



# MANICALAND STATE UNIVERSITY OF APPLIED SCIENCES

## FACULTY OF ENGINEERING, APPLIED SCIENCE AND TECHNOLOGY

DEPARTMENT: COMPUTER SCIENCE AND INFORMATION SYSTEMS

MODULE: SOFTWARE ENGINEERING

CODE: BCOS 213

SESSIONAL EXAMINATIONS  
OCTOBER 2023

DURATION: 3 HOURS

EXAMINER: MR A.C MUZENDA

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### INSTRUCTIONS

1. Answer **Any four** questions.
  2. Start a new question on a fresh page
  3. Total marks 100
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### Question 1

a. With reference to the Four Layered Approach, use a working example to critically discuss non-functional (NFR's) and functional requirements (FR's) in software engineering. [16]

b. Explain why incremental development is the most effective approach for developing business software systems. Why is this model less appropriate for real-time systems engineering? [9]

### Question 2

a. Describe the typical stages that a software product goes through from the initial concept to its disposal. [12]

b. Describe the key features of a software repository suitable for use in the control of an incremental development project. [13]

### Question 3

Activity	Immediate Predecessor	Duration 9 (Weeks)
O	-----	1
P	-----	2
Q	-----	1
R	O	3
S	O	5
T	S	1
U	P	6
V	P	6
W	R, T	5
X	Q	11
Y	V, X	4
Z	W, Y, U	3

i. Draw a network diagram to show the dependencies amongst the activities.[6]

- ii. Calculate the duration of the project [3]
- iii. Calculate the Earliest Start, Earliest Finish, Late Start, Late Finish. [4]
- iv. Determine the critical path and explain why it is important? [4]
- b. Give the benefits of verification and validation in software development. [4]
- c. Define the meaning of quality assurance. Explain the role of testing in Quality assurance. [4]

#### **Question 4**

- a) Development projects often require staff from a range of disciplines and backgrounds. Describe six typical personnel factors that might be used to help in selecting the appropriate team members for such projects. [12]
- b) Explain how team size and team structure can influence effective communications in large development teams. [8]
- c) Give one advantage and one disadvantage of using ‘benchmarking’ to measure project productivity. [5]

#### **Question 5**

- a) i. Using relevant examples, discuss the reason why a project manager must use software metrics in a software development project. [15]
- ii) Using real-world examples, explain why architecture design is important in software engineering. [10]