Heat

1. Why does food cook faster in pressure cooker than in an open pot?
2. If you add heat to an object, do you necessarily increase its temperature? Justify it.
3. Water in earthen pot remains cold in summer. Explain why?
4. Why does steam at 100°C causes severe burns than water at 100°C?
5. Why is the groundnut find along with sand?
6. A medical officer prescribes to put wet cloth on the forehead of a person suffering from high fever, why?
7. When you come out of swimming pool, you feel cold. Why?
8. Why latent heat of vaporization is greater than latent heat of fusion?
9. Water has the specific value of 4200J/kg°C. What does it means?
10. A large iceberg melts at the base, but not at top, why?
11. A newly born baby is wrapped by warm cotton clothes, why?
12. Differentiate between evaporation and boiling.
13. Define specific heat capacity of a substance. Describe the method of mixture to measure the specific heat capacity of a solid.
14. State and explain Newton's law of cooling and derive an expression for the specific heat of a liquid.
15. Define latent heat of fusion of ice. Describe the method for the measurement of it in the laboratory.
16. What is specific latent heat of vaporization of a liquid? Develop an expression for the determination of the latent heat of vaporization.
17. What is regelation? Does ice melt when it is mixed with water at 0 °C? Explain.
18. When a fine wire supporting two heavy loads is passed over a block of ice placed across two supports, the wire finds its way through the ice block without cutting into two pieces. Explain why?
19. How glaciers move down the slope of a mountain?
20. How much heat is required to convert 10g of ice at -10°C into steam at 10°C? (Specific heat capacity if ice is 0.5cal/g°C) **Ans: 30450J**
21. What is result of mixing 100g of ice at 0°C and 100g of water at 100°C. Latent heat of fusion of ice = 336×10^3 Jkg^{-1}, Specific heat of water = 4200 Jkg^{-1} K^{-1}. **Ans: 10°C**
22. What is result of mixing 10gm of ice at 0°C into 15gm of water at 20°C in a vessel of mass 100 gm and specific heat capacity 0.09cal/gm 0°C.
23. A metal of mass 25 gm at a temperature of 100°C, is dropped into a calorimeter containing 200gm of water initially at 20°C The final temperature is 22°C. Complete the specific heat capacity of metal if the water equivalent of the calorimeter is 10 gm. **Ans: 0.21cal/gm°C**
24. 1 KW immersion heater heats one liter of water in a kettle for 5 minutes. If temperature rises by 60°C calculate the heat capacity of cattle in JK^{-1}. (Sp. Heat of water = 4200J/kg K) **Ans: 0.8×10^3**
25. A pan filled with hot food cools from 94°C to 86°C in 2 minutes when the room temperature is at 20°C. How long will it take to cool from 71°C to69°C. **Ans: 42sec.**
26. The temperature of equal masses of three different liquids A, B and C are 12, 19°C and 28°C respectively. The temperature When A and B are mixed is 16°C and when B and C are mixed it is 23°C what should be the temperature when A and C are mixed?` **Ans: 20.26**
27. From what height should a block of ice be dropped in order that it may melt completely? Given that latent heat of ice = 80 $calg^{-1}$. (Assume that all energy of fall is retained by ice)

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