

**Professional Course (Odd) Examination, 2022**

( 5th Semester )

**BACHELOR OF COMPUTER APPLICATIONS**

Course No. : BCA/5/CC/25

( **Software Engineering—I** )

( Revised )

Full Marks : 75

Time : 3 hours

*The figures in the margin indicate full marks for the questions*( **PART : A—OBJECTIVE** )

( Marks : 25 )

**SECTION—A**

( Marks : 15 )

**A. Choose and write the correct answer :**

1. If user participation is available, which model is to be chosen?

- (a) Waterfall model
- (b) Iterative enhancement model
- (c) Spiral model
- (d) RAD model

2. Program is
  - (a) subset of software.
  - (b) superset of software
  - (c) software
  - (d) None of the above
3. The most desirable form of cohesion is
  - (a) logical cohesion
  - (b) procedural cohesion
  - (c) functional cohesion
  - (d) temporal cohesion
4. Which of the following is not a strategy for design?
  - (a) Bottom-up design
  - (b) Top-down design
  - (c) Embedded design
  - (d) Hybrid design
5. Estimation of size for a project is dependent on
  - (a) cost
  - (b) schedule
  - (c) time
  - (d) None of the above
6. Which of the following is not a size metric?
  - (a) LOC
  - (b) Cyclomatic complexity
  - (c) Program length
  - (d) Function count

7. Level-0 DFD is similar to

(a) Use Case diagram

(b) context diagram

(c) system diagram

(d) None of the above

8. Which one of the following statements is not correct during requirements engineering?

(a) Requirements are difficult to uncover.

(b) Requirements are subject to change.

(c) Requirements should be consistent.

(d) Requirements are always precisely known.

9. Beta testing is carried out by

(a) testers

(b) developers

(c) users

(d) All of the above

10. Patch is known as

(a) emergency fixes

(b) routine fixes

(c) critical fixes

(d) None of the above

1×5=5

B. State whether the following statements are *True* or *False* :

1. When a model makes use of a single basic variable to calculate all others, it is said to be a single variable model.
2. In coincidental cohesion, two modules have no conceptual relationship other than shared code.
3. Non-functional requirements are also called product features.
4. In prototyping model of software development, the prototype is thrown away.
5. Maximum possible value of reliability is 100.

**SECTION—B**

( Marks : 10 )

C. Answer the following questions :

2×5=10

1. (a) Briefly explain the build and fix model.  
**OR**  
(b) Differentiate between system software and embedded software.
2. (a) What are data dictionaries? Give example.  
**OR**  
(b) What is the purpose of feasibility studies in requirements engineering?

3. (a) What is design? Why is it important?

OR

(b) How are conceptual and technical designs different?

4. (a) Explain in brief the different categories of software metrics.

OR

(b) What do you understand by LOC (lines of code)? What are the disadvantages of using LOC technique for size estimation?

5. (a) Distinguish between verification and validation.

OR

(b) What is reverse engineering? What are the different levels of reverse engineering?

**( PART : B—DESCRIPTIVE )**

( Marks : 50 )

**D. Answer the following questions :**

10×5=50

1. (a) Explain the different characteristics of software. Illustrate with the help of diagram wherever necessary.

5

(b) Compare between the waterfall model and the spiral model of software development.

5

OR

(c) What do you understand by software process? Discuss the reasons why it is difficult to improve the software process. 1+4=5

(d) What is software life cycle? Discuss the increment process models.

1+4=5

2. (a) What do you understand by the term 'requirements elicitation'?  
List out the different techniques of requirements elicitation and explain any two in detail.  $1+1+4=6$

(b) Explain the various steps of requirements analysis. 4

OR

- (c) What is software requirements specification (SRS)? Discuss the various characteristics of a good SRS.  $1+5=6$

(d) What do you understand by relationships in E-R diagrams?  
Explain the different types of relationships in E-R models.  $1+3=4$

3. (a) Define module coupling. Discuss the different types of coupling.  $1+4=5$

(b) Differentiate between top-down design and bottom-up design. 5

OR

- (c) What do you understand by function-oriented design? Explain in detail the structure chart technique of representing a function-oriented design.  $1+4=5$

(d) Discuss object-oriented design. 5

4. (a) Explain in detail the function count technique of size estimation. 5

(b) What do you understand by risk? List out the typical software risks. Also discuss the various risk management activities.  $1+1+3=5$

OR

- (c) Define data structure metrics. How can we calculate the amount of data in a program?  $2+3=5$

(d) Describe the various stages of COCOMO-II. 5

5. (a) Differentiate between failures and faults. Mention the different ways of characterizing failure occurrences in time. 2+2=4
- (b) Discuss the different levels of testing. 6

**OR**

- (c) What is debugging? Discuss the debugging techniques. 5
- (d) Explain the different categories of software maintenance. 5

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