CHG2317 Fall 2019 **Quiz 1_v2** Instructor: George Psofogiannakis

Name / Student # :

A fresh Hexane (**H**) solvent stream (**stream 1**) **mixes** with a recycle stream (**stream 5**) that contains hexane and oil. In the mixed stream (**stream 2**), the mass flowrate of Hexane is 300 g/s. Stream 3 is entering an **extractor**. A second input stream to the extractor is 100 g/s of solid beans containing oil, consisting of 13-wt-% oil (**O**) and 87-wt-% solids (**S**). The extractor extracts all the oil out of the beans into the Hexane solvent.

The effluent from the extractor (**stream 3**) enters a **filter** that completely separates the solids, which are collected and discarted.The liquid stream exiting the filter (**stream 4**) consists of all the oil and hexane exiting the extractor.

Stream 4 is sent to a **distillation column**. The bottoms product **(stream 6)** is the oil-rich product that also contains 10-wt-% of the hexane stream in the feed to the distillation column. The overhead product is the hexane-rich recycle stream (**stream 5**) that contains 5-wt-% of the oil feed to the distillation column.

(a) Create and label a flowchart for this process.
(b) Calculate the mass flowrates of the components of all streams, starting with overall sytem balances.