

Roll No.

Total No. of Questions : 07

Total No. of Pages : 02

BCA (Sem.-4)
SOFTWARE ENGINEERING
 Subject Code : UGCA1921
 M.Code : 79725
 Date of Examination : 05-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **SIX** questions carrying **TEN** marks each and students have to attempt any **FOUR** questions.

SECTION-A**1. Write briefly :**

- a) Define Software Engineering. What are the important roles of Conventional Component within the Software Architecture?
- b) During the course of the project, the company decides that it wishes the new web-based application's interface to be made accessible to international users. How can this be achieved and what advantages would the company achieve by having an application that is accessible to international users?
- c) Why Formal Methods are not widely used?
- d) What is the difference between security and stress testing?
- e) What is coupling? Name what are the different types of Coupling.
- f) What are the different phases of Unified Process?
- g) Define Bug, Error and Failure.
- h) What are the umbrella activities of a software process?
- i) Define Stakeholder.
- j) Explain the concept of decision tree.

SECTION-B

2. How the Process Model differ from one another? Explain types of prescriptive process models. 'Spiral life cycle model is not suitable for products that are vulnerable to large number of risks'. Comment on the statement.
3. What is SRS? Identify the problems one would face, if he tries to develop a large software product without using software engineering principles.
4. What is the difference between white and black box testing? Is determining test cases easier in black or white box testing? Is it correct to claim that if white box testing is done properly, it will achieve close to 100% path coverage?
5. What is requirement analysis? What are functional and non-functional requirements?
6. What is meant by the term cohesion in the context of software design? Differentiate architectural design and procedural design.
7. Why software development is not quick and easy method? Why a disciplined approach need to be adapt in software development of complex software? What is the role of embedded system in software development? Illustrate with the help of example.



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SECTION-B

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1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
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SECTION-A

I. Answer briefly :

- i) What is SRS and why it is used?
- ii) What is Perspective Process Model?
- iii) What is Object Oriented Design?
- iv) What are the metrics used for software testing?
- v) How decision tree is used in Software Engineering?
- vi) What are characteristics of a good software design?
- vii) When and how decision tree and decision model is used?
- viii) Discuss some features of a design document.
- ix) What are metrics for design model?
- x) What is Software Engineering?

SECTION-B

2. What is difference between functional and non functional requirements? Explain with an example
3. In 2017, a well-known organization 'A' is planning to develop a large product 'B'. Product 'B' would be comparable to a well-known Product 'C' but would be targeted to Operating system 'D'. At this time, no other vendor is planning to develop such product for Operating System 'D'. What life cycle model would you use? Briefly justify your answer and also explain the model
4. Match the following:

(a) Unit test	(i) Requirements
(b) System test	(ii) Design
(c) Validation test	(iii) Code
(d) Integration test	(iv) System Engineering

And also, give explanation of each type of testing
5. What is difference between Coupling and Cohesion? Explain with an example
6. Assume that the project needs to be terminated early. In this scenario, how do you get off the spiral model? What will be the disadvantages of spiral model in this scenario?
7. What is software cost estimation and how it is measured? Give an example to support your answer.

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SECTION-A

1. Write briefly :

- a. Why is software engineering essential in the development of complex software systems?
- b. How do preliminary design activities differ from detailed design activities in software engineering?
- c. What is software testing, and why is it a crucial step in the software development process?
- d. Why is risk management an important aspect of software engineering processes?
- e. What is the primary role of a system analyst in the software development process?
- f. What is formal requirement specification, and when is it typically used in software engineering?
- g. Name one commonly used software cost estimation model and describe its key components.
- h. What is software design, and why is it a critical phase in the software development process?

- i. How does object oriented design differ from function-oriented design in terms of its approach to modeling and structuring software systems?
- j. What is the purpose of using metrics and indicators in software development and testing?

SECTION-B

2. *The Unified Process (UP) is a complex and comprehensive software development framework. Describe the key principles and phases of UP, and provide a real-world example of a project where UP could be effectively applied, highlighting its benefits and challenges.*
3. *Software cost estimation is a critical yet challenging aspect of project management. Explain the various techniques and models used for software cost estimation, their strengths and weaknesses, and provide a comprehensive case study demonstrating the application of one of these methods in a real world software project.*
4. *Explain the key metrics used to assess the quality of requirement and design documents, and describe how they can lead to improved project outcomes. Discuss the challenges and limitations of using these metrics.*
5. *Software design encompasses various activities from high-level architectural decisions to detailed component designs. Describe the typical phases and activities involved in software design, highlighting their interdependencies and the challenges that may arise in the process.*
6. *In the context of object-oriented design, explore the principles of encapsulation, inheritance, and polymorphism. Provide examples that demonstrate how these principles promote modularity, reusability, and maintainability in software design. Additionally, discuss potential pitfalls and misconceptions that designers should be aware of when applying these principles.*
7. *Software testing is a critical phase in the software development process. Discuss the various types of software testing, their purposes and the challenges faced during testing. How do testing metrics help in measuring the effectiveness of the testing process and what role do they play in ensuring software quality?*

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SECTION-A

1. Write briefly :

- Define Software Engineering and explain its need.
- What are Specialized Process Models? Give an example.
- Explain the role of a system analyst.
- What are functional and non-functional requirements?
- Define cohesion and coupling in software design.
- What are the characteristics of a good software design?
- Differentiate between unit testing and integration testing.
- What is Software Reengineering?
- Explain in brief about Software Measurement.
- Define a decision tree and a decision table.

SECTION-B

2. Write a detailed note on Spiral model along with its advantages and disadvantages.
3. Discuss Software Requirement Specification (SRS) and its essential properties.
4. Explain structured analysis and function-oriented design in detail.
5. What are software testing fundamentals? Explain system testing in detail.
6. Explain in detail about Metrics for Testing and Metrics for Maintenance.
7. Write a detailed note on Software Cost Estimation.

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