Professional Course (Odd) Examination, 2024

(CBCS)

(5th Semester)

BACHELOR OF COMPUTER APPLICATIONS

(Software Engineering—I)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(PART : A—OBJECTIVE)

(*Marks* : 25)

SECTION—I

(*Marks* : 15)

A. Tick (✓) the correct answer in the brackets provided : 1×10=10

1. During software development, which factor is most crucial?

(a) People ( )

(b) Product ( )

(c) Process ( )

(d) Project ( )

2. Which one of the following models is not suitable for accommodating any change?

(a) Build and Fix model ( )

(b) Prototyping model ( )

(c) RAD model ( )

(d) Waterfall model ( )

3. Use case approach was developed by

(a) B. Littlewood ( )

(b) J. D. Musa and others ( )

(c) I. Jacobson and others ( )

(d) None of them ( )

4. Level-0 DFD is similar to

(a) use case diagram ( )

(b) context diagram ( )

(c) system diagram ( )

(d) None of the above ( )

5. The importance of software design can be summarized in a single word

(a) accuracy ( )

(b) complexity ( )

(c) efficiency ( )

(d) quality ( )

6. Which one of the following is not a strategy for design?

(a) Bottom-up design ( )

(b) Top-down design ( )

(c) Embedded design ( )

(d) Hybrid design ( )

7. Software science measures are developed by

(a) B. Littlewood ( )

(b) M. Halsted ( )

(c) T. J. McCabe ( )

(d) G. Rothermel ( )

8. COCOMO stands for

(a) Constructive Cost Model ( )

(b) Comprehensive Cost Model ( )

(c) Constructive Cost Estimation Model ( )

(d) Complete Cost Estimation Model ( )

9. Which of the following testings is related to the boundary value analysis?

(a) White-box and black-box testing ( )

(b) White-box testing ( )

(c) Black-box testing ( )

(d) None of the above ( )

10. Software reliability is defined with respect to

(a) time ( )

(b) bugs ( )

(c) failures ( )

(d) quality ( )

B. State whether the following statements are *True (T)* or *False (F)* by putting a Tick (✓) mark in the brackets provided : 1×5=5

1. System testing is the first step in the software development life cycle.

(T / F)

2. Requirements analysis is an iterative process.

(T / F)

3. When using structured design methodologies, the process of stepwise refinement is unnecessary.

(T / F)

4. Cyclomatic complexity is not a size metric.

(T / F)

5. Mean Time To Repair (MTTR) is the time needed to repair a failed hardware module.

(T / F)

SECTION—II

(*Marks* : 10)

C. Answer the following questions : 2×5=10

1. Define the term 'software engineering'. Mention its objective.

2. What are DFDs and data dictionaries?

3. What is software design? Mention the goal of software design.

4. Define organic and embedded projects with examples.

5. Define maintainability and adaptability with respect to software quality.

(PART : B—DESCRIPTIVE)

(*Marks* : 50)

D. Answer the following questions : 10×5=50

1. *(a)* Explain the spiral model and discuss the various activities in each phase with suitable diagram and mention the disadvantages of such a model. 6

   (b) Explain the reasons for difficulties in improving software process. 4

OR

   (c) Describe the following software development life cycle models : 5×2=10

   (i) Waterfall model

   (ii) Evolutionary process model

2. *(a)* Discuss the various methods of requirement elicitation. 6

   (b) What are throw-away and evolutionary prototyping approaches? 4

OR

(c) Explain the different characteristics of a good SRS document. 6

(d) Discuss the inputs and outputs of the requirements validation process. 4

3. *(a)* Describe any five types of cohesion with suitable examples. 5

(b) Explain the three strategies of design. 5

OR

(c) Discuss the concepts of object-oriented design. 6

(d) Write a short note on function-oriented design. 4

4. Mention the importance and the disadvantages of COCOMO model. Discuss the three types of COCOMO model—basic, intermediate and detailed with suitable examples. 4+6=10

OR

(a) What are information flow metrics? Explain the basic information flow model. 5

(b) Discuss the problems during the implementation of metrics in any organization. What are the various categories of software metrics? 5

5. *(a)* With suitable diagrams, explain the different levels of testing. 6

(b) Differentiate between the following : 4

(i) Alpha and Beta testings

(ii) Verification and Validation

OR

(c) What is software maintenance? Describe the various categories of maintenance. Which category consumes maximum effort and why? 5

(d) Explain the phases of software maintenance process with suitable diagram. 5

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