PHYSICS

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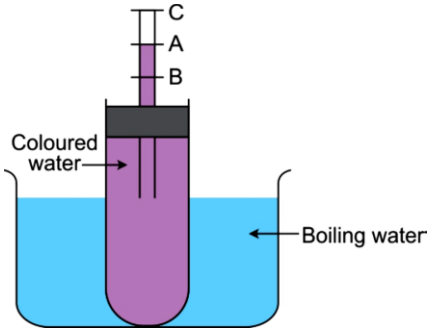
Board – ICSE	Class –9th	Topic – Heat and Energy

1. Mention three disadvantages of construction of large dams for generating hydroelectric power.
2. Explain the effect of ozone depletion.
3. Explain the following:
   (i) What is the use of thermos flask?
   (ii) Draw a labeled diagram of thermos flask.
   (iii) What contribution does the vacuum between the two walls give to the functioning of a thermos flask?
   (iv) What is the function of the two shining walls of the glass vessel in the thermos flask?
4. A test tube made of ordinary glass cracks on plunging into boiling water whereas a red hot test tube made of fused silica can be safely plunged into normal water, why?
5. An iron cork is fitted in a hole on the brass plate. What will be happen to the cork if
   (a) only the cork is heated?
   (b) only the iron plate is heated?
   (c) both, the cork and the plate are heated equally?
6. A metal bar measures 50 cm at $0^{o}C$ and 50.048 cm at 353 K. Find the coefficient of linear expansion of the metal.
7. Mention a few consequences accompanied with the transfer of heat.
8. What is sea breeze? Explain its causes of origin and direction of motion?
9. A brass cork is fitted in the hole of an iron plate. To loosen the cork, will you heat it or cool it?
10. Mention three characteristics of heat radiations.
11. The area of a copper plate at 0°C is 3 m^2. Calculate the area of the plate when it is heated through $40^{o}C$.Take coefficient of linear expansion of copper = $0.000016°C^{-1}$.
12. Given figure shows a hard glass test tube containing coloured water such that the level of water is up to point A. The test tube is placed in a large beaker containing boiling hot water. It is observed that the level of coloured water first drops to B and then rises up to C. Answer the following questions.
    (i) Why is there a drop in the level of water?
    (ii) Why does the level of water start rising after sometime?
    (iii) State the two important deductions which can be made regarding the action of heat on liquids from



the above observations.

(iv) If the test tube is placed in ice cold water instead of boiling hot water, state your observations with reasons.

13. (i) Write the relation between coefficient of volume expansion and coefficient of linear expansion.

(ii) A metallic ball is heated through a certain temperature. Out of radius, surface area and volume, which will undergo the least percentage increase and which will undergo largest percentage increase? Why?

14. The coefficient of cubical expansion of copper is 5.1×10^{-5} per ^{o}C. Calculate its coefficient of linear expansion.