

**University of Eswatini**  
**Department Of Computer Science**  
**Main Examination December 2019**

**Title of paper** : **System Analysis and Design**

**Course number** : **CSC393**

**Time Allowed** : **Three (3) hours**

**Instructions:**

- **Each question carries 25 marks.**
- **Answer any four (4) questions.**

**This paper may not be opened until permission has been granted by the invigilator.**

### QUESTION 1

- a) What is a system? Explain characteristics and types of system [8]
- b) List and briefly define the seven phases of the systems development life cycle (SDLC). [8]
- c) Show how the following relationships represented in E-R model with suitable examples: [9]
  - i) One-to-one
  - ii) One-to-many
  - iii) Many-to-many

### QUESTION 2

- a) What is meant by the term entity-relationship diagram? What symbols are used to draw E-R diagrams? [6]
- b) Draw a context-level data flow diagram of your university's registration system. Label each entity and process. Discuss why there appear to be different ways to draw the diagram. [10]
- c) Define what is meant by open-ended interview questions. Give eight benefits and five drawbacks of using them. [9]

### QUESTION 3

- a) Explain five stages of agile modelling development process. [8]
- b) Define what is meant by sampling. What are the four steps to follow to design a good sample? Explain briefly each steps. [10]
- c) Describe how prototyping can be used to augment the traditional SDLC. [7]

### QUESTION 4

- a) What is a Data Flow Diagram? State its use? [4]
- b) Give the key difference between physical DFD and logical DFD. [3]

- c) Draw a Data flow diagram (DFD) for a payroll management system. [8]
- d) Define the term data dictionary and decision tree. [2]
- e) What does a data dictionary record? Explain with example. [8]

**QUESTION 5**

- a) What are the effectiveness measures of database design? [5]
- b) What is normalization? Explain the needs of it in designing database. Explain 1NF, 2NF and 3NF in detail with example. [12]
- c) What differentiates output for a DSS from that of a more traditional MIS? [5]
- d) List six guidelines for choosing a design and documentation technique. [3]

**End of Question Paper**