Date Planned : __ / __ / __	Daily Tutorial Sheet-15	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-3	Exact Duration :_____

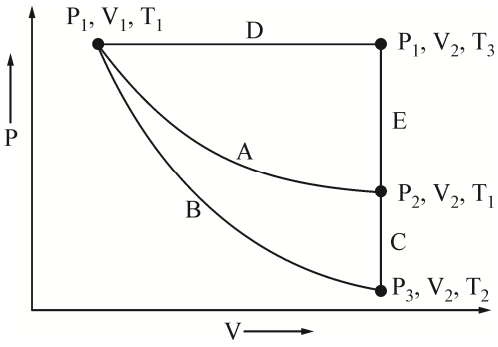
159. During an adiabatic process, the pressure of gas is found to be proportional to the cube of its absolute temperature. The ratio of $(C_{p.m.}/C_{v,m})$ for gas is :

(A) $\frac{3}{2}$ **(B)** $\frac{5}{3}$ **(C)** $\frac{7}{2}$ **(D)** $\frac{4}{3}$

Paragraph for Question No. 160 – 164

For an ideal gas, as illustration of three different path & A, (B + C) and (D + E) from an initial state P_1, V_1, T_1 to state P_2, V_2, T_1 is shown in the given figure.

Path A represents a reversible isothermal expansion from P, V_1 to P_2, V_2. Path (B + C) represents a reversible adiabatic expansion (B) from P_1V_1, T_1 to P_3, V_2, T_2 followed by reversible heating the gas at constant volume (C) from P_3, V_2, T_2 to P_2, V_2, T_1. Path (D + E) represents a reversible expansion to P_1, V_2, T_3 followed by a reversible cooling at constant volume V_2 (E) from P_1, V_2, T_3 to P_2, V_2, T_1



160. What is q_{rev}, for path (A) ?

(A) $P(V_2 - V_1)$ **(B)** $nRT_1 \ln \frac{V_2}{V_1}$ **(C)** $-nR \ln \frac{V_2}{V_1}$ **(D)** $-nRT_1 \ln \frac{V_2}{V_1}$

161. What is q_{rev}, for path (B + C)?

(A) $nR \ln \frac{V_2}{V_1}$ **(B)** $-nR \ln \frac{V_2}{V_1}$ **(C)** zero **(D)** $nRT_1 \ln \frac{V_2}{V_1}$

162. What is ΔS for path A?

(A) $nR \ln \frac{V_2}{V_1}$ **(B)** $P(V_2 - V_1)$ **(C)** $-P(V_2 - V_1)$ **(D)** $nR(V_2 - V_1)$

163. What is q_{rev}, for path (D + E) ?

(A) $P(V_2 - V_1)$ **(B)** $\int_{T_3}^{T_1} \frac{C_V(T)}{T} dT$ **(C)** $nR \ln \frac{V_2}{V_1}$ **(D)** $\int_{T_1}^{T_3} C_V(T) dT$

164. What is ΔS for path (D + E)?

(A) $-P(V_2 - V_1)$ **(B)** $-nR \ln \frac{V_2}{V_1}$ **(C)** $+P(V_2 - V_1)$ **(D)** $nR \ln \frac{V_2}{V_1}$