



UNIVERSITY EXAMINATIONS

FIRST SEMESTER 2025/2026 ACADEMIC YEAR

**THIRD YEAR EXAMINATION FOR THE DEGREES OF
BACHELOR OF SCIENCE IN COMPUTER SCIENCE AND
BACHELOR OF SCIENCE IN INFORMATION
COMMUNICATION AND TECHNOLOGY**

COMP 312/BICT 311: SOFTWARE ENGINEERING

STREAM: R

TIME: 2 HRS

DAY: FRIDAY [11.30 – 13.30 P.M]

DATE: 06/02/2026

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.

INSTRUCTIONS: Answer Question ONE and ANY other TWO Questions in Section B

SECTION A

QUESTION ONE– COMPULSORY (30 MARKS)

- a.) Explain the following terms;
 - i) Requirements engineering (2 Marks)
 - ii) System prototype (2 Marks)
 - iii) Software engineering (2 Marks)
- b.) Draw a classical waterfall model. (5 Marks)
- c.) Give advantages and disadvantages of waterfall model (two each). (4 Marks)
- d.) Name the deliverables of these phases; feasibility analysis and requirements engineering. (2 Marks)
- e.) Differentiate between functional and non-functional requirements (2 Marks)
- f.) Discuss **three** types of user testing. (6 Marks)
- g.) Read the statement below then draw a use case diagram (5 Marks)

The Student Management System enables teachers, and students to check timetables, check grades, and check attendance. Then the teacher updates attendance and grades.

SECTION B

QUESTION TWO (20 MARKS)

- a.) Discuss **four** factors to consider when selecting a software development methodology. (4 Marks)
- b.) Differentiate between white box testing and black box testing. (4 Marks)
- c.) Discuss **three** types of non-functional requirements. (6 Marks)
- d.) Explain the **three** types of development testing (6 Marks)

QUESTION THREE (20 MARKS)

- a.) List **three** techniques for requirements elicitation (3 Marks)
- b.) Explain the term “cloud” in cloud computing (2 Marks)
- c.) Discuss the n-tier architecture, comparing it with client server architecture. (5 Marks)
- d.) Name and discuss three advantages of explicitly designing and documenting software architecture. (6 Marks)
- e.) Discuss **two** approaches for implementing RAD (4 Marks)

QUESTION FOUR (20 MARKS)

- a.) Explain the meaning of requirements validation (2 Marks)
- b.) Discuss four types of requirements validation checks. (8 Marks)
- c.) Name and discuss two types of prototypes. Highlighting their advantages, disadvantages and applicability. (6 Marks)
- d.) A five-year project has a projected net cash flow of sh.15,000, sh. 25,000, sh.30,000, sh.20,000, and sh.15,000 in the next five years. It will cost sh.50,000 to implement the project. If the required rate of return is 20 percent, conduct a discounted cash flow calculation to determine the NPV. (4 Marks)

QUESTION FIVE (20 MARKS)

- a.) Discuss **two** requirements validation techniques. (4 Marks)
- b.) The manager for Code&Code software development firm listed the following (see table) activities, predecessors and durations for project Y. Use it to answer question i to iii below it.

Activity	Immediate Predecessor	Duration (months)
A	None	2
B	A	4
C	A	2
D	B	2
E	B, C	4
F	A, E	6
G	D	4
H	D, E, F	2
I	G, H	6
J	H, F	6
K	H, I, J	4

- i) Draw a PERT diagram for analyzing the project (11 Marks)
- ii) Give the importance of a critical path (1 Mark)
- iii) List the critical activities (4 Marks)