

NEET THERMODYNAMICS (PHYSICS) — FIRST LAW OF THERMODYNAMICS — PYQS

Max. Marks: 32
Questions: 8

Section A (MCQ) — 8 questions

- Q.1** 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 : [NEET (UG) 2026]

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

Scan or tap for the full solution



- Q.2** Two gases A and B are filled at the same pressure in separate cylinders with movable pistons of radius r_A and r_B , respectively. On supplying an equal amount of heat to both the systems reversibly under constant pressure, the pistons of gas A and B are displaced by 16 cm and 9 cm, respectively. If the change in their internal energy is the same, then the ratio $\frac{r_A}{r_B}$ is equal to [NEET (UG) 2025]

 (1) $\frac{2}{\sqrt{3}}$ (2) $\frac{\sqrt{3}}{2}$ (3) $\frac{4}{3}$ (4) $\frac{3}{4}$

Scan or tap for the full solution



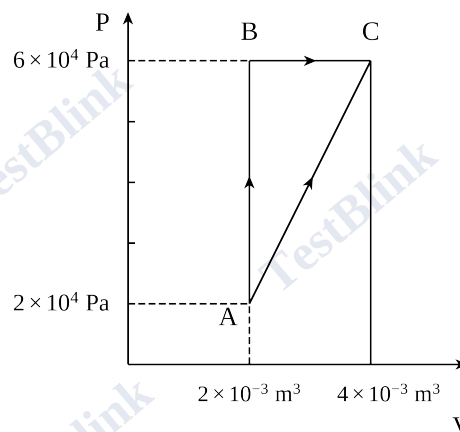
- Q.3** A sample of 0.1 g of water at 100°C and normal pressure ($1.013 \times 10^5 \text{ N m}^{-2}$) requires 54 cal of heat energy to convert to steam at 100°C. If the volume of the steam produced is 167.1 cc, the change in internal energy of the sample, is [NEET 2018]

(1) 104.3 J (2) 208.7 J (3) 42.2 J (4) 84.5 J

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- Q.4** Figure below shows two paths that may be taken by a gas to go from a state A to a state C.



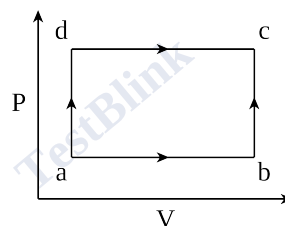
In process AB, 400 J of heat is added to the system and in process BC, 100 J of heat is added to the system. The heat absorbed by the system in the process AC will be [AIPMT 2015 (Cancelled)]

(1) 460 J (2) 300 J (3) 380 J (4) 500 J

Scan or tap for the full solution



- Q.5** A system is taken from state a to state c by two paths adc and abc as shown in the figure. The internal energy at a is $U_a = 10 \text{ J}$. Along the path adc the amount of heat absorbed $dQ_1 = 50 \text{ J}$ and the work obtained $dW_1 = 20 \text{ J}$ whereas along the path abc the heat absorbed $dQ_2 = 36 \text{ J}$. The amount of work along the path abc is [NEET 2013 (Karnataka)]



(1) 10 J (2) 12 J (3) 36 J (4) 6 J

Scan or tap for the full solution



- Q.6** During an isothermal expansion, a confined ideal gas does 150 J of work against its surroundings. This implies that [AIPMT 2011 (Prelims)]

- (1) 150 J of heat has been removed from the gas
- (2) 300 J of heat has been added to the gas
- (3) no heat is transferred because the process is isothermal
- (4) 150 J of heat has been added to the gas

Scan or tap for the
full solution



Q.7 If ΔU and ΔW represent the increase in internal energy and work done by the system respectively in a thermodynamical process, which of the following is true? [AIPMT 2010 (Prelims)]

- (1) $\Delta U = -\Delta W$, in an adiabatic process
- (2) $\Delta U = \Delta W$, in an isothermal process
- (3) $\Delta U = \Delta W$, in an adiabatic process
- (4) $\Delta U = -\Delta W$, in an isothermal process

Scan or tap for the
full solution



Q.8 The internal energy change in a system that has absorbed 2 kcal of heat and done 500 J of work is

[AIPMT 2009]

- (1) 6400 J (2) 5400 J (3) 7900 J (4) 8900 J

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8			
Ans.	2	4	2	1	4	4	1	3			