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Semester 2nd

Subject Thermodynamic

Dept BE Electrical Engi...

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Ans:

Given data

$V_1 = 6\,L$

$P_1 = 4\,atm$

$V_2 = 2.50\,L$

Req:

final preasure $= P_2 = ?$

Solution

According to Boyle's law

$$P_1 V_1 = P_2 V_2$$

$$P_2 = \frac{P_1 V_1}{V_2}$$

$$P_2 = \frac{(6L)(4\,atm)}{(2.50L)}$$

$$\boxed{P_2 = 9.6\,atm}$$

Converting into mmgh

$9.6 \text{ atm} \left(\frac{760 \text{ mmgh}}{1 \text{ atm}}\right)$

$P2 = 7296$

$\boxed{P2 \quad 7.2 \times 10^{-3} \text{ mmgh}}$

Converting into psi

$9.6 \text{ atm} \left(\frac{14.7 \text{ psi}}{1 \text{ atm}}\right)$

$P2 = 141.12$

$\boxed{P2 = 1.4 \times 10^{-2} \text{ psi}}$

Q No 2

Ans: False There is not a direct but inverse relation between air pressure & attitude

Reason:

this is due to the amount of also above us. for example:

If we are on the lower surface. So we are not So we have more air above us which will exert

more pressure. but we move to higher surface. There will be less air above us Thus less air will exert less pressure:

Conclusion:

We Concluded that their is inverse relation b/w air pressure & attitude.

Q No(3)

Ans

$V_1 = 8\ ft^3$

$p_1 = 100\ lbf/in^2$

$p_2 = 18.3\ lbf/in^2$

process hyperbolic

$p_1 v_1 = p_2 V_2$

$V = \frac{p_1 v_1}{p_2}$

$V = \frac{100 \times 8}{18.3}$

$v_2 = 43.718\ ft^3$

work done = pv = Consult as the process hyperbolic

So

$$W = P_1V_1 = P_2V_2$$

$$W = P_1V_1 = 8 \times 100 = 800 J$$

$$W = P_2V_2 = 18.3 \times 43.72 = 800.075$$

$$= 800 J$$

Q4:

Ans: Heat and Energy are two different ways of transformation energy from one System to another b/w heat & work following are difference

~~work~~

Heat

(1) Heat is the tranfer thermal energy b/w System.

(2) work is the energy associated with the random motion of particales.

(3) Change in heat is represanted by ΔH

Work:- Work is the transfer of mechanical energy b/w two system

Heat can not be fully converted into work

Work is the energy of ordered motion in one direction.

Change in work is represented by ΔW

Eq:- The term $\Delta Q = \Delta W$ implies that the heat supplied by surrounding is equal to the work done by the system of the surrounding

i.e ΔQ = Heat supplied

ΔW = work done by system