

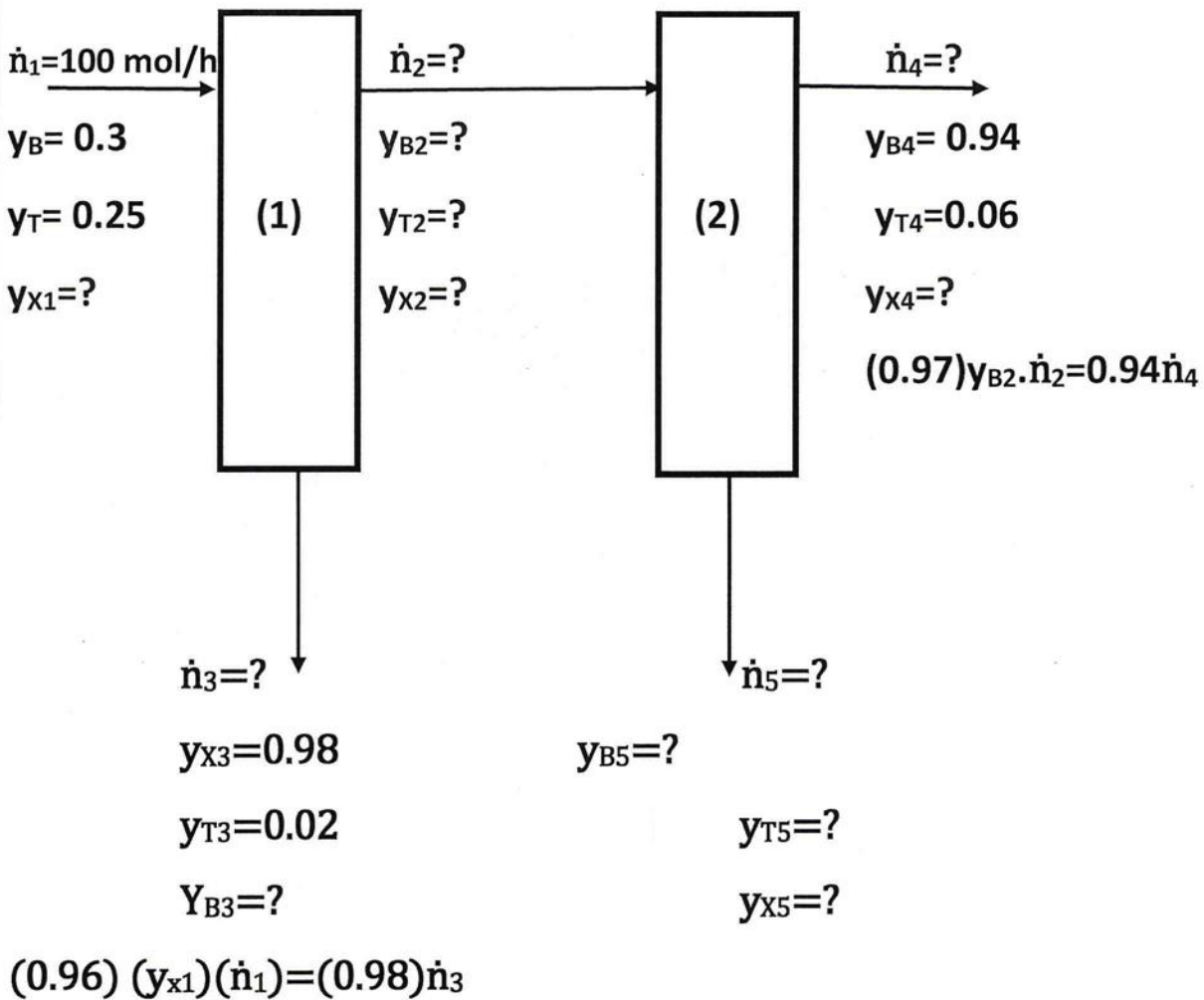


## Försättsblad Prov Original

Kurskod	Provkod	Tentamensdatum
K E 0 2 6 G	T 2 0 1	2 0 1 8 - 0 2 - 1 7
Kursnamn	Kemi GR (A), Teknisk kemi	
Provnamn	Material- och energibalanser	
Ort	Sundsvall	
Termin	V18	
Ämne	Kemi	

