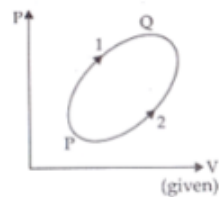


### QUES 04:-

A system goes from P to Q by two different paths in the P-V diagram as shown in Figure. Heat given to the system in path 1 is 1000 J. The work done by the system along path 1 is more than path 2 by 100 J. What is the heat exchanged by the system in path 2?



**Sol.** For path (1)  $Q_1 = + 1000 \text{ J}$

$$W.D = W_1 - W_2 = 100$$

$$W_1 = W.D \text{ through path 1}$$

$$W_2 = W.D \text{ through path 2}$$

$$\therefore W_2 = W_1 - 100$$

As change in internal energy by path 1 and 2 are same

$$\Delta U = Q_1 - W_1 = Q_2 - W_2$$

$$1000 - W_1 = Q_2 - (W_1 - 100)$$

$$1000 = Q_2 + 100$$

$$Q_2 = 900 \text{ J.}$$