

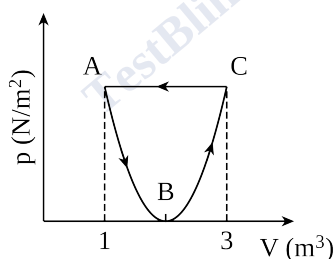
JEE MAIN THERMODYNAMICS (PHYSICS) — CYCLIC PROCESSES AND P-V DIAGRAMS — PYQS

Max. Marks: 16
Questions: 4

Section A (MCQ) — 2 questions

- Q.1** In the following $p - V$ diagram the equation of state along the curved path is given by $(V - 2)^2 = 4ap$ where a is a constant. The total work done in the closed path is

[JEE Main 2026 (Online) 28th January Morning Shift]



- (1) $+\frac{1}{3a}$ (2) $-\frac{1}{a}$ (3) $\frac{1}{2a}$ (4) $-\frac{1}{3a}$

Scan or tap for the full solution



- Q.2** An ideal gas exists in a state with pressure P_0 , volume V_0 . It is isothermally expanded to 4 times of its initial volume (V_0), then isobarically compressed to its original volume. Finally the system is heated isochorically to bring it to its initial state. The amount of heat exchanged in this process is

[JEE Main 2025 (Online) 3rd April Evening Shift]

- (1) $P_0 V_0 (\ln 2 - 0.75)$ (2) $P_0 V_0 (2 \ln 2 - 0.75)$
 (3) $P_0 V_0 (2 \ln 2 - 0.25)$ (4) $P_0 V_0 (\ln 2 - 0.25)$

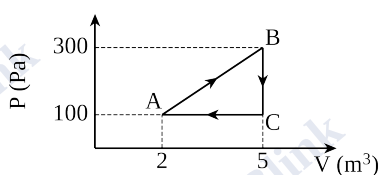
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Section B (Numerical) — 2 questions

- Q.3** A thermodynamic system is taken through the cyclic process ABC as shown in the figure. The total work done by the system during the cycle ABC is _____ J.

[JEE Main 2026 (Online) 28th January Evening Shift]

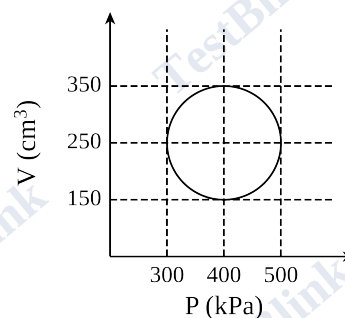


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- Q.4** An ideal gas has undergone through the cyclic process as shown in the figure. Work done by the gas in the entire cycle is _____ $\times 10^{-1}$ J. (Take $\pi = 3.14$)

[JEE Main 2025 (Online) 7th April Morning Shift]



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ANSWER KEY

Section A (MCQ) — 2 questions

Ques.	1	2													
Ans.	4	2													

Section B (Numerical) — 2 questions

Ques.	3	4													
Ans.	300	314													