



University of Colombo, Sri Lanka
University of Colombo School of Computing
BACHELOR OF SCIENCE IN INFORMATION SYSTEMS

First Year Examination - Semester II - UCSC AY20 [held in March/ April 2024]

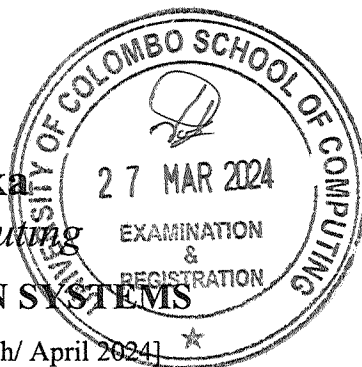
IS1111 — Software Engineering

(Two (2) Hours)

Answer ALL questions

Number of Pages = 12

Number of Questions = 3



To be completed by the candidate

Index Number:

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Important Instructions to Candidates:

- I. Students should answer in the medium of English language only using the space provided in this question paper.
- II. Note that questions appear on both sides of the paper. If a page or a part of this question paper is not printed, please inform the supervisor immediately.
- III. Write your index number **CLEARLY** on each and every page of this Question paper.
- IV. This paper consists of 3 questions in 12 pages (including the Cover Page).
- V. Answer **ALL** questions.
- VI. Programmable Calculators and any electronic device capable of storing and retrieving text, including electronic dictionaries, smartwatches, and mobile phones, are **not allowed**.
- VII. Non-Programmable calculators are also **not allowed**.
- VIII. Calculators and any electronic device capable of storing and retrieving text, including electronic dictionaries, smartwatches, and mobile phones, are **not allowed**.
- IX. Do not tear off any part of this answer book. Under no circumstances may this book, used or unused, be removed from the Examination Hall by a candidate.

To be completed by the examiners

1	
2	
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Total	

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Q1. Question 1 has 25 MCQ-based questions.

(2*25=50 marks)

- Each MCQ question will have 5 (five) choices with **one or more correct** answers.
- Answers should be marked on the special answer sheet provided.
- When answering the MCQ questions, completely read and follow the instructions given in the "Instructions to use the MCQ answer sheet" document before you shade your correct choices (The backside of the "special MCQ answer sheet").
- There will be a penalty for selecting wrong choices in a MCQ answer. The maximum mark for an MCQ question is 2 marks, and the minimum mark is 0 marks.

1)

Which of the following is/are true with respect to system software (SS)?

- (a) SS are always developed using low-level programming languages
- (b) SS provides the service to other working software in the computer
- (c) application software doesn't depend on the system software
- (d) Embedded software is a type of SS
- (e) SS controls the hardware of computer

2)

Which of the following factor(s) is/are true with respect to software cost?

- (a) The software costs include the maintenance cost of the software
- (b) Hardware cost is more than software cost
- (c) Software Engineering is concerned with cost-effective software development
- (d) The cost of software testing is not a part of the software cost
- (e) The failures of software will not affect the cost of software

3)

What is/are not phase(s) of the software development life cycle?

- (a) Feasibility Study
- (b) Requirement Analysis
- (c) Design and Modeling
- (d) Project Management
- (e) Maintenance

4)

Which of the following is/are not a plan-driven software development model?

- (a) Incremental
- (b) Rapid Application Development
- (c) Spiral Model
- (d) Scrum
- (e) Extreme Programming (XP)

5)

Which of the following phrases describe(s) the throw-away prototyping correctly?

- (a) It is an evolutionary model
- (b) It can be used to clear vague requirements
- (c) The final system is based on the prototype.
- (d) User participation is not very important
- (e) It is developed incrementally

6)

Which of the following(s) describes the Spiral Model?

- (a) A sequence of activities with backtracking
- (b) Each loop in the spiral represents a phase of development
- (c) Each phase represents the development life cycle
- (d) Risk assessments are carried out throughout the process
- (e) More suitable when requirements could not be specified precisely

7)

Which of the following is/are phases in the Unified Process?

- (a) Inception
- (b) Expansion
- (c) Elaboration
- (d) Completion
- (e) Transition

8)

Which of the following phrases are relevant to the Scrum methodology?

- (a) A user story is a short description of a business requirement
- (b) Velocity is the number of user stories during a sprint.
- (c) Product backlog lists the user stories based on the priorities of the client
- (d) Sprint planning determines the user stories for the sprint
- (e) The daily meeting is not essential in the Scrum

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9) Which of the following is/are practices directly promoted in the Extreme Programming?

- (a) Collective Ownership
- (b) Coding Standards
- (c) Customer collaboration
- (d) 40-hour week
- (e) Refactoring

10) What are the objectives of the daily scrum meetings?

- (a) Inform the individual the progress
- (b) Identify the issues faced by the team
- (c) Plan the presentation to customers
- (d) Report what was achieved
- (e) Record attendance

11) Which of the following is/are correct with respect to User Requirements

- (a) Basis for the functional requirements
- (b) Written them to understand easily
- (c) Diagrams/illustrations could be used to present them
- (d) Cannot be linked to system requirements
- (e) Requirement imprecision is higher

12) Which of the following is/are the types of non-functional requirements?

