UNIRAZAK
UNIVERSITI TUN ABDUL RAZAK

FINAL EXAMINATION
MARCH 2024

COURSE TITLE	**INTRODUCTION SOFTWARE ENGINEERING**
COURSE CODE	**RCIT1613**
DATE/DAY	**21 JUNE 2024 / FRIDAY**
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. Identify 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 result of this design process is a depiction of the _____.

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

3. Which two categories of architectural abstraction exist?

   A. Structural and Functional abstraction
   B. Small and large abstraction
   C. Abstract and Concrete abstraction
   D. None of the answers.

4. Identify the benefits of a clearly defined architectural structure.

   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.

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5. What is the status of architectural representations in the field of 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 main objective of architectural models?

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

7. The following statement pertains to _____.

    "Systems in the same domain often have similar architectures that reflect domain concepts."
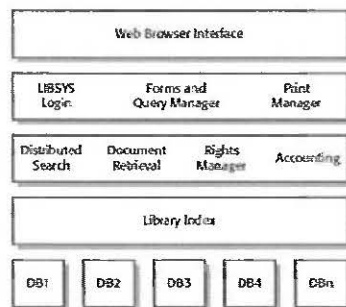
    A. user interface
    B. software development
    C. data analysis
    D. architecture reuse

8. Identify the attributes of the architecture and system.

    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. Please determine the accurate architecture by referring to the provided diagram.

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

10. During the design and implementation phases, which specific stage is dedicated to the planning and creation of 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 fundamental objective of the design process in an object-oriented manner?

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. What is the purpose of context model in software engineering?

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 does the term "sequence models" mean in the context of 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 main goal of testing a program?

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

17. Recognize **TWO (2)** forms of testing.

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

18. What does the expression "Are we constructing the product correctly" pertain to _____.

    A. Validation.
    B. Evaluation.
    C. Verification.
    D. None of the answers.

19. What does the expression "Are we developing the correct product" pertain to _____.

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

20. What is the main objective of conducting software inspections?

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

21. Recognize the testing phases.

    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 primary challenge that organizations face with their current software systems?

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

23. Recognize the significance of software development over time.

    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 the software has been fully developed and is ready for implementation, what preparations should the software vendor make for the user?

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

25. The expenses associated with maintaining custom systems typically surpass the initial costs of developing the software.

    A. True.
    B. False.

26. Three crucial components constitute software project management. Please pinpoint these **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. Recognize the managerial tasks within 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. Recognize the project's risk management procedure.

    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. Effective project management is crucial for the timely and budget-conscious development of software engineering projects.

    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) Provide a concise explanation of the term "actor" within the context of a use case diagram. (5 marks)

   b) Provide a concise description of a state diagram in the context of software engineering. (5 marks)

   c) Create a use case diagram illustrating the specified 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. Software engineering encompasses **FIVE (5)** architecture and system characteristics. Provide a brief explanation of these architecture and system characteristics. (10 marks)

3. There are **FIVE (5)** management activities in project management. Provide a concise overview of these five activities in detail. (15 marks)

*** END OF QUESTION PAPER ***