

- 3 (a) With reference to the kinetic theory of gases, state and explain the pressure and temperature conditions for a real gas to behave like an ideal gas.
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[3]

- (b) 0.428 mole of an ideal gas undergoes the following thermodynamic processes:

Process A: adiabatic compression (no net heat flow).

Process B: expansion at constant temperature T .

Process C: decrease in pressure at constant volume.

Fig. 3.1 shows the variation of pressure p with volume V of the gas.

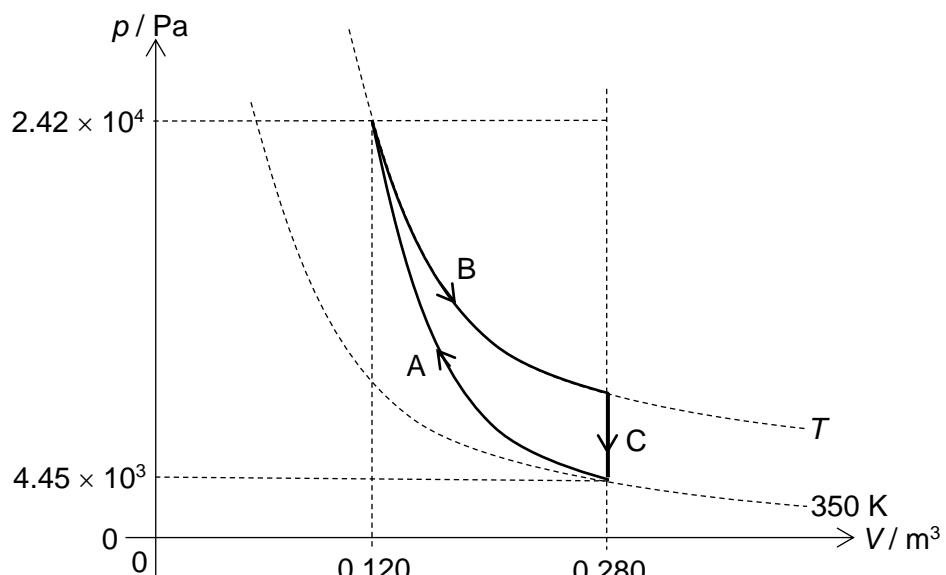


Fig. 3.1

- (i) Calculate the temperature T .

$$T = \dots \text{K} \quad [2]$$

- (ii) Show that the amount of thermal energy removed from the system during Process C is 2490 J.

[3]

- (iii) Calculate the work done on the system during Process A.

work done = J [2]

