

Name: \_\_\_\_\_

ID: \_\_\_\_\_

**Analytical Chemistry II – Quiz (4<sup>th</sup> June, 2020)**

1) Describe the operational principle of electron capture detector (ECD).

The sample eluate from a column is passed over a radioactive  $\beta$  emitter. An electron causes ionization of the carrier gas, and the production of a burst of electrons. The electric current decreases in the presence of organic molecules containing electronegative functional groups that tend to capture electrons.

2) In liquid chromatography operated at high linear velocity of mobile phase, theoretical plate height is lower with 1.7  $\mu\text{m}$  particles of packing material than with 5  $\mu\text{m}$  particles. Explain why.

Resistance to mass transfer depends on diameter of packing material. Resistance to mass transfer greatly contributes to theoretical plate height at high linear velocity of mobile phase. When particle diameter is small, resistance to mass transfer is low, even at high linear velocity of mobile phase.