Most Repeated Questions in JEE Main Physics from Laws of Thermodynamics

Q: A source supplies heat to a system at the rate of 1000 W. If the system performs work at a rate of 200 W. The rate at which internal energy of the system increases is

Q: A total 48 J heat is given to one mole of helium kept in a cylinder. The temperature of helium increases by 2°C. The work done by the gas is (Given, R = 8.3 J K^{-1} mol^{-1})

Q: Assertion A: If dQ and dW represent the heat supplied to the system and the work done on the system respectively. Then according to the first law of thermodynamics dQ = dU – dW.
Reason R: First law of thermodynamics is based on the law of conservation of energy.

(a) Both A and R are correct and R is the correct explanation of A
(b) Both A and R are correct but R is not the correct explanation of A.
(c) A is not correct but R is correct.
(d) A is correct but R is not correct.