



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF COMPUTING AND INFORMATICS
DEPARTMENT OF SOFTWARE ENGINEERING**

QUALIFICATION: BACHELOR OF COMPUTER SCIENCE	
QUALIFICATION CODE: 07BCMS	LEVEL: 6
COURSE: SOFTWARE PROCESSES	COURSE CODE: SPS611S
DATE: JUNE 2025	PAPER: THEORY
DURATION: 3 HRS	MARKS: 80

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
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THIS QUESTION PAPER CONSISTS OF 5 PAGES
(Including this front page)

INSTRUCTIONS TO STUDENTS

1. Read all the questions, passages, scenarios, etc., carefully before answering.
2. Answer all the questions.
3. Number each answer clearly and correctly.
4. Write neatly and legibly.
5. Making use of any crib notes may lead to disqualification and disciplinary action.
6. Use the allocated marks as a guideline when answering questions.
7. Looking at other students' work is strictly prohibited.

SECTION A: MULTIPLE CHOICE QUESTIONS (10 MARKS)

1. What is the main purpose of the Spiral Model in software development?
 - A. Cost estimation
 - B. Customer satisfaction
 - C. Risk management
 - D. Security design
2. According to Sommerville, software processes include which four fundamental activities?
 - A. Requirements, Testing, Scaling, Marketing
 - B. Specification, Development, Validation, Evolution
 - C. Planning, Development, Deployment, Feedback
 - D. Ideation, Planning, Implementation, Maintenance
3. What is the primary difference between plan-driven and agile processes?
 - A. Agile requires more documentation
 - B. Plan-driven is iterative
 - C. Agile is adaptive to change
 - D. Plan-driven has no process model
4. The V-Model ensures that:
 - A. Code is refactored early
 - B. Every development phase has a corresponding testing phase
 - C. Validation comes before requirements
 - D. Testing is done only at the end
5. Which sector would most benefit from a hybrid model combining Agile and Waterfall?
 - A. Agriculture
 - B. Telecommunications
 - C. Mining logistics
 - D. Traditional art marketing
6. What does the Capability Maturity Model Integration (CMMI) assess?
 - A. Product design quality
 - B. Software license models
 - C. Process maturity
 - D. Testing strategies

7. What is the primary purpose of requirements validation?
 - A. Ensuring test cases are complete
 - B. Confirming stakeholder needs are met
 - C. Compiling code efficiently
 - D. Optimising performance
8. What does traceability in software engineering ensure?
 - A. System usability
 - B. User documentation is updated
 - C. Requirements are mapped through development and testing
 - D. Agile stories are estimated
9. Which activity is common to all software processes?
 - A. User story generation
 - B. Prototyping
 - C. Maintenance and evolution
 - D. Scrum planning
10. Which model best suits NamPower's need for both regulatory compliance and faster delivery?
 - A. Spiral Model
 - B. Waterfall
 - C. Hybrid Model
 - D. DevOps

SECTION B: MATCHING QUESTIONS (10 MARKS)

Match each concept in Column A with the correct definition from Column B.

Column A	Column B
A. Validation	A modelling standard for describing and analysing software processes
B. Scrum Sprint	Continuous improvement and adaptation of software post-deployment
C. Reuse	A fixed timebox (e.g., 2 weeks) used for delivering working software
D. Agile	Maintains links between requirements and their related design and test artefacts
E. Software Process Model	A process improvement framework for measuring organisational capability
F. Waterfall	Involves checking that the developed system meets customer needs
G. SPEM	Emphasises iterative development, user feedback, and adaptability
H. CMMI	A linear and sequential software process model
I. Traceability	Incorporation of existing software artefacts or components
J. Evolution	A systematic approach for organising software engineering activities

SECTION C: CASE STUDY (60 MARKS)

You are a newly hired software engineer at a mid-sized company tasked with leading the process development for a new health tracking mobile application. The company previously used plan-driven models but recently adopted DevOps and Agile practices. The team comprises developers, testers, and business analysts working remotely. You are expected to document the requirements, ensure process traceability, set up configuration management, and integrate AI-driven automation in testing.

1. Describe the process you would follow to elicit, analyse, and document software requirements for this application. Use diagrams such as use-case or requirement flowcharts where applicable. Based on these activities, draft three (3) examples of functional or non-functional requirements that could be included for this app. (10 Marks)
2. How would you implement traceability in this project and ensure that all requirements are validated? A traceability matrix or visual representation may be included. (10 Marks)
3. Explain how you would introduce configuration management in a remote Agile development environment. Include configuration diagrams or workflows. (10 Marks)
4. Identify key challenges in adopting DevOps & Agile practices in this context and propose strategies to overcome them. (10 Marks)
5. Outline how you would apply AI-based automation in the testing process. Mention tools or techniques and use illustrative examples if necessary. (10 Marks)
6. Suggest methods to improve the software process continuously in this team. Diagrams like CMMI or PDCA may be used to support your answer. (10 Marks)

***** End of the Paper *****