Qn. Set Code-1

Semester: 6th
Programme: B.Tech
Branch: All (OE-I/Minor-I)

SPRING END SEMESTER EXAMINATION-2023

6th Semester B.Tech (Open Elective-I/Minor-I)

INTRODUCTION TO SOFTWARE ENGINEERING

IT-3040

(For 2020 (L.E), 2019 & Previous Admitted Batches)

Time: 3 Hours Full Marks: 50

Answer any SIX questions.
Question paper consists of four SECTIONS i.e. A, B, C and D.
Section A is compulsory.
Attempt minimum one question each from Sections B, C, D.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.

SECTION-A

1. Answer the following questions. [1 × 10]

(a) List out the need of software engineering principles in modern software development processes.

(b) Identify the shortcomings of classical waterfall approach.

(c) Discuss different ways of requirement gathering while developing a software project.

(d) Explain the different activities that is carried out in traditional approach of software design.

(e) List out the advantages and disadvantages of object-oriented design in software engineering.

(f) "We must avoid integrating the different modules together in a single step." State TRUE/FALSE. Justify your answer.

(g) Write the difference between alpha testing and beta testing.

(h) Write the responsibilities of a project manager in software project management.

(i) What is Delphi cost estimation technique? How is it different from expert judgement technique?

(j) List out the benefits and shortcoming of democratic team in team organization.

SECTION-B

2. (a) Write the characteristics of a good software product. [4]

   (b) Discuss spiral model with a nice sketch. Also, write its advantages and disadvantages. [4]

3. (a) Explain the importance of SRS documents in software development process. What are the features of a good SRS? [4]

   (b) Write a minimum of two functional requirements for Ticket Booking System software. Also, identify two non-functional requirements. [4]

SECTION-C

4. (a) Define Cohesion in software design. Explain different types of cohesion with suitable examples. [4]

   (b) Explain synchronous and asynchronous operations in DFD with suitable example. Also, write limitations of DFD approach. [4]

5. (a) Design the black-box test suite for a function that checks whether an entered 3-digit number is prime or not using Boundary Value Analysis method. [4]

(b) Explain equivalence class partitioning black-box test approach using a suitable example. [4]

6. (a) Define cyclomatic complexity in white-box testing. How it contributes to software testing? [4]

(b) Draw context diagram and level-1 DFD for a Library management system that supports three functions namely "CREATE MEMBER", "UPDATE MEMBER" and "DELETE MEMBER". [4]

- When "CREATE MEMBER" option is selected then system asks the user to enter their personal details. If entered details are correct, then a unique membership ID is generated and the same is given to the user besides the bill.
- When "UPDATE MEMBER" is selected, the software asks the member's name and their membership ID and checks whether he/she is a valid member. If the name represents a valid member, the membership expiry date is updated and the annual membership bill is printed, otherwise an error message is displayed.
- When "DELETE MEMBER" option is selected, then software asks the member's name and their membership ID and checks whether he/she is a valid member. If the name represents a valid member, then the membership is cancelled, a cheque for the balance amount due to the member is printed, the membership record is deleted.

SECTION-D

7. (a) Explain Function Point metrics. List out the benefits of function point metrics over LOC metrics. [4]

(b) Suppose that a certain software product of semi-detached type costs Rs. 100000/- to buy off the shelf [4]

and its size is 40KLOC. If in-house developers cost Rs. 12000 per programmer month, would it be more cost effective to buy the product or build it?

(Constants: a1=3.0, a2=1.12, b1=2.5, b2=0.35)

8. (a) Write the difference between functional format and project format of organizational structure. [4]

   (b) What are the characteristics of a chief programmer's team? Explain its advantages and disadvantages. [4]

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