2025

COMPUTER SCIENCE — HONOURS

Paper : CC-13

(Software Engineering)

Full Marks : 50

The figures in the margin indicate full marks.

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

Answer ***question no.*** **1** and ***any four*** questions from the rest.

1. Answer ***any five*** questions : 2×5

(a) Differentiate between verification and validation.

(b) Give a brief description of COCOMO.

(c) Name any two types of integration testing.

(d) Which lifecycle model is known as metamodel and why?

(e) Why is maintenance important for software?

(f) What is the need of feasibility study phase in software development lifecycle model?

(g) What is a decision tree?

(h) Why is risk analysis important?

2. (a) When is a Module said to be functionally independent? Why is this criteria important for a good software design?

(b) Differentiate between communicational cohesion and logical cohesion. Give examples for each. 5+5

3. (a) Differentiate between Black-box testing and White-box testing strategies.

(b) Compare the different White-box testing strategies.

(c) What is CFG? 3+6+1

4. (a) Draw the schematic diagram of the Iterative Waterfall Model.

(b) What are the drawbacks of Iterative Waterfall Model?

(c) Explain the characteristics of a good SRS. 4+2+4

5. (a) What are the characteristics of a good quality software?
   (b) What is software quality assurance?
   (c) Explain software quality assurance activities. 3+2+5

6. (a) What do you mean by Level 0 DFD?
   (b) Design level 0 and level 1 DFD for Student Management System.
   (c) Write the significance of designing DFD. 2+5+3

7. (a) Consider a system taking 'speed' as input and the valid range is 40 km/hr – 80 km/hr. Design test cases, keeping in mind 'boundary value analysis' and give proper reasoning.
   (b) Differentiate between adaptive maintenance and preventive maintenance.
   (c) Compare and contrast between alpha testing and beta testing with an example. (2+2)+2+4

8. (a) What do you mean by cyclomatic complexity? Draw the control flow graph for the following program. Also, calculate the cyclomatic complexity.

```
int module (int x, int y)
 {
   while (x!=y)
     {
       if (x > y)
          x = x-y;
       else
          y = y-x;
     }
   return x;
 }
```

   (b) A bank pays interest to the depositor at the rate of 6% per annum. Accounts of less than ₹ 5,000 are not paid any interest, whereas amount of ₹ 20,000 or more, that have been with bank for more than 1 year, enjoy the interest of 6.5% per annum.
   Design a decision tree for the above case scenario. (2+4)+4