

ANSWER No: 4

Heat

Heat is a form of energy.

It requires temperature differences.

It cannot be totally converted into form of work.

Heat is the transfer of thermal energy between systems.

Work

Work is the amount of energy transferred by force acting through distance.

It requires force and displacement.

It can be transferred to heat.

Work is the transfer of mechanical energy b/w two systems.

ANSWER 4 (ii)

As the first law of thermodynamics.

Q is the net heat transferred into the system.

That is Q is the sum of all heat transfer into & out of the system. W is the net work done by the system. That is W is the sum of all the work done on or by the system.

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ANSWER No: 2)

The above statement is false because they both have an inverse relationship.

REASON:-

When altitude increases, the air pressure decrease. This is due to the amount of air on top of you at your current altitude. At lower altitude, you have more air above you & thus more pressure and at higher altitude, you have less air above you, & thus less pressure.

Therefore at high altitude, food takes longer time to cook due to low pressure.

ANSWER No (3)

Given That :

$$V_1 = 8.5 \text{ ft}^3$$

$$P_1 = 100 \text{ lb-ft/in}^2$$

$$P_2 = 18.3 \text{ lb-ft/in}^2$$

Find

Work done $W = ?$

Solution

As we know that

$$P_1 V_1 = P_2 V_2$$

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

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

$$= \frac{(100)(8)}{(18.3)} = \frac{800}{18.3}$$

$$V_2 = 43.71 \text{ ft}^3$$

Now

$$\text{Work done, } W = P_1 V_1 \ln \left(\frac{V_2}{V_1} \right)$$

$$= (100)(8) (18.3) \ln \left(\frac{43.71}{8} \right)$$

$$= 14.660 \ln \left(\frac{43.71}{8} \right)$$

$$\text{Work done} = 24860.76 \text{ ft-lbs}$$

ANSWER # 1

Given That

$$P_1 = 4 \text{ atm}$$

$$V_1 = 6 \text{ L}$$

$$V_2 = 2.50 \text{ L}$$

Find:

$$P_2 = ?$$

Solution

$$P_1 V_1 = P_2 V_2$$

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

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

$$= \frac{(4)(6)}{2.50} \rightarrow \boxed{P_2 = 9.6 \text{ atm}}$$

Now

$$\text{For } 1 \text{ atm} = 29.9 \text{ Hg } \quad 29.9 \text{ Hg} = 760 \text{ mm Hg}$$

o,

$$9.60 \text{ atm} = 729.6 \text{ mm Hg}$$

For Psi

$$1 \text{ atm} = 14.7 \text{ Psi}$$

So,

$$\boxed{9.60 \text{ atm} = 14.12 \text{ Psi}} \text{ Ans}$$