Midlem ENGR 251/2015

Problem I 12Pts

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$$V_1 \vee P_1 \vee T_1 \vee P_2 \times V_2 \times$$

$$PV^{n} = c^{+} = P_{n}V_{n}^{n} = P_{n}V_{n}^{n}$$

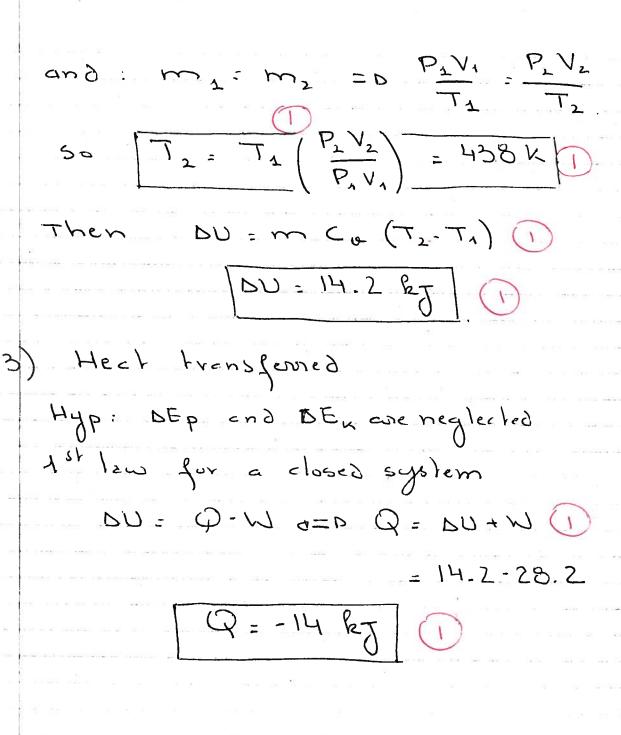
$$V_{n} = V_{n}\left(\frac{P_{n}}{P_{n}}\right)^{n}$$

$$= 0.1 \left(\frac{120}{1200} \right)^{1/2}$$

We have to determine Tz one m

$$m = \frac{P_1 V_1}{RT_1} = \frac{120 \times 0.1}{0.285 \times 298} = 0.141 \text{ kg}$$

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	Problem II 12 pts
	Hyp 3 DEx and DEp are neglected
	DU = Qnet-Wnet
	Qnet = Q13
	Writ: W + W
	Whet: W 12 + W 23.
	isothermal isobanic
	Then m Ca (T3-T1) = Qnet-Wnet (2)
a	
	P, V, 100 x 0.4
	$m = \frac{P_1 V_1}{RT_1} = \frac{100 \times 0.4}{0.2001 \times 300} = 0.6407 \text{ Rg}$
	R 1, 0.2001 X 200
	Im - 0 6407 Bail (1)
	m= 0.6407 kg (1)
1169	Computation of Wis
	$W_{12} = P_{12} \ln \frac{V_2}{V_1} = 100 (0.4) \ln (\frac{0.2}{0.4})$
	0.4)
	W12: -27.7 RT
	E est 1800 M. B. F. Mark B. F. A. F. B.
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	The term of the te
land.	

computation of W23 W23 = P2 (+3-T2) P2(13-12) P2: P1 V1 = 200 RPa W 23: 80 RT 1 finally: DU + Wnet Qinet = m co(T3-TA) + Wnet T3= T V3 = 900 K Qnet: 0.6407 (0.3122) (900-300) + (-27.7 +80) Q = + 172,3

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Problem III 6 Pts

(05) 1) yes Cp is higher than Cu.

because C = Q = nd for the

Semi P, DT is smaller when the

process is at Pact than at Isch was

2) Cp-Ca=R?

h= U+PU

h= U+RT (for ideal gas)

dh: 20 + R 2T

 $\frac{dh}{dT} = \frac{dv}{dT} + R = D CP = Cv + R$

CP Cu Cp-Cu=R

5) 1st lew of Thermodynamics

introduces Energy (or internal energy)