2020

COMPUTER SCIENCE — GENERAL

Paper : SEC-A-2 (A-X2)

(Software Engineering)

Full Marks : 80

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 six*** questions from the rest.

1. Answer ***any ten*** questions : 2×10

(a) Differentiate between software verification and software validation.

(b) What is cohesion and coupling?

(c) What do you mean by meta model?

(d) What is context diagram?

(e) Why is maintenance required?

(f) List the two characteristics of bad SRS document.

(g) What is fan-in and fan-out in modular design?

(h) Which characteristics must be followed to design a good software?

(i) What is α-testing?

(j) Write the full form of COCOMO.

(k) When is a development project said to be semidetached type?

(l) What is KLOC?

(m) What do you mean by the poor modular design solution?

(n) What are the different software errors?

(o) What is software fault?

2. (a) Discuss about the spiral model for SDLC.

(b) Write the disadvantages of DFD.

(c) Mention two advantages of software reusability. 5+3+2

3. (a) Discuss about Equivalence class partitioning and Boundary value analysis approaches for designing black box test cases.

(b) What does the term 'balancing a DFD' mean? Give an example to explain your answer. 5+5

4. (a) Write down the importance of data dictionary in the context of good software design.

(b) Write the characteristics of a quality software product.

(c) Differentiate between DFD and flow chart. 3+5+2

5. (a) What is CFG? Design a CFG for the following code segment.

```
funct-gcd  (x,  y)  {
1. While  (x! = y)  {
2.      If  (x > y)  then
3.      x = x - y;
4.      else  y = y - x;
5. }
6. return  x  }
```

(b) When a module is said to be functionally independent? Write the reasons for which functional independency is needed for any good design. (2+3)+(2+3)

6. (a) Discuss briefly about different types of coupling that can exist between different modules.

(b) Discuss briefly about decision tree with a suitable example. 5+5

7. (a) Which are the major phases in the waterfall model of software development?

(b) Which phase of waterfall model consume the maximum effort for developing a typical software product and why?

(c) What are the differences between logical and physical DFD? 3+3+4

8. (a) Discuss briefly about functional and non-functional requirements for SRS document developement.

(b) Why is SRS the most important document to develop a software?

(c) What problems arise if a model has low cohesion? 5+3+2

9. (a) Explain the importance of feasibility study.

(b) Why is integration testing necessary? Discuss briefly about different types of integration testing techniques. 5+(1+4)

10. (a) Write the drawbacks of waterfall model. How is it overcome by iterative waterfall model?

(b) Discuss about different characteristics of a good SRS document. 5+5
