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6. a) i) What type of metric is Cyclomatic complexity? Justify its significance and calculate the Cyclomatic Complexity of a control flow graph that has .
- Number of decision nodes = 4.
 - Number of edges = 12.
 - Number of nodes = 9
- ii) You are gathering requirements for a university course management system. Design a set of techniques for requirement elicitation.
- (b) Compare and contrast Scrum, Kanban, and Extreme Programming (XP). Discuss their principles, workflows, and key practices. Which situations is each best suited for? (9×2 = 18)

(200)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 8611

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Unique Paper Code : 2932812402

Name of the Paper : Software Engineering

Name of the Course : B.Tech (CSE)

Semester : IV

Duration : 3 Hours

Maximum Marks :90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
 2. Attempt **five** questions in all, including **question no. 1**, which is **compulsory**.
 3. All questions carry equal marks.
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- 1 a) Compare and contrast the Waterfall and Spiral models with regard to risk handling and client involvement.
 - b) Briefly explain the test automation tools used for functional and regression testing.

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- c) Explain the purpose of a Sequence Diagram in UML. (6 × 3 = 18)
2. (a) Design a basic SDLC flowchart for a small online bookstore. Highlight each phase and its purpose.
- (b) How would you use Kanban for a help desk ticketing system? Describe how work-in-progress limits can improve performance. (9 × 2 = 18)
3. (a) In layered architecture system, how many layers are present? Explain the purpose of each layer. Also discuss its use cases, advantages, disadvantage.
- (b) Make Use Case Diagram for an e-commerce platform that facilitates online shopping for customers and provides administrative functionalities for system administrators. Customers can browse products, search for items, add items to the shopping cart, place orders, make payments, and track orders. Administrator can manage product listings, update inventory, process orders, and handle customer inquiries. Design atleast 03 use cases in accordance with template based on Jacobson guidelines. (9 × 2 = 18)
4. (a) Admission to a professional course is subject to the following conditions:

- (a) Marks in Mathematics $\geq$ 60
- (b) Marks in Physics $\geq$ 50
- (c) Marks in Chemistry $\geq$ 40
- (d) Total in all three subjects $\geq$ 200

Or

Total in Mathematics and Physics $\geq$ 150

If aggregate marks of an eligible candidate are more than 225, he/she will be eligible for honors course, otherwise he/she will be eligible for pass course. The program reads the marks in the three subjects and generates the following outputs:

- (a) Not Eligible
- (b) Eligible to Pass Course
- (c) Eligible to Honors Course

Design test cases using decision table testing technique.

- (b) Highlight the types of software metrics. Give two examples each of performance metrics and security metrics. (9 × 2 = 18)
5. (a) Describe the Albrecht's function count method with a suitable example.
- (b) What are the main objectives of configuration management? Explain why SCM is critical in large-scale software projects. (9 × 2 = 18)

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