- (a) Product/Service requirements
- (b) Financial requirements
- (c) Organizational requirements
- (d) External requirements
- (e) Project scope

13)

Which of the following areas is/are considered as the requirements definition.

- (a) Requirement gathering
- (b) Requirement Documentation
- (c) Manage changes
- (d) Requirement Review
- (e) Requirement Traceability

14)

Which of the following is/are the requirement elicitation techniques?

- (a) Interviews
- (b) Observations
- (c) Simulations
- (d) Meetings
- (e) Questionnaires

15)

When choosing a programming language to implement a software product, what factors should be considered?

- (a) Productivity of programmers
- (b) The country of origin
- (c) Tool support
- (d) Reputation of the organization which distributes the language
- (e) Availability of supporting Integrated Development Environment.

16)

Which of the following is/are good coding practices?

- (a) Descriptive procedure names irrespective of length
- (b) Meaningful Names according to standard format
- (c) Exceptional Handling
- (d) Use only the primitive Data types
- (e) Identify the logical segments using comments

17)

Which of the following is/are correct concerning the Verification and Validation (V&V) Model?

- (a) Validation verifies whether the right product is built
- (b) Validation verifies whether the product is built correctly.
- (c) Verification verifies whether the product is right
- (d) Verification verifies whether building the right product
- (e) Start after completing the implementation

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18) Consider the following code segment.

Read (X, Y);

While (X <= Y) X+=1;

Which of the following is/are acceptable test data sets for X and Y?

- (a) (0,5), (10,10), (7,3)
- (b) (0,0), (-10,-10), (5,5)
- (c) (5,-5), (-5,5), (5,5)
- (d) (5,5), (-5,10), (5,10)
- (e) (7,3), (3,7), (-7, -3)

19)

Which Git command is used to view the commit history of a repository?

- (a) git log
- (b) git show
- (c) git commit
- (d) git display
- (e) git status

20)

What doesn't cover the freedom in Free and Open Source software?

- (a) Analyze the source codes without obtaining permission from the authors
- (b) Modify the code before running
- (c) Sell the software to a third party
- (d) Distribute the software with a new license without modifying
- (e) Extend the software to create a new version without permission

21)

What is GitLab?

- (a) A version control system similar to Git
- (b) A web-based Git repository manager and collaboration platform
- (c) A programming language
- (d) A continuous integration tool
- (e) Integrated Development Environment

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22)

You are the project manager of a software development team, and you need to track the progress of your team's work. Which of the following Jira features would be most useful for this task?

- (a) Jira Board
- (b) Jira Graph
- (c) Jira Filter
- (d) Jira Workflow
- (e) Jira Dashboard

23)

Which of the following is/are not covered by the software testing?

- (a) Unit Testing
- (b) Component Testing
- (c) Interface Testing
- (d) Consistency Testing
- (e) Ethical Testing

24)

What is JIRA sprint?

- (a) A short, time-boxed period during which a team works on a set of issues
- (b) Business Plan
- (c) A report on project progress
- (d) A team meeting
- (e) A way to assign tasks to team member

25)

In JIRA, an issue could be?

- (a) Bug
- (b) Epic
- (c) Workflow
- (d) Improvement
- (e) Process

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Q2. A We need to anticipate failures in a particular software product. In the beginning, it is unknown, but it changes with time. Many changes could be made to software products, and they may be related to failures. However, any change to software products may affect failures. Draw a graph between failure rate and time of lifetime software showing the idea situation and real situation. **(05 marks)**

ANSWER BOX

Q2. B. What is the role of software engineering when developing software products/services? **(05 marks)**

ANSWER BOX

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- Q2.** C. (i) Is a code of ethics important for Software Engineers? (ii) How does it affect the public interest, honesty and integrity, and competency of software engineers? **(05 marks)**

ANSWER BOX

- Q2.** D. (i) Describe the waterfall model briefly. (ii) What are the challenges and disadvantages of the waterfall model? **(05 marks)**

ANSWER BOX

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Q3.	B.	State the four values described in the Agile Manifesto. How do you evaluate these values?
		(05 marks)
		<u>ANSWER BOX</u>

Q3.	C.	<p>A student can register for a programme in the institute by submitting an online application form or by submitting a printed application form. When registering online, the student has to log in to the system using his credentials. If he is a new student, he can sign up to obtain the login credentials. The application form can be saved as a draft application before submitting the application.</p> <p>Draw the Use Case Diagram for the above scenario considering generalization, including and extending relationships.</p>
		(05 marks)
		<u>ANSWER BOX</u>

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Q3.	D.	<p>A student can register for many courses. However, at least five students should register for a course to offer it. Some courses may have prerequisites too. Some students are full-time students, and others are part-time students. Staff members are teachers or managers of courses, but some staff members play the roles of teacher and manager.</p> <p>Draw the class diagram for the above scenario. (05 marks)</p>
		<p><u>ANSWER BOX</u></p>

Q3.	E.	<p>Briefly describe software defect testing stages according to the order of testing in a project. (05 marks)</p>
		<p><u>ANSWER BOX</u></p>

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