

2. If 100 moles of  $H_2O_2$  decompose at 1 bar and 300 K, the work done (kJ) by one mole of  $O_2(g)$  as it expands against 1 bar pressure is: ( $R = 8.3$  J/mol K)

a) 62.25

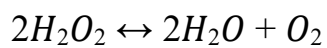
b) 124.5

c) 249

d) 498

(JEE,2016)

solution:



$$W = -P_{\text{ext}}\Delta V$$

100 moles  $H_2O_2$  produces 50 moles  $O_2$

$$\text{Work done by } O_2 = -50 \times 8.3 \times 300 = -124.5 \text{ KJ}$$