2023

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** from the rest.

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

   (a) What is open system? Give an example.

   (b) Explain the use of decision tree in software engineering.

   (c) What is the use of data store in DFD?

   (d) Why is high cohesion desirable?

   (e) What do you understand by the term 'interoperability' of software?

   (f) Suppose a level-1 DFD has 5 processes. Mention the maximum and minimum number of level-2 DFD that may be constructed from this level-1 DFD.

   (g) What is the functionality of stub?

   (h) What do you understand by program testing?

2. (a) Perform black box testing for the following problem and generate suitable test cases :
   In an examination system grade 'O' is awarded to the students who get marks in the range of 90 to 100, grade 'A' is awarded to the students who get marks in the range of 80 to 89, grade 'B' is awarded to the students who get marks in the range of 70 to 79, grade 'C' is awarded to the students who get marks in the range of 60 to 69, grade 'D' is awarded to the students who get marks in the range of 50 to 59 and those who get below 50 their grade is given as 'Failed'. Necessary error checking conditions should be given for the marks over 100 and below 0.

   (b) How is testing related with software quality?　　　　　　　　　　　　　　　　7+3

3. (a) Draw a level-0 and level-1 DFD for a banking system.

   (b) What are the characteristics of a good DFD?　　　　　　　　　　　　　　　　8+2

4. (a) Briefly discuss about iterative waterfall model.

   (b) What are the advantages and disadvantages of prototype model?　　　　　　6+(2+2)

Please Turn Over

5. (a) Why is maintenance important for software? Discuss about different types of problems that may occur if software is not maintained properly.

    (b) Discuss about the different information that are described in SRS. (2+4)+4

6. (a) Briefly explain the features of three types of projects that are classified in COCOMO.

    (b) Write the full form of COCOMO. (3+3+3)+1

7. (a) What is the requirement of quality assurance for software? What methodologies are used to ensure this?

    (b) Compare and contrast alpha testing and beta testing. (2+4)+4

8. (a) Calculate the cyclomatic complexity of the following program :

```
Start
 If (X) then
   If (Y) then
     Perform A
     Perform B
  Else
     Perform C
     Perform D
  End If
 End If
End
```

    (b) What are the different performance requirements of software testing? Mention the name of different types of performance testing. 4+(4+2)