



**Student ID:**

**Name:**

**Instructions:** Please write your answer on a file or piece of paper and return it to me by uploading it in the Assignment Moodle section. I will look at all homework but will consider for evaluation only those returned **not later than Thursday May 5<sup>th</sup>**.

**IMPORTANT:** This homework is not mandatory so you will still be able to get your full score at the final test even if you can't do it or can't return it on time!

---

**Questions:**

1. What happens if we sum a right- and a left-handed circularly polarized wave of the same amplitude and propagation direction? Try to prove your answer by using both the real time expressions and the Jones vector representation of the fields.
2. A TE polarized plane wave illuminates the interface between air ( $n_a=1$ ) and water ( $n_w=1.33$ ) at  $\theta_i=60^\circ$  from the air side.
  - a. Calculate the angles of reflection and transmission, reflectance (R) and transmittance (T) values.
  - b. Calculate the transmitted intensity  $I_t$  if the incident intensity is  $I_i=2 \text{ MW/cm}^2$ .
  - c. What happens to the angles of reflection and transmission and values of R and T if the light impinges from the water side at the same angle? Motivate your answer.
3. Describe the concept of scattering and the parameters that govern this phenomenon.