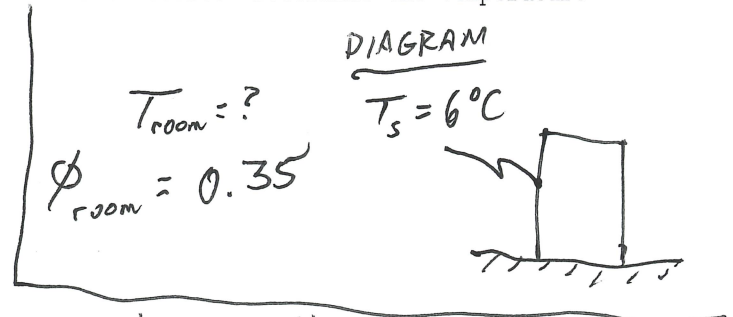


SOLUTION

NAME: _____

This is an open book quiz. You may use a 4-function calculator. An unsigned honors pledge will result in a zero.

1. A can of soda has a temperature of 6°C , and condensation can be seen on the surface of the can. The can is in a room where the relative humidity is 35%. Any humidity lower than this value will cause condensation on the can to cease. Determine the temperature of the air in the room.

GIVEN: T_s ; ϕ_{room} FIND: T_{room} ASSUME: Air temperature at can surface is the same as T_s 

Analysis: ϕ_s is exactly 1.0, since condensation will cease if ϕ_{room} gets any lower

$$\phi_s = 1.0 = \frac{P_v}{P_g(6^\circ\text{C})} = \frac{P_v}{0.00935 \text{ bar}} \rightarrow P_v = 0.00935 \text{ bar}$$

$$\phi_{\text{room}} = 0.35 = \frac{P_v}{P_g(T_{\text{room}})} = \frac{0.00935 \text{ bar}}{P_g(T_{\text{room}})} \rightarrow P_g(T_{\text{room}}) = 0.02671 \text{ bar}$$

Interpolating in A-Z gives T_{room}

$T(^{\circ}\text{C})$	$P_g(\text{bar})$
22	0.02645
(T_{room})	0.02671
23	0.02810

$$T_{\text{room}} = 22.157^\circ\text{C}$$

ANS

I HAVE NEITHER PROVIDED OR RECEIVED HELP DURING THIS QUIZ.

SIGNATURE