

Thermodynamics

NEET previous year questions · Physics

4 questions from the official papers: NEET 2026 (1), Re-NEET 2026 (2), NEET 2020 (1). Each is followed by its answer and a worked solution written by BrainIt. Generated on 23 October 2026.



BrainIt

The NEET practice app that learns how you practise and tells you what to do next.

PYQs · Mock tests · Revision · Interactive 3D concepts · Analytics

Get it on
Google Play

Download on the
App Store



brainit.pro/app

1. NEET 2026 · Q34

An electric heater supplies heat to a system at a rate of 100 W. If the system performs work at a rate of 75 J/s, then the rate at which internal energy increases will be:

- (1) 75 W (2) 100 W (3) 125 W (4) 25 W

Answer (4)

Sol. By the first law of thermodynamics $Q = \Delta U + W$. Differentiating with respect to time, $\frac{dQ}{dt} = \frac{d(\Delta U)}{dt} + \frac{dW}{dt}$, so $\frac{d(\Delta U)}{dt} = 100 - 75 = 25$ W. The distractors correspond to the given work rate (1), heat rate (2), or the incorrect sum (3).

2. Re-NEET 2026 · Q17

In an adiabatic expansion, the temperature of one mole of an ideal monatomic gas ($\gamma = 5/3$) decreases from 60 K to 50 K. The work done by the gas in the process is: (Take the universal gas constant as $R = 8.3 \text{ J mol}^{-1}\text{K}^{-1}$)

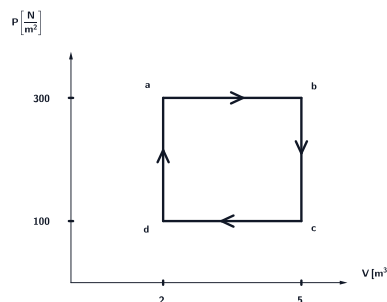
- (1) 41.5 J (2) 83 J (3) 124.5 J (4) 166 J

Answer (3)

Sol. In an adiabatic process $Q = 0$, so the work done by the gas comes entirely out of its internal energy:
 $W = -\Delta U = nC_V(T_1 - T_2)$. For a monatomic gas $C_V = \frac{3}{2}R$, giving $W = 1 \times \frac{3}{2}(8.3)(10) = 124.5$ J. The same follows from $W = \frac{nR(T_1 - T_2)}{\gamma - 1}$ with $\gamma - 1 = \frac{2}{3}$. NCERT Class 11, Thermodynamics.

3. Re-NEET 2026 · Q39

One mole of an ideal monatomic gas undergoes a cyclic process as shown in the figure. The total heat supplied to the gas is:



- (1) 400 J (2) 500 J (3) 600 J (4) 800 J

Answer (3)

Sol. Over a complete cycle the gas returns to its initial state, so $\Delta U = 0$ and the first law reduces to $Q = W$. The cycle is a rectangle on the $P-V$ diagram between $P = 100$ and 300 N m^{-2} and $V = 2$ and 5 m^3 , traversed clockwise, so the work done by the gas is the enclosed area $= (300 - 100)(5 - 2) = 600$ J. Hence 600 J of heat is supplied. NCERT Class 11, Thermodynamics (cyclic process).

Why the other options are wrong:

- (1) miscounts one side of the rectangle, typically taking $\Delta V = 2 \text{ m}^3$
- (2) computes only the net heat of the two isobaric legs and omits the isochoric contributions to the balance
- (4) adds the areas under the two isobaric legs instead of taking their difference, double-counting the return path

4. NEET 2020 · Q173

Two cylinders A and B of equal capacity are connected to each other via a stop cock. A contains an ideal gas at standard temperature and pressure. B is completely evacuated. The entire system is thermally insulated. The stop cock is suddenly opened. The process is :

- (1) adiabatic (2) isochoric
(3) isobaric (4) isothermal

Answer (1)

Sol. The system is thermally insulated, so $q = 0$; the gas expands freely against vacuum, so $w = 0$. This is an irreversible adiabatic free expansion (with $\Delta T = 0$ for an ideal gas). Chapter: Thermodynamics.

Questions: official NEET papers set by NTA. Solutions: BrainIt. BrainIt is independent and not affiliated with NTA. Online, with every chapter: brainit.pro/neet/physics/thermodynamics/pyq/

AFTER THIS PAPER

Turn this paper into a plan.

BrainIt is a NEET practice app. It learns how you practise and tells you what to do next.

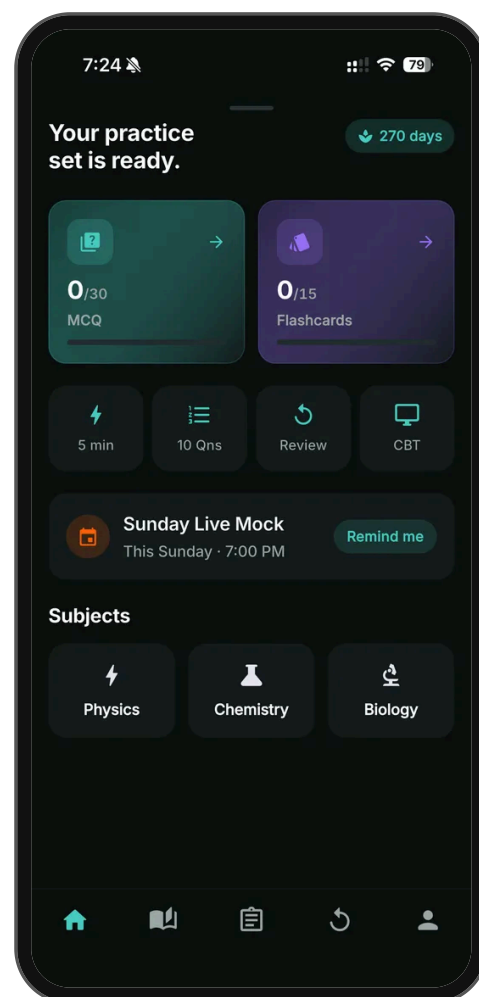
- **PYQs**
Previous-year questions, each with an explanation.
- **Mock tests**
Full and mini mocks on the CBT exam screen.
- **Revision**
Your mistakes come back for review, with flashcards.
- **Interactive concepts**
Learn by exploring 3D models, like the human body and the heart.
- **Analytics**
See your accuracy, speed and where you lose marks.
- **A daily plan**
It picks what to study next, every day.

Get it on
Google Play

Download on the
App Store



Scan with your phone camera,
or type **brainit.pro/app**



Take a free CBT mock

Real NEET questions on the exam screen, timed and marked for you.
No login.