20 An ideal gas undergoes an expansion in volume from $1.3 \times 10^{-4}\,m^3$ to $3.6 \times 10^{-4}\,m^3$ at a constant pressure of $1.3 \times 10^{5}\,Pa$. During this expansion, 24 J of heat is supplied to the gas.

What is the overall change in the internal energy of the gas?

A decrease of 54 J

B decrease of 6 J

C increase of 6 J

D increase of 54 J

21 A long horizontal tube, containing a fine powder, is closed at one end. A loudspeaker, connected