



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION  
SEMESTER II  
SESSION 2023/2024

- COURSE NAME : SOFTWARE ENGINEERING PRINCIPLES
- COURSE CODE : BIE 10103
- PROGRAMME CODE : BIP
- EXAMINATION DATE : JULY 2024
- DURATION : 3 HOURS
- INSTRUCTIONS :
1. ANSWER ALL QUESTIONS
  2. THIS FINAL EXAMINATION IS CONDUCTED VIA
    - Open book
    - Closed book
  3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE FINAL EXAMINATION CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF SEVEN (7) PAGES

**PART A**

Answer the following questions in the answer sheet.

**Q1** Which of the following is **NOT** a common characteristic to all design methods?

- (a) Configuration management
- (b) Functional component representation
- (c) Quality assessment guidelines
- (d) Refinement heuristics

(1 mark)

**Q2** Which of the following can be used to represent the software architectural design?

- (a) Dynamic models
- (b) Functional models
- (c) Structural models
- (d) All of the above

(1 mark)

**Q3** Cohesion is a qualitative indication of the degree to which a module \_\_\_\_\_.

- (a) can be written more compactly
- (b) focuses on just one thing
- (c) is able to complete its function in a timely manner
- (d) is connected to other modules and the outside world

(1 mark)

**Q4** Coupling is a qualitative indication of the degree to which a module \_\_\_\_\_.

- (a) can be written more compactly
- (b) focuses on just one thing
- (c) is able to complete its function in a timely manner
- (d) is connected to other modules and the outside world

(1 mark)

**Q5** Acceptance tests are normally conducted by the \_\_\_\_\_.

- (a) developer
- (b) end users
- (c) test team
- (d) systems engineers

(1 mark)

**Q6** The major advantage of bottom-up integration testing is \_\_\_\_\_.

- (a) major decision points are tested early
- (b) no drivers need to be written
- (c) no stubs need to be written
- (d) regression testing is not required

(1 mark)

**Q7** The major advantage of top-down integration testing is \_\_\_\_\_.

- (a) low level modules never need testing
- (b) regression testing is not required
- (c) no drivers need to be written
- (d) no stubs need to be written

(1 mark)

**Q8** What are the characteristics of testable software?

- (a) Observability
- (b) Simplicity
- (c) Stability
- (d) All of the above

(1 mark)

**Q9** What is the testing technique that can be employed to ensure each program function is operational?

- (a) Black-box testing
- (b) Glass-box testing
- (c) Grey-box testing
- (d) White-box testing

(1 mark)

- Q10** What is the testing technique that can be employed to exercise the internal logic of a software module?
- (a) Behavioral testing
  - (b) Black-box testing
  - (c) Grey-box testing
  - (d) White-box testing
- (1 mark)
- Q11** Software reengineering process model includes restructuring activities for the following work items.
- (a) Code
  - (b) Documentation
  - (c) Data
  - (d) All of the above
- (1 mark)
- Q12** Which of these individuals is **NOT** involved in the Software Process Improvement education and training activities?
- (a) Customers
  - (b) Managers
  - (c) Practitioners
  - (d) Stakeholders
- (1 mark)
- Q13** The capability maturity model integration represents a meta-model implemented as a
- (a) continuous model
  - (b) staged model
  - (c) theoretical model
  - (d) both a and b
- (1 mark)
- Q14** The elements of software quality assurance consist of \_\_\_\_\_.
- (a) reviews
  - (b) audits
  - (c) testing
  - (d) all of the above
- (1 mark)

**Answer sheet for PART A**

1		6		11	
2		7		12	
3		8		13	
4		9		14	
5		10			

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## PART B

**Q15** A software manager is involved in the project development of a software design support system that supports the translation of software requirements to a formal software specification. Explain the **TWO (2)** advantages and disadvantages of the following development strategies:

(a) Develop a throw-away prototype, evaluate it, then review the system requirements. Develop the final system using C.

(8 marks)

(b) Develop the system from the existing requirements using Java, then modify it to adapt to any changed user requirements.

(8 marks)

(c) Develop the system using incremental development with a user involved in the development team.

(8 marks)

**Q16** For each of the following case studies, design **TWO (2)** test cases using the given test case template.

**Test Case ID:**

**Test Case Name:**

**Description:**

**Preconditions:**

**Test Steps:**

**Expected Results:**

(a) A leading online retailer is launching a new e-commerce website to offer customers a seamless shopping experience. The website will feature a wide range of products across various categories, including food, fashion, home goods, and more. As part of the quality assurance process, comprehensive testing is required to ensure the website functions correctly and provides users with a smooth shopping experience.

(12 marks)

(b) A game development company is launching a new mobile game app for iOS and Android platforms. The game app is a puzzle-solving game where players need to solve challenging levels by matching colored blocks. As part of the quality assurance process, comprehensive testing is required to ensure the game app functions correctly, provides an engaging user experience, and meets player expectations.

(12 marks)

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**Q17** Explain **THREE (3)** reasons why testing can only detect the presence of errors, not their absence.

(6 marks)

**Q18** As a software project manager in a company that specialises in the development of software for the offshore oil industry, you have been given the task of discovering the factors that affect the maintainability of the systems developed by your company. Suggest **THREE (3)** ways how you might set up a programme to analyse the maintenance process.

(6 marks)

**Q19** Answer **Q19(a) – Q19(c)** based on **Figure Q19.1**

Nyet Corporation operates an e-commerce platform that connects buyers and sellers. The web application has been in operation for several years, with regular updates and maintenance to ensure optimal performance, security, and user experience. Recently, the company has noticed an increase in user complaints regarding slow page loading times and occasional system crashes. As the software maintenance team leader, you have been tasked with investigating and addressing these issues.

**Figure Q19.1**

(a) What steps would you take to diagnose the root cause of the slow page loading times and system crashes reported by users?

(2 marks)

(b) How would you prioritize maintenance tasks to address the reported issues while minimizing disruption to ongoing business operations?

(2 marks)

(c) How would you communicate with stakeholders, including users, management, and development teams, throughout the maintenance process to ensure transparency and alignment?

(2 marks)

**- END OF QUESTIONS -**