



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF ENGINEERING

DEPARTMENT OF ELECTRONIC ENGINEERING

Software Engineering

EEE 1231

Final Examination Paper

October 2024

This examination paper consists of 3 pages

Time Allowed: 3 hours

Total Marks: 100

Special Requirements: Graph Paper (1 sheet)

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INSTRUCTIONS

1. Answer **ANY FOUR QUESTIONS.**
2. Each question carries 25 marks.

MARK ALLOCATION

QUESTION	MARKS
1	25
2	25
3	25
4	25
5	25
6	25
TOTAL	100

QUESTION 1

- a) With the aid of a diagram describe the Waterfall model in detail. [20]
- b) One of the challenges of the Waterfall model is limited shareholder involvement. Briefly describe one process model that resolves this challenge. [5]

QUESTION 2

- a) Software development process activities include changeover. Explain what is meant by changeover in software development. [2]
- b) State and briefly explain the different types of changeover. [20]
- c) What is meant by changeover crises? [3]

QUESTION 3

- a) What is a feasibility study? [2]
- b) State and explain the different types of feasibility studies. [16]
- c) Besides the types of feasibility mentioned in (b), state and explain other components of a feasibility study report. [7]

QUESTION 4

A university's ICT workshop involves repairing laptops, printers, computers for the university. The ICTS department wants to keep track of items that are brought to the department for repairs. For each item, the workshop needs to keep a record of the asset number, description, serial number, model, user, user's department, and status of the hardware item, work done on it, among other things. The users must be given a reference number to use for follow ups. The items used to replace the faulty one must have existing records in the system. There is also a need to identify the repair technician who would have worked on a job.

- a) Draw an ERD to design the database for such a system. [20]

b) Using the ERD deduced in (a), provide the metadata of the database for such a system. [5]

QUESTION 5

- a) Differentiate between software verification and software validation. [4]
- b) Define automated testing. [1]
- c) Briefly describe the **FIVE** testing levels. [15]
- d) State and explain any **TWO** testing documents. For each document, state the stage at which it is created. [5]

QUESTION 6

- a) Define software project management. [2]
- b) Describe any four types of software project management. [12]
- c) Describe the Gantt chart and the resource histogram software project management tools. [6]
- d) Below is a table of activities of a certain software development project. Draw the Gantt chart on the provided graph paper. [5]

Activity	Planned start date	Planned end date
Feasibility Study	04/11/2024	25/11/2024
System Analysis	27/11/2024	06/01/2025
System Design	02/01/2025	13/02/2025
Coding	14/02/2025	31/04/2025
System Testing	21//02/2025	14/05/2025
User manual creation and training	15/05/2025	19/05/2025
Deployment	20/05/2025	25/05/2025

END OF EXAMINATION PAPER