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UNIVERSITI TUN ABDUL RAZAK

FINAL EXAMINATION

NOVEMBER 2023

COURSE TITLE	**INTRODUCTION SOFTWARE ENGINEERING**
COURSE CODE	**RCIT1613**
DATE/DAY	**25 FEBRUARY 2024 / SUNDAY**
TIME/DURATION	**09:00 AM - 11:00 AM / 02 Hour(s) 00 Minute(s)**

INSTRUCTIONS TO CANDIDATES :

1. Please read the instruction under each section carefully.
2. Candidates are reminded not to bring into examination hall/room any form of written materials or electronic gadget except for stationery that is permitted by the Invigilator.
3. Students who are caught breaching the Examination Rules and Regulation will be charged with an academic dishonesty and if found guilty of the offence, the maximum penalty is expulsion from the University.

(This Question Paper consists of 9 Printed Pages including front page)

*****DO NOT OPEN THE QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO*****

This question paper consists of TWO (2) sections in this examination paper. Please answer ALL questions in the answer booklet provided. [80 MARKS]

SECTION A (30 Marks)

There are THIRTY (30) questions in this part of the examination paper. Answer ALL question in the answer booklet.

1. What is the definition of architectural design?

   A. Design process for identifying the sub-systems.
   B. Hardware process of a systems.
   C. Software process of a sub-systems.
   D. None of the answers.

2. The output of this design process is a description of the _____.

   A. user interface
   B. software development
   C. software architecture
   D. data analysis

3. What are the two types of architectural abstraction?

   A. Structural and functional abstraction
   B. Small and large abstraction
   C. Abstract and concrete abstraction
   D. None of the answers.

4. Identify the advantages of explicit architecture.

   I. Stakeholder communication.
   II. System analysis.
   III. No secret databases.
   IV. Internet connection stability.
   V. Large-scale reuse.

   A. I, II, IV and V.
   B. II, III, and IV.
   C. I, II, III and IV.
   D. None of the answers.

5. Which is architectural representations in software engineering?

   I. Data flow.
   II. Block diagrams.
   III. Data store.
   IV. Showing entities.
   V. Relationships.

   A. II, III, IV and V.
   B. I, II, III, and IV.
   C. I, II, IV and V.
   D. None of the answers.

6. What is the primary purpose of architectural models?

   A. Aesthetic decoration.
   B. Documentation.
   C. Functional design.
   D. Environmental conservation.

7. The statement below refers to _____.

   "Systems in the same domain often have similar architectures that reflect domain concepts."

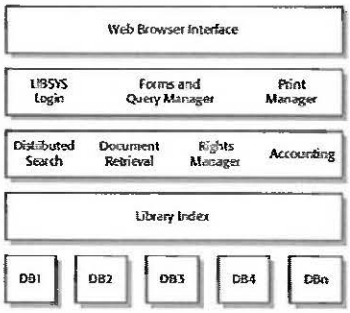
   A. user interface
   B. software development
   C. data analysis
   D. architecture reuse

8. Identify the architecture and system characteristics.

   I. Performance
   II. Security
   III. Documentation
   IV. Safety
   V. Availability
   VI. Functional design.
   VII. Maintainability

   A. I, II, IV, V and VII.
   B. II, III, IV, V and VII.
   C. I, II, III, IV and V.
   D. None of the answers.

9. Based on the diagram below, identify the correct architecture.



A. Vertical architecture.
B. Horizontal architecture.
C. Parallel architecture.
D. Layered architecture.

10. In the process of design and implementation, what stage specifically focuses on planning and creating the overall structure?

A. Ideation phase.
B. Development stage.
C. Execution step.
D. Blueprint phase.

11. What is the primary purpose of purchasing off-the-shelf systems (COTS)?

A. To customize and tailor software according to specific needs.
B. To eliminate the need for any future software updates.
C. To create a unique and proprietary system from scratch.
D. To save time and resources by using pre-built, commercially available solutions.

12. What is the primary purpose of the object-oriented design process?

A. To improve hardware efficiency.
B. To enhance user interface aesthetics.
C. To processes involve developing a number of different system models.
D. To minimize database storage requirements.