**Tillåtna:** Tabeller, 4 diagram och formelsamling som ni får av oss, Penna, miniräknare, suddgummi

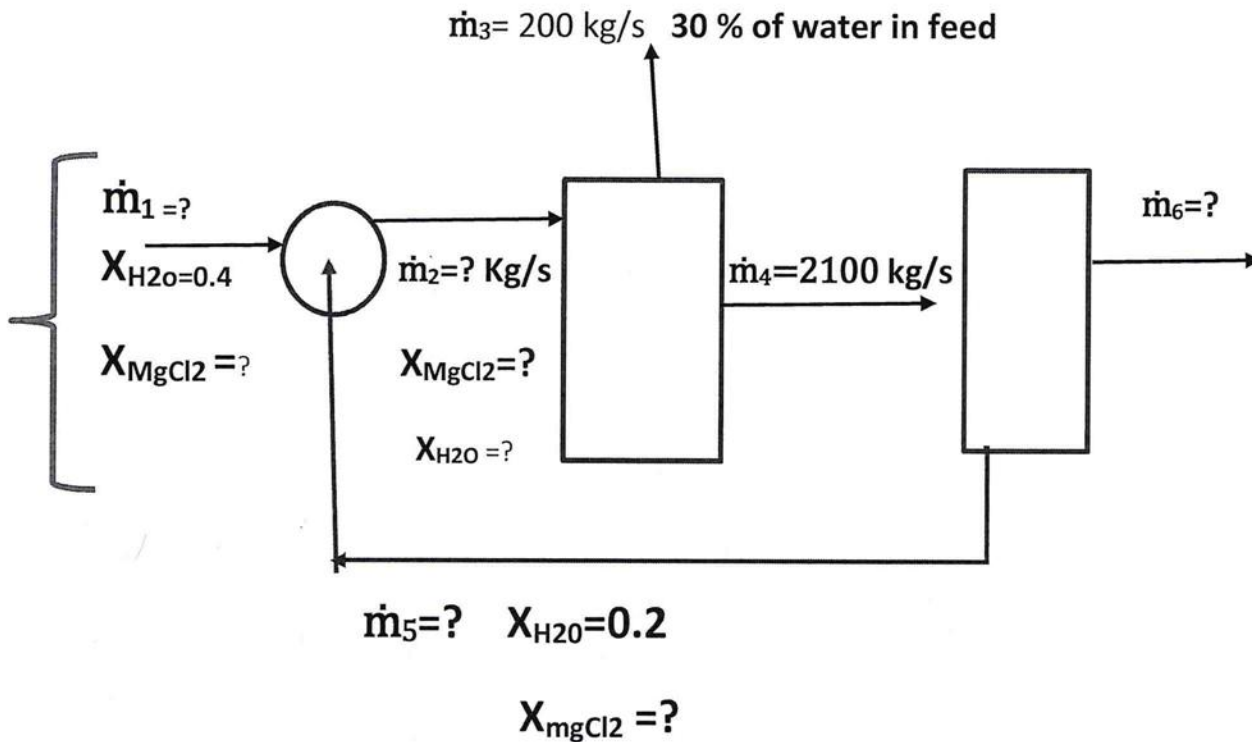
**Problem 1:** Calculate all unknowns: (30 Poäng)



**Problem 2: (20 poäng)**

Calculate all unknowns, using material balance.

Overhead from column 2 is equal 30% of the total water in the feed.



**Problem 3: (15 poäng)**

10 kg Helium gas at 2,04 atm must be transported. The temperature of the helium inside the container must be kept at 6,312 k. How much is the volume of the container in liter. The gas condition is not ideal. Use compressibility factor to calculate the volume.

**Problem 4:** (20 poäng)

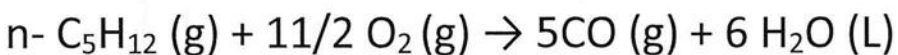
200 mol/s Methyl alcohol (liquid) enters a boiler at 10 °C and 1 atm and the outlet is Methyl alcohol (vapor) at 64,7 °C and 1 atm. How much heat was added to Methyl alcohol in KW.

Comments: (For solution, you need to use both table **B1** and **B2**)

**Problem5:** (15 Poäng)

Use heat of formation ( $\Delta H_f$ ) to calculate the heat of reaction  $\Delta H_{rxn}$  of the:

n- Pentane (g) + oxygen (g)  $\rightarrow$  carbon monoxide (g) + water (L)



- a) If the mole flow rate of the oxygen ( $\text{O}_2$ ) in an open system reactor is 330 mole/s. How much heat is produced in kW?

Lycka till

Jan Bijan Pourian