

2026

COMPUTER SCIENCE — HONOURS

Paper : DSCC-13

(Software Engineering)

Full Marks : 75

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

1. Answer **any five** questions : 2×5
- (a) What do you mean by CFG?
 - (b) Name any two types of integration testing.
 - (c) Differentiate between 'driver' and 'stub' module.
 - (d) What is a context diagram?
 - (e) Explain any four characteristics of a good SRS.
 - (f) What is the main purpose of DFD?
 - (g) Why do we give stress on testing while developing a software?
 - (h) What is a test case suite? Give an example.

Section - A

Answer **any three** questions.

- 2. Compare and contrast software validation and verification. 5
- 3. Differentiate between Branch coverage criterion and Condition coverage criterion with example. 5
- 4. Discuss the limitations of testing. Why do we say that complete testing is impossible? 3+2
- 5. Differentiate between coupling and cohesion. What do you mean by temporal cohesion? 3+2

Please Turn Over

(6375)

6. Calculate the cyclometric complexity of the following program :

5

```
{
    i = 1;
    while (i ≤ n) {
        j = i;
        while (j ≤ i) {
            if (A[i] < A[j])
                swap (A[i], A[j]);
            j++; }
        i++; }
}
```

Section - B

Answer *any five* questions.

7. (a) A bank pays interest to the depositor at the rate of 5% per annum. Accounts of less than ₹ 10,000 are not paid any interest, whereas ammount of ₹ 15,000 or more, that have been with bank for more than 2 years enjoy the interest of 6% per annum.

Design a Decision Table for the above scenario.

- (b) Differentiate between 'throw-away prototype' model and 'Evolutionary Prototype' model. 6+4

8. (a) What do you mean by Physical DFD? How does logical DFD differ from it?

- (b) Draw a context diagram and a level-1 DFD along with a data dictionary of an examination system for processing the marks of the students. The system after processing the marks of the students generates a report card for each individual student. The system also generates a consolidated report and sends it to Contoller of Examination. 5+5

9. (a) What do you mean by structure chart? Draw a structure chart for the following :

Input a number in km, output the equivalent number of miles.

- (b) "Spiral model is called meta model."— Justify. (2+3)+5

10. (a) A project was estimated to be 200KLOC. Calculate the effort, development time for :

(i) Organic, (ii) Semi-detached modes.

- (b) What is risk? List three common type of risks that a typical software project might suffer. What is mutation testing? 5+1+3+1

11. (a) Compare and contrast between alpha testing and beta testing with proper example.

- (b) Explain software quality factors in detail. 5+5

12. (a) Let us consider the following program to compute the maximum of two numbers :

```

Algo_max (x, y)
{
    if (x > y)
    {
        max = x
    }
    else
    {
        max = x
    }
}

```

Write down a valid test set that will be able to detect the error (if any) in the above code.

- (b) Differentiate between open and closed systems.
- (c) What do you mean by software quality assurance? State the characteristics of a good quality software. 3+3+(2+2)
13. (a) Explain the different phases of Iterative waterfall model with proper diagram.
- (b) Why is maintenance important for software? What do you mean by perfective maintenance? (4+2)+(2+2)
14. (a) What do you mean by code walk through? How does code inspection differ from it?
- (b) Explain different types of performance testing. (2½+2½)+5
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