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(4th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper No. : BCA–404

(Software Engineering)

(PART : A—OBJECTIVE)

(*Marks* : 25)

The figures in the margin indicate full marks for the questions

SECTION—I

(*Marks* : 15)

1. Put a Tick (✓) mark against the correct answer in the brackets provided :   1×10=10

   (a) System specification is mainly concerned with

       (i)   how the functions are performed   (   )

       (ii) what functions are to be performed (   )

       (iii) Both (i) and (ii)   (   ) ✓

       (iv) None of the above   (   )

   (b) Which one of the following is not internal document?

       (i)   Code indentation   (   )

       (ii) Use of constant identifier   (   )

       (iii) Code structuring   (   )

       (iv) SRS   (   ) ✓

(c) Which one of the following is not identified by SQA plan?

   (i) Evaluation to be performed   (   )

   (ii) End user's knowledge   (   )

   (iii) Procedure for error reporting and tracking   (   )

   (iv) Amount of feedback provided to the software project team   (   )

(d) We can view quality of a software product as having

   (i) product operation   (   )

   (ii) product revision   (   )

   (iii) product transition   (   )

   (iv) All of the above   (   )

(e) A module is said to have logical cohesion, if

   (i) it performs a set of tasks that relate to each other very loosely   (   )

   (ii) all the functions of the module are executed within the same time span   (   )

   (iii) all elements of the module perform similar operations, e.g. error handling, data input, data output, etc.   (   )

   (iv) All of the above   (   )

(f) Usability can be measured in terms of

    (i) intellectual skill to learn the system ( )

    (ii) time required to become moderately efficient in system usage ( )

    (iii) net increase in productivity ( )

    (iv) All of the above (✓)

(g) Modular design of a system means

    (i) delivering a complex system to the customer one piece at a time ( )

    (ii) divide the whole system into a number of units, each of which is quite cohesive within itself and is not too dependent on others, and to design and develop the units separately ( ) ✓

    (iii) using models at its phase of system life cycle ( )

    (iv) using subroutine libraries ( )

(4)

(h) In object-oriented design

   (i) operations and methods are identical ( )

   (ii) methods specify algorithms whereas operations only state what is to be done ( )

   (iii) methods do no change values of attributes ( )

   (iv) methods and constructors are same ( )

(i) Find the odd one out :

   (i) Interview ( )

   (ii) Examination ( ) ✓

   (iii) Record review ( )

   (iv) Observation ( )

(j) Which of the following does not affect the software quality and organizational performance?

   (i) Market ( )

   (ii) Product ( )

   (iii) Technology ( )

   (iv) People ( ) ✓

2. State whether the following statements are *True* or *False* by putting a Tick (✓) mark : 1×5=5

(a) In bottom-up testing, each subsystem is tested separately and then the full system is tested.

　　　　　True 　(　) 　　　　*False* 　(　)

(b) The most fundamental calculation in the COCOMO model is the use of the effort equation to estimate the number of Person-Months required to develop a project.

　　　　　True 　(　) 　　　　*False* 　(　)

(c) Lines of Code (LOC) is used as estimation variable to size each element of the software. It requires considerable level of detail.

　　　　　True 　(　) 　　　　*False* 　(　)

(d) Quality assurance is the activity that leads to 'fitness of purpose'.

　　　　　True 　(　) 　　　　*False* 　(　)

(e) Project risk factor is considered in prototyping model only.

　　　　　True 　(　) 　　　　*False* 　(　)

(6)

SECTION—II

(*Marks* : 10)

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

(a) What problems may be encountered when top-down integration is chosen?

(b) How might the completion times and costs be estimated for a new software engineering contract?

(c) Briefly explain how algorithmic cost can be used for estimating software cost.

(d) Which of the software engineering paradigms would be most effective for a developing customized software of a small organization and why? State your own opinion.

(e) What are different measures for measuring software quality?

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(4th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper No. : BCA–404

(Software Engineering)

Full Marks : 75

Time : 3 hours

(PART : B—DESCRIPTIVE)

(*Marks* : 50)

*The figures in the margin indicate full marks
for the questions*

1. *(a)* Define the term 'software engineering'. State characteristics of a well-engineered software. Explain the classical life-cycle paradigm for software engineering. 5

   (b) What do you understand by build-and-fix model of a software development? Identify at least four major problems that would be faced if a larged product development work is undertaken using the build-and-fix model of software development. 5

(*Turn Over*)

Or

(c) Increasing interest is being taken in the use of rapid application development. Why is this and are there any dangers associated with the RAD approach?   5

(d) Define software process. What are the fundamental activities of a software process?   5

2. *(a)* Define the term 'feasibility study'. Explain requirement of three feasibility studies during software development.   5

(b) What do you mean by the term Data Dictionary in the context of software analysis and specification? How is the data dictionary useful during software development and maintenance?   5

Or

(c) What is the importance of properly documentation during the software development? Explain three commonly used requirement elicitation techniques for software analysis.   4

(d) What is the importance of SRS? List the characteristics of a good quality SRS. What kind of information should an SRS include?   6

3. *(a)* How are cohesion and coupling related? Give an example of where cohesion increases and coupling decreases.   5

(b) Differentiate between top-down and bottom-up approaches in respect to software design.   5

Or

(c) Define three types of module cohesion and coupling with suitable examples. What problems arise if two modules have high coupling?   6

(d) Differentiate between technical design and conceptual design.   4

4. *(a)* What are meant by measures and metrics? Explain the role of metrics in software engineering.   5

(b) What are activities during the entail stage of software project planning? What are the difficulties faced in measuring the software costs?   5

Or

(c) What is risk analysis? Explain three activities of risk assessment.   5

(d) Discuss various types of COCOMO model and its phasewise effort distribution.   5

5. *(a)* Discuss the important objectives of testing software system. Do you agree with the statement, "System testing can be considered as a pure black-box test"? Justify your answer. 4

(b) Explain the steps of software maintenance with the help of a diagram. 6

Or

(c) Differentiate between the following (any *two*) : 5×2=10

   (i) Verification and Validation

   (ii) Reverse engineering and Re-engineering

   (iii) Functional testing and Integration testing

★ ★ ★