 400 Jkg⁻¹K⁻¹)

- A 0.50°C
- B 5.0°C
- C 50°C
- D 500°C

Q4

20. The diagram below shows a cooling curve of an unknown pure substance.

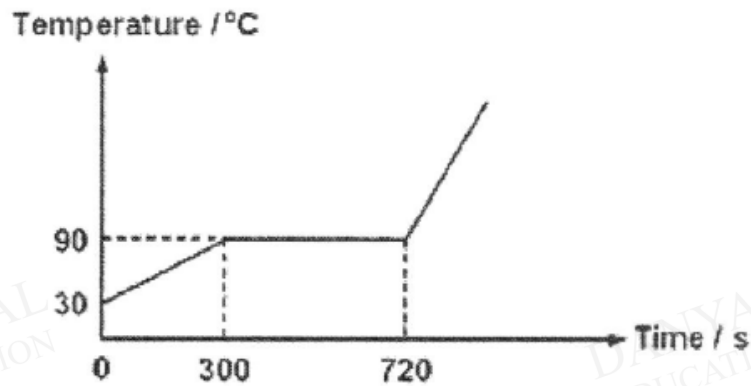


Which of the following statements are correct?

- A At BC, the kinetic energy increases and the potential energy remains constant.
- B At BC, the kinetic energy decreases and the potential energy remains constant.
- C At BC, the potential energy increases and the kinetic energy remains constant.
- D At BC, the potential energy decreases and the kinetic energy remains constant.

Q5

23. The diagram shows a graph of temperature against time when 0.5 kg of salt is being heated.

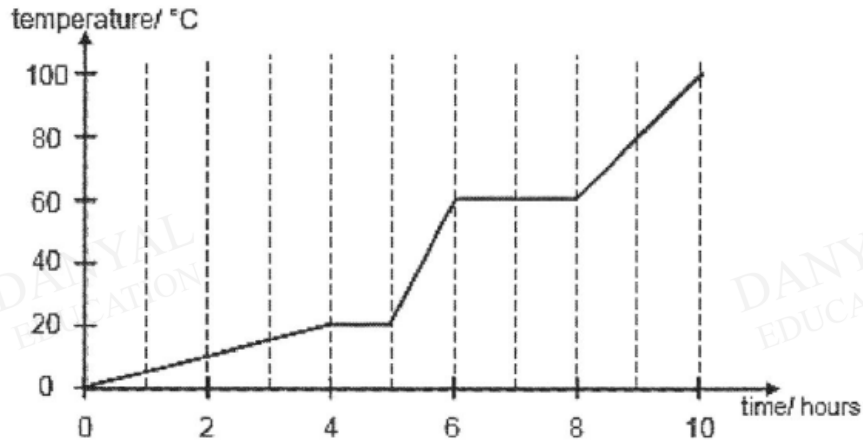


If heat energy is supplied to the salt at a rate of 100 W. What is the specific latent heat of fusion of the salt?

- A 1.4×10^3 J/kg
- B 2.1×10^4 J/kg
- C 8.4×10^4 J/kg
- D 1.4×10^5 J/kg

Q6

- 24 A sample of a material is heated at a constant rate from solid state until it reaches the gaseous state and a graph of temperature against time is shown below.



Which of the following can be deduced from the graph?

- A The heat capacity of the material increases with temperature in gaseous state.
 - B The specific heat capacity of the material is smallest when in the solid state.
 - C The specific latent heat of fusion is the same as the specific latent heat of vaporisation.
 - D The specific latent heat of fusion is half the specific latent heat of vaporisation.
- Q7

A solid substance is heated strongly for some time.

At one stage, the energy given to the substance is used as latent heat of vaporisation.

At this stage, what change does the energy cause?

- A It breaks the bonds holding the molecules together. Molecules escape from the liquid.
- B It breaks the bonds holding the molecules together. The solid becomes liquid.
- C It makes the molecules move faster but there is still a strong attraction between them.
- D It makes the molecules move faster and so the temperature rises.

Q8

During a cold weather, underground water pipes which are made from iron will sometimes burst. This is because

- A the pipes contract on cooling which decreases the water pressure inside.
- B the pipe expands when cooled from 4 °C to 0 °C.
- C the iron pipes becomes brittle when subjected to a very low temperature.
- D the formation of ice from water will increase its volume inside the pipes.

Q9

A lump of 100 g ice at -10 °C is put inside a glass of 240 g water which is at a temperature of 60 °C. The following information is provided:

specific heat capacity of ice = 2100 J / kg.°C

specific heat capacity of water = 4200 J / kg.°C

specific latent heat of fusion of ice = 0.336 MJ / kg

What is the lowest temperature of the water in the glass that can be achieved?

- A 16.4 °C
- B 17.3 °C
- C 18.8 °C
- D 40.9 °C

Q10

"When a substance is heated, the average kinetic energy of the particles in the substance remains constant. The particles begin to slide on each other."

What is the name of the process described above?

- A Freezing
- B Melting
- C Condensation
- D Boiling

Answers

Thermal Properties of Matter Test 2.0

Q1 D

Q2 C

Q3 A

Q4 D

Q5 C

Q6 D

Q7 A

Q8 D

Q9 B

Q10 B

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