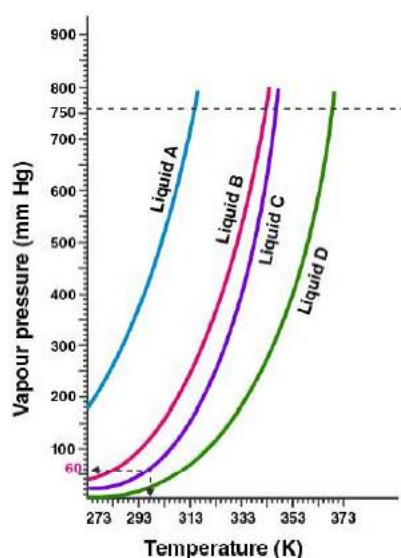


Exemplar problem 12

The variation of the vapour pressure of different liquids with temperature is shown in Fig.

- (i) Calculate graphically boiling points of liquids A and B.
- (ii) If we take liquid C in a closed vessel and heat it continuously. At what temperature will it boil?
- (iii) At high altitude, atmospheric pressure is low (say 60 mm Hg). At what temperature liquid D boils?
- (iv) The pressure cooker is used for cooking food at the hill station. Explain in terms of vapour pressure why is it so?



Solution:

- (i) The boiling point of liquid A is: 315 K (approx.) and the boiling point of B is: 345 K (approx.)
- (ii) In the closed vessel the liquid C will not boil because the pressure is kept on increasing in the vessel
- (iii) According to the graph Temperature corresponding to 60mm of hg = 313 K. So liquid D will boil at 313 K.
- (iv) Since the atmospheric pressure is low at high altitudes, water boils at low temperatures on hills. We already know that a liquid boils when its vapour pressure equals atmospheric pressure. Because a pressure cooker raises the boiling point of water and its heat content, food cooks faster.