



**PAMIBIA 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 2024	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
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THIS QUESTION PAPER CONSISTS OF 4 PAGES
(Excluding this front page)

INSTRUCTIONS TO STUDENTS

1. Attempt all Questions.
2. All questions have to be answered in the answer booklet.
3. Clearly indicate the section and question number for each answer.
4. The allocation of marks is an indication of the extent of the expected answer.
5. Answering more than expected does not result in higher marks. Keywords alone are not enough.
6. There are no books, notes or any other additional aids allowed in the examination.
7. A none-programmable calculator is permissible.

SECTION A: TRUE/FALSE**[10 MARKS]**

Write all your answers in the answer booklet provided.

	Question	True	False
1	The Waterfall model is a flexible and iterative approach to software development.		
2	In Agile software development, customer collaboration is valued over contract negotiation.		
3	The main purpose of software testing is to eliminate all defects and errors from the software.		
4	Continuous integration (CI) involves integrating code changes from multiple developers into a shared repository frequently.		
5	Non-functional requirements describe the functional behaviour of the software system.		
6	The main goal of software maintenance is to introduce new features and functionality to the software system.		
7	Software architecture refers to the detailed design of individual software components and modules.		
8	Software reusability allows developers to reuse existing software components, modules, or assets in the development of new systems or applications.		
9	In Agile software development, the Scrum framework prescribes specific roles, events, and artefacts to facilitate iterative development.		
10	The main goal of software quality assurance (SQA) is to fix defects and errors in software products.		

SECTION B: MULTIPLE CHOICE**[10 MARKS]**

Write all your answers in the answer booklet provided.

1. What is the main purpose of software requirements engineering?
 - A. To write code for the software system
 - B. To manage and control changes to software artefacts
 - C. To gather, analyse, document, and manage requirements
 - D. To validate software design decisions

2. Which of the following is a characteristic of Agile software development?
 - A. Sequential and plan-driven approach
 - B. Emphasis on comprehensive documentation
 - C. Customer collaboration over contract negotiation
 - D. Strict adherence to a fixed scope and schedule

3. Which software development process model involves iterative cycles of planning, risk analysis, engineering, and evaluation?

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

4. What is the primary goal of software configuration management (SCM)?

- A. To manage and control changes to software artefacts
- B. To eliminate all defects from the software
- C. To document software requirements
- D. To validate software design

5. Which software development methodology emphasizes responding to change over following plan?

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

6. What is the primary purpose of software documentation?

- A. To provide detailed instructions for end-users
- B. To document the source code
- C. To explain the software architecture
- D. To provide guidance for developers, testers, and maintainers

7. What is the main advantage of using open-source software in software development projects?

- A. Reduced development time
- B. Lower cost
- C. Increased security
- D. Limited support options

8. What is the main focus of software testing?

- A. Designing software architecture
- B. Eliminating all defects from the software
- C. Verifying that the software meets specified requirements
- D. Documenting software design decisions

9. In Agile software development, what is the purpose of a Sprint Review?

- A. To plan the tasks for the upcoming sprint
- B. To review and evaluate the work completed during the sprint
- C. To discuss and resolve any issues or obstacles encountered during the sprint
- D. D. To demonstrate the software to stakeholders and gather feedback

10. What is the main goal of software maintenance?

- A. To introduce new features and functionality to the software system
- B. To ensure that the software system continues to meet user needs and perform effectively over time
- C. To eliminate all defects from the software
- D. To document software requirements

SECTION C: STRUCTURED QUESTIONS

[40 Marks]

Answer all questions. Write all your answers in the answer booklet provided.

Question 1

Explain the concept of software requirements traceability and its importance in software development projects. (10 marks)

Question 2

Explain the roles within a Scrum team and their respective responsibilities. How do these roles collaborate to deliver value incrementally and iteratively in the Scrum framework? (10 marks)

Question 3

Describe the concept of a hybrid approach in software development. How does it differ from traditional and agile methodologies? Provide two examples of situations where a hybrid approach might be beneficial for a software development project. (10 marks)

Question 4

Discuss the advantages and disadvantages of using open-source software in software development projects. (10 marks)

SECTION D: SENARIO-BASED QUESTIONS**[40 Marks]**

Answer all questions. Write all your answers in the answer booklet provided.

Question 1

You are tasked with designing a use case for an online shopping system. The system should allow users to browse products, add them to a shopping cart, proceed to checkout, and make payments. Design a use case diagram for the online shopping system, including actors, use cases, and their relationships. (20 marks)

Question 2

Draw a sequence diagram showing the interactions of objects in a group diary system, when a group of people are arranging a meeting. Assumes there are 3 participants in the meeting, one of whom is the meeting organizer. The organizer suggests a 'window' in which the meeting should take place and the participants involved. The group diary communicates with the diaries of the participants in turn, modifying the window accordingly as their availability is known. So, if the organizer suggests a window of 18th-19th May, the group diary consults the organizer's diary D1 and finds availability on these days. D2 is then contacted with that availability, not the original window. D3 is then contacted with that availability. If there are no mutually available dates in the window, the system reports this to the organizer. Otherwise, a date is selected, entered in all diaries and confirmed to the organizer. Show the notation used to denote alternatives. (20 marks)

***** End of Exam Paper *****