Open University of Mauritius

BSc (HONS) DATA SCIENCE AND ARTIFICIAL INTELLIGENCE [OUbs035]

EXAMINATION FOR: November- December 2023

MODULE   :   Software Engineering Fundamentals [OUbs035122]

DATE   :   Tuesday 21 November 2023

DURATION   :   2 Hours

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of **FOUR (4) QUESTIONS**.
2. Answer **ALL questions**.
3. Always start a new question on a fresh page.
4. Total marks: **100**

This question paper contains 4 questions and 4 pages.

ANSWER <u>ALL</u> QUESTIONS

QUESTION 1 [25 MARKS]

a) According to you, what is the difference between **tailor-made software** and **ready-made software**?

(3 marks)

b) Suppose you have the responsibility of choosing an appropriate process model for a software project which will require to deliver the client in chunks and your model should cater for changing requirements.

    i. Which process model you would find to best fit the given scenario?

(3 marks)

    ii. Justify why you have chosen this process model.

(4 marks)

c) Why do requirements change in a software project? Provide **two (2)** examples of requirements that may change during the course of a project.

(6 marks)

d) Explain the difference between **functional requirements** and **non-functional requirements** by providing relevant examples of each.

(6 marks)

e) Why is software testing important according to you?

(3 marks)

QUESTION 2 [25 MARKS]

Consider the following scenario.

An employee has to apply for a leave on the company website. First, he has to login into the system to submit a request for leave on the leave request page on the website. The employee schedule will be checked if there are no any conflicts within the working schedule for that specific date. A leave approval will be created and will be sent back to the employee.

a) Draw a suitable **use case diagram** to represent the system.

(10 marks)

b) Differentiate between **decomposition** and **abstraction**. **(6 marks)**

c) Explain **two (2)** differences between **validation** and **verification** techniques.

(6 marks)

d) Integration testing is one of the test coverage mechanisms. Why is **integration testing** important according to you?

(3 marks)

QUESTION 3 [25 MARKS]

a) What is the difference between **internet** and **intranet** networks? You can support your answer with examples. **(4 marks)**

b) What is the main role and importance of **network management protocols**?

(6 marks)

c) State **two (2)** differences between **cohesion** and **coupling**.

(6 marks)

d) There are **two (2)** possible approaches to a good system design strategy: Top-down approach and Bottom-up approach. Explain what you understand by:

    i.   Top-down approach
    ii. Bottom-up approach

(6 marks)

e) List down **three (3)** goals of coding. **(3 marks)**

QUESTION 4 [25 MARKS]

a) What is a user story?

(2 marks)

b) State **three (3)** characteristics of user stories.

(6 marks)

c) User acceptance testing (UAT) is a crucial phase in the software development. Explain the importance of UAT.

(4 marks)

d)   Deployment is another important phase in the software development life cycle. What can be the challenges of deployment?

(4 marks)

e) What do you understand by a **state transition model**?

(3 marks)

f)   Measuring a software is not a piece of cake, to be able to measure a software, some aspects of development must be considered. Briefly list down **three (3)** of those relevant aspects.

(6 marks)