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

End Term (Odd) Semester Examination November 2025

Roll no.....

Name of the Course and semester: MCA and 3rd
Name of the Paper: Software Engineering
Paper Code: TMC 303
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. Compare the difference between traditional methodology and agile methodology for software development. (CO2)

b. You are designing a E-commerce application that requires specific quality features. Identify at least four software characteristics critical in this case. (CO5)

c. Analyze Software Crisis? Discuss the problems and causes of software crisis. What is the significance of software crisis in reference to software engineering discipline? (CO2)

Q2. (2X10=20 Marks)

a. How does the Prototype Model contribute to software development, and what are its key phases and principles? Discuss its advantages and challenges for different types of projects. (CO4)

b. Examine the Requirements Engineering Process and illustrate the significance of requirement specification. Elaborate the structure of SRS document? (CO6)

c. Consider a Patient Management System (PMS) in a hospital: (CO2)

(i) Identify functional and non-functional requirements for the system.
(ii) Draw the Data Flow Diagram in levels for the above system.

Q3. (2X10=20 Marks)

a. Differentiate between: (any two) (CO3)

i) alpha Testing and beta Testing
ii) Coding Standards and Coding guidelines
iii) Code Walk Through and Code Inspection
Iv) Internal and External documentation

b. Comment on the role of software testing in software life cycle and why is it so difficult? List and explain different types of testing done during the testing phase. (CO1)

c. Explain equivalence class partitioning and boundary value analysis methods for designing teat cases. (CO5)

Q4. (2X10=20 Marks)

a. What is the role of a software project management in software development.? List down the activities of SPM. (CO6)

b. How would you identify and prioritize risks in a software project. And what factors would you consider when determining the likelihood and impact of each risk. (CO4)

c. Consider a project to develop a full screen editor. The major components identified are:

I. Screen edit
II. Command Language Interpreter
III. File Input & Output

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IV. Cursor Movement
V. Screen Movement

The sizes of these are estimated to be 5k, 6k, 1k, 4k & 3k delivered source code lines. Use COCOMO to determine: effort, development time, average staff size and productivity of the project, (assume values for different cost drivers to be unity, 1.0 and project to be of organic type) (CO3)

Q5. (2X10=20 Marks)

a. Describe the maturity levels of SEI CMM? Also elaborate the key processing areas of each level. (CO6)

b. Compare and contrast forward engineering, reverse engineering, and re-engineering. Critically assess the challenges faced during the re-engineering of a large-scale legacy system. (CO5)

c. What are CASE Tools? Draw a schematic diagram of the architecture of the CASE environment and explain how the different tools are integrated. (CO5)