



**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
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DURATION: 3 HRS	MARKS: 80

SUPPLEMENTARY / SECOND 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)

(Each question carries 1 mark. Choose the correct answer.)

1. Which process model allows for flexibility and iterative improvement during development?

- A. Waterfall
- B. Agile
- C. V-Model
- D. Spiral

2. Which technique is best for validating requirements with users?

- A. Interviewing
- B. Prototyping
- C. Surveys
- D. Observation

3. The DevOps model is primarily intended to:

- A. Separate development and testing
- B. Promote manual deployments
- C. Integrate development and operations
- D. Reduce developer involvement

4. In Agile, the short iterative cycles are called:

- A. Phases
- B. Stages
- C. Sprints
- D. Builds

5. Which of the following is NOT part of software configuration management?

- A. Version control
- B. Change management
- C. Requirements analysis
- D. Build management

6. A requirement is said to be traceable when:

- A. It has been validated by testers
- B. It is mapped to implementation and test cases
- C. It is well-documented
- D. It is complex and lengthy

7. Which metric is used to measure software reliability?

- A. LOC
- B. Mean Time Between Failures (MTBF)
- C. Gantt Chart
- D. Code Coverage

8. AI in software engineering can be used to:

- A. Delay processes
- B. Automate repetitive tasks
- C. Increase cost
- D. Remove documentation

9. A key Agile value is:

- A. Process over people
- B. Individuals and interactions over processes and tools
- C. Contracts over collaboration
- D. Following the plan at all costs

10. Which of the following is an open-source version control system?

- A. Oracle
- B. SAP
- C. Git
- D. Docker

SECTION B: MATCHING (10 MARKS)

Match the definitions in Column B with the terms in Column A. Write only the correct letter (A–J) next to the number. Each correct match = 1 mark.

Column A (Concepts):

1. Spiral Model
2. Prototyping
3. DevOps
4. User Stories
5. Process Automation
6. Requirement Validation
7. Continuous Delivery
8. Plan-Driven Model
9. CI/CD
10. Traceability Matrix

Column B (Definitions):

- A. Short, simple descriptions of features told from the user's perspective
- B. Risk-focused iterative process model
- C. Enables frequent software releases using automation
- D. Mapping requirements to design, implementation, and testing artifacts
- E. Combining dev and ops for rapid deployment
- F. User-involved early mock-up for feedback and revision
- G. Traditional model with detailed planning and documentation
- H. Repeating builds and tests to streamline releases
- I. Confirming requirements meet stakeholder needs
- J. Using tools to remove manual tasks from workflows

SECTION C: CASE STUDY (60 MARKS)

A government agency is launching a new citizen service portal where people can report issues (e.g. potholes, broken lights) and track the resolution process. The development team must adopt a software process that accommodates frequent feedback, allows progressive feature delivery, and ensures system security and quality. The agency also wants to use AI tools for bug tracking and adopt open-source technologies.

1. Identify and justify the most suitable software process model for this project. Support your answer with relevant characteristics. (10 Marks)
2. Outline the steps you would follow to elicit and document software requirements for the portal. (10 Marks)
3. Discuss how you would ensure traceability and requirement validation in this system. (10 Marks)
4. Propose a strategy to incorporate AI tools into the bug tracking and resolution process. (10 Marks)
5. Explain how you would manage version control, security, and collaboration using open-source tools. (10 Marks)
6. Describe how you would introduce and manage continuous process improvement in the agency's software development workflow. Reference tools, metrics, or frameworks (e.g., CMMI, retrospectives, KPIs) in your response. (10 Marks)

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