Modelling and Computation of Electric and Magnetic Fields A.A.

Electrical Energy Engineering

Date (y-m-d format): _____

Name and Surname: _____

Student ID number: _____

For report: other group members: _____

Instructions

Write your personal details (name, surname, etc.) on the sheets to be used for the exam (only once per sheet). Make sure to return all sheets by placing the inside the provided answer sheet

Questions

Question 1: Vector operators:

(a) Define and discuss the properties of the gradient, divergence, and curl operators

(b) Discuss the link between the divergence theorem and solenoidal fields

(c) Discuss the link between Stokes theorem and conservative fields

Question 2: Finite Difference Method (FDM) - Application to a 1D Poisson problem

Topics to be discussed:

(a) Mathematical formulation (use Dirchlet BCs on one side of the domain, and Neumann BCs on the other one)

(b) Discretization $\longrightarrow$ linear system assembly