

ANSWER 1 (a)

Given
Temperature 139°C

Require

$$F^{\circ} = ?$$

$$R^{\circ} = ?$$

$$K^{\circ} = ?$$

Solution

Degree Fahrenheit
Formula

$$F^{\circ} = (1.8^{\circ}\text{C}) + 32$$

Put the value

$$F^{\circ} = (250.2) + 32$$

$$F^{\circ} = 282.2$$

$$F^{\circ} = 282.2 F^{\circ}$$

Ran king

Formula

$$R^{\circ} = F^{\circ} + 460$$

Put the value

$$R^{\circ} = 282.2 + 460$$

$$R^{\circ} = 742.2 R^{\circ}$$

Kelvin scales

Formula

$$K^{\circ} = C^{\circ} + 273$$

Putting the values

$$K^{\circ} = 139 + 273$$

$$K^{\circ} = 412 K^{\circ}$$

ANSWER 1(b):

Work done by a gas or vapour in expanding
the amount of work done by a gas or vapour
in expanding depend on the method by
which expansion is performed
as

$$W = \int p \, dV$$

Constant temperature

$$W = \int_{V_1}^{V_2} p \, dV$$

as $p_1 V_1 = p_2 V_2 = p V = C$

$$W = \int_{V_1}^{V_2} \frac{C}{V} \, dV$$
$$= C \ln \frac{V_2}{V_1}$$
$$= C \ln (V_2/V_1)$$
$$\text{Work} = p_1 V_1 \ln (V_2/V_1)$$

ANSWER 2:

Ideal gas eqⁿ - $pV = nRT$
Isobaric process - Constant p
Isochoric process - Constant V
Isothermal process - Constant T

Adiabatic process - no exchange of heat or mass

An interesting fact also worth the great answer
nothing is that when you release air in football in the large
ballon, you also increase the hunger or thirst
of this air for heat or warmth from
nearby objects surrounding or environment
because now this air (after being release has
become cooler and as you know that

Cool things absorb heat energy from surrounding environment on the other hand when earlier we put air in football previously it turned warmer hence this air tried to release its warmth to the environment.

ANSWER 3(a)

Solution:

$$P_2 = 7560 \text{ lb/ft}^2$$

$$V_2 = 28 \text{ ft}^3$$

$$V_1 = 12 \text{ ft}^3$$

Work done = ?

Solution is an constant pressure process work

$$\text{done} = (P) V_2 - V_1$$

$$= 7560 \times 16 (28 - 12)$$

$$= 7560 \times 16 (16)$$

$$= 1920, 960 \text{ ft-lbf}$$

ANSWER (3) b

Explanation of terms entropy and enthalpy which are related to physics sub topic of thermodynamic using analogy (resemblance) from social lives of humans, thus below is the explanation.

A group of young friends in the peak of their youth is very energetic and needs a large play ground to play football or hockey etc while when the same group of friends becomes old they become less energetic and then they only need a