Graphic Era
HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sanakhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Even) Semester Examination May-June 2025

Roll no. 2[illegible]

Name of the Program and semester: BCA 4th
Name of the Course: Introduction to Software Engineering
Course Code: TBC 402/TBD 404

Time: 3 hour

Maximum Marks: 100

Note:

(i) All the questions are compulsory.
(ii) Answer any two sub questions from a, b and c in each main question.
(iii) Total marks for each question is 20 (twenty).
(iv) Each sub-question carries 10 marks.

Q1. (2X10=20 Marks)

a. Differentiate between functional and non-functional requirements with suitable examples. CO2

b. Discuss the importance of coding guidelines and documentation in reducing software maintenance costs. CO3

c. A startup is planning to develop a financial mobile app with a very tight deadline and evolving requirements. Which SDLC model would you recommend? Justify your answer. CO4

Q2. (2X10=20 Marks)

a. Explain in detail reverse engineering in software maintenance? Support your answer by providing approriate example. CO6

b. Explain cohesion and coupling with reference to software design quality. CO2

c. Draw a use case diagram for a Library Management System, showing the interactions between the following actors: Student, Librarian, and Administrator. Include at least five use cases CO3

Q3. (2X10=20 Marks)

a. Discuss how CASE tools support activities such as project documentation, internal interface design, and version control. Give examples of at least two widely used CASE tools and the features they provide. CO5

b. Draw and explain a Level 1 Data Flow Diagram (DFD) for an online food ordering system. Your diagram should identify at least three processes (e.g., Place Order, Process Payment, Update Inventory), data stores (like User Database, Menu Database), and external entities (such as Customer and Restaurant Admin). Label data flows clearly, and explain how the DFD contributes to a well-structured design. CO2

c. Compare White Box and Black Box Testing based on parameters like test design, tester knowledge, coverage, and use cases. CO4

Q4. (2X10=20 Marks)

a. Consider you are a project manager handling a distributed development team. How would you manage risk and ensure software quality across all teams? CO5

b. Define regression testing and unit testing. Explain their objectives, key differences, and when each is typically performed in the software development life cycle. CO4

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c. Briefly explain the importance of UML diagrams. Illustrate key components of a UML Class Diagram? CO3

Q5. (2X10=20 Marks)

a. Compare the Spiral Model and RAD Model. Highlight at least three key differences. CO1

b.Analyze how object-oriented coding practices (like encapsulation and inheritance) improve code reusability and maintainability. Support your answer with examples. CO3

c. A healthcare software used in a hospital is showing intermittent faults during patient data retrieval. Describe a testing approach you would adopt and justify your strategy. CO6

Note For the question paper setters:

- Question paper should cover all the COs of the course.
- Please specify COs against each question.