

Answer 7

(a) $V_1 = 20 \text{ dm}^3$ $V_2 = 20 + 20 = 40 \text{ dm}^3$
 $P_1 = 200 \text{ atm}$ $P_2 = ?$

$$P_1V_1 = P_2V_2$$
$$200 \times 20 = P_2 \times 40$$
$$P_2 = \frac{200 \times 20}{40} = 100 \text{ atm}$$

(b) $V_1 = 200 \text{ cm}^3$ $V_2 = ?$
 $T_1 = 27 + 273 = 300 \text{ K}$ $T_2 = 3 + 273 = 276 \text{ K}$
 $P_1 = 200 \text{ atm}$ $P_2 = 740 \text{ mm Hg}$

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$
$$\frac{720 \times 200}{300} = \frac{740 \times V_2}{276}$$
$$V_2 = \frac{720 \times 200 \times 276}{300 \times 740}$$
$$= \frac{72 \times 2 \times 276}{3 \times 74} = \frac{39744}{222}$$
$$= 179.02 \text{ cm}^3$$

(C) The forces of attraction in liquids are less than solids but are enough to keep the molecules in contact with other. Therefore, the liquids flow from a higher level to a lower level.

(c)

- i. **Solution:** A solution is a homogeneous mixture of two or more substances, the components of which cannot be seen separately.
- ii. **Solute:** A solute is the substance which dissolves in a solvent to form a solution.
- iii. **Solvent:** A solvent is the medium in which a solute dissolves.

Solution = Solute + Solvent