13. In software engineering, what do context models refer to?

A. Graphic design elements and user interface components.
B. The system interacts with its environment as it is used.
C. Representations of the system's environment.
D. Database schema structures

14. In software engineering, what do interaction models refer to?

A. Graphic design elements and user interface components.
B. The system interacts with its environment as it is used.
C. Representations of the system's environment.
D. Database schema structures

15. What is the definition of sequence models in software engineering?

A. Models that represent the process flow of data in a program.
B. Models that focus on organizing code in a process manner.
C. Models that handle sequences of data, such as time series or ordered data.
D. Models that emphasize the importance of process diagrams in software design.

16. What is the primary objective of program testing?

A. Enhancing code readability
B. Improving software design
C. Streamlining project documentation
D. Ensuring program correctness and reliability

17. Identify **TWO (2)** types of testing.

A. Enhancing and readability testing.
B. Validation and defect testing.
C. Element and scheme testing.
D. None of the answers.

18. The phrase "Are we building the product right" refers to _____.

A. validation.
B. evaluation.
C. verification.
D. none of the answers.

19. The phrase "Are we building the right product" refers to _____.

A. validation.
B. evaluation.
C. verification.
D. none of the answers.

20. What is the primary purpose of software inspections?

A. Enhancing user interfaces
B. Identifying and fixing bugs and defects
C. Improving software aesthetics
D. Increasing hardware performance

21. Identify the stages of testing.

I. Development testing.
II. Fundamental testing.
III. Release testing.
IV. Site testing.
V. User testing.

A. II, III and V.
B. I, II and V.
C. I, III and V.
D. None of the answers.

22. What is the key problem for all organizations to their existing software systems?

A. Processing and manipulating.
B. Implementing and managing change.
C. Inserting and preventing.
D. None of the answers.

23. Identify the importance of software evolution.

I. Implementing software process.
II. Investments of software systems.
III. Preventing software process.
IV. Assets to the business.
V. Software budget in companies

A. II, IV and V
B. I, IV and V
C. I, II and III
D. None of the answers.

24. Once software had fully developed and ready for implementation. What should software vendor prepare for user?

A. Instruct users.
B. Process users.
C. Educate users.
D. None of the answers.

25. For custom systems, the costs of software maintenance usually exceed the software development costs.

A. True.
B. False.

26. Software project management consist of three important elements. Identify **THREE (3)** elements of software project management.

I. Risk management.
II. Processes.
III. Managing people.
IV. Prevention.
V. Teamwork.

A. I, III dan V.
B. II, III dan V.
C. III, IV dan V.
D. None of the answers.

27. Identify management activities in project management.

I. Project planning.
II. Project prevention.
III. Reporting.
IV. Risk management.
V. Survey process.
VI. People management.
VII. Proposal writing.

A. II, III, IV, VI and VII.
B. I, III, IV, V and VII.
C. I, III, IV, VI and VII.
D. None of the answers.

28. Identify risk management process of a project.

I. Risk identification.
II. Risk process.
III. Risk analysis.
IV. Risk planning.
V. Risk evaluation.
VI. Risk monitoring

A. II, III, IV and VI.
B. I, III, IV and V.
C. I, III, IV and VI.
D. None of the answers.

29. Good project management is essential if software engineering projects are to be developed on schedule and within budget.

    A. True.
    B. False.

30. Risk management is now recognized as one of the most important project management tasks.

    A. True.
    B. False.

SECTION B **(50 Marks)**

There are THREE (3) questions in this part of the examination paper. Answer ALL question in the answer booklet.

1. Use case diagram is intended for an overall understanding of a system with multiple use case and it summarizes the use cases for a system by showing the goals of the use cases and the actors who interact with the goals. Basic flows, together with one-line descriptions of alternative flows are helpful for an intuitive understanding of the system.

   a) Briefly explain the term actor in a use case diagram. (5 marks)

   b) Briefly explain state diagram in software engineering. (5 marks)

   c) Draw the use case diagram for the following use cases.

   'A salary system has two roles which is employee and manager. Each role is represented by a different actor. Employees can view their own salaries by initiating the View My Salary use case. They can also initiate View Salary Statistics for perspective on how their salaries compare with similar roles both within their company and within their industry. Information about salaries outside the company is provided by a benchmarking service, which is shown as a secondary actor. Managers can view salary statistics and can administer raises for the people they manage. The system can initiate the Retrieve Benchmark Info use case to get industry salary statistics from the benchmarking service actor.'

   (15 marks)

2. There are **FIVE (5)** architecture and system characteristics in software engineering. Explain briefly architecture and system characteristics. (10 marks)

3. There are **FIVE (5)** management activities in project management. Briefly in detail five management activities. (15 marks)

***** END OF QUESTION PAPER *****