



Video Solution on Website:-

<https://physicsaholics.com/home/courseDetails/5>

Video Solution on YouTube:-

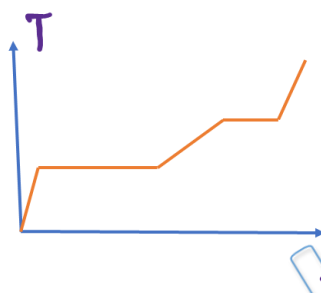
https://youtu.be/DgZx_S4dXhU

- Q 1. 1 kg of ice at 0°C is mixed with 1.5 kg of water at 45°C [latent heat of fusion = 80 cal/g]. Then-
- (a) the temperature of the mixture of 0°C
 - (b) mixture contains 156.25 g of ice
 - (c) mixture contains 843.75 g of ice
 - (d) the temperature of the mixture is 15°C
- Q 2. It takes 15 minutes to raise a certain amount of water 0°C to boiling point using an electric heater. After this one hour and twenty minutes are required in the same conditions to convert all the water into vapour -
- (a) latent heat of vaporization is 530 cal
 - (b) latent heat of vaporization is 533 cal
 - (c) mass of water is 1 kg
 - (d) latent heat of vaporization is 540 cal
- Q 3. Steam at 100°C passed into a calorimeter of water equivalent 10 g containing 94 gm of water and 10g of ice at 0°C . The temperature of the calorimeter and contents rise by 5°C . The amount of steam passed is
- (a) 1g (b) 2g
 - (c) 3g (d) 4g
- Q 4. An electrically heating coil is placed in a calorimeter containing 360g of H_2O at 10°C . The coil consumes energy at the rate of 90W. The water equivalent of calorimeter and the coil is 40g. The temperature of water after 10 minutes will be
- (a) 42.14°C (b) 32.14°C (c) 22.14°C (d) 52.14°C
- Q 5. To raise the temperature of 100 g of ice at 0°C to 10°C by a heater of 420 W the time required is
- (a) 90 min (b) 90 seconds (c) 21.2 min (d) 21.2 seconds
- Q 6. A lump of 0.1 kg of ice at -10°C is put in 0.15 kg of water at 20°C . How much water will be found in the mixture when it has reached thermal equilibrium? (Specific heat of ice = 2.1 kJ/kg; Latent heat of ice = 336 kJ/kg)
- Q 7. If water at 0°C , kept in a container with an open top, is placed in a large evacuated chamber,
- (a) all the water will vaporize
 - (b) all the water will freeze
 - (c) part of the water will vaporize and the rest will freeze



(d) ice, water and water vapour will be formed and reach equilibrium at the triple point.

- Q 8. A substance of mass M kg requires a power input of P watts to remain in the molten state at its melting point. When the power source is turned off, the sample completely solidifies in time t seconds. The specific latent heat of fusion of the substance is
(a) Pt (b) Pt/M (c) PtM (d) PM/t
- Q 9. Heat is supplied to a certain homogenous sample of matter, at a uniform rate. Its temperature is plotted against time, as shown. Which of the following conclusions can be drawn?



- (a) Its specific heat capacity is greater in the solid state than in the liquid state.
(b) Its specific heat capacity is greater in the liquid state than in the solid state.
(c) Its latent heat of vaporization is greater than its latent heat of fusion.
(d) Its latent heat of vaporization is smaller than its latent heat of fusion.
- Q 10. When ice melts at zero degree Celsius
(a) its molecular kinetic energy increases
(b) its molecular potential energy increases
(c) its kinetic energy decreases
(d) None of these
- Q 11. 100 gram water at 0°C is placed in a large container in which there is no air. Some water converted to steam and rest converts in to ice. Find mass of ice formed ?
(a) 13g (b) 50g (c) 87g (d) 33g
- Q 12. mass of empty cylinder is 14 kg Mass of fully filled LPG cylinder is 30 kg and pressure inside it is P . find pressure inside cylinder when mass of cylinder reduces to 22kg ?
(a) P (b) $2P$ (c) $P/2$ (d) $P/3$
- Q 13. m_1 gm ice at 0°C , m_2 gm water at 50°C and m_3 gm steam at 100°C are mixed together then the correct alternative is –
(a) Temperature of mixture is 0°C if $m_1 \geq \frac{5}{8}m_2 + 8m_3$.
(b) Temperature of mixture is 100°C if $m_3 \geq \frac{5}{54}m_2 + \frac{m_1}{3}$
(c) Temperature of mixture is 50°C if $13m_1 = 59m_3$
(d) Temperature of mixture is 50°C if $18m_1 = 59m_3$



- Q 14. A cube of iron (density = 8000 kg/m^3 , specific heat capacity = 470 J/kg-K) is heated to a high temperature and is placed on a large block of ice at 0°C . The cube melts the ice below it, displaces the water and sinks. In the final equilibrium position, its upper surface just goes inside the ice. Calculate the initial temperature in degree celcius of the cube. Neglect any loss of heat outside the ice and the cube. The density of ice = 900 kg/m^3 and the latent heat of fusion of ice = $3.36 \times 10^5 \text{ J/kg}$.

Answer Key

Q.1 a,b	Q.2 b	Q.3 b	Q.4 a	Q.5 b
Q.6 181g	Q.7 c	Q.8 b	Q.9 b,d	Q.10 b
Q.11 c	Q.12 a	Q.13 a,b,c	Q.14 080	