Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 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: Diploma CS III
Name of the Paper: Software Engineering
Paper Code: DTCS-304
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. Define Software Engineering and explain its need in modern software development? Discuss different software characteristics that differentiate software from hardware? (CO1)

b. Explain Software Development Life Cycle (SDLC) with the help of a neat diagram? Provide comparison between the Waterfall Model and Spiral Model highlighting their advantages? (CO1)

c. Describe what is Software Requirements Specification (SRS)? Discuss its desirable characteristics and components? (CO1)

Q2. (2X10=20 Marks)

a. Define Software Design and explain its objectives and importance? Describe the architectural design and modular design in software designing and planning? (CO2)

b. Explain the concepts of Coupling and Cohesion in software modules, and discuss how achieving low coupling and high cohesion improves system reliability? (CO2)

c. Define Software Metrics? Explain the types of metrics and describe how these metrics support software project estimation? (CO2)

Q3. (2X10=20 Marks)

a. Define Software Maintenance and explain its need and impact of maintenance activities on software evolution and performance? (CO3)

b. Describe the process of Software Configuration Management (SCM) and explain the importance of change control and version control in maintaining software integrity? (CO3)

c. Explain the factors affecting software maintenance cost and describe how risk avoidance, detection, and recovery help minimize project failures? (CO3)

Q4. (2X10=20 Marks)

a. Define Software Testing and explain its principles and objectives, distinguishing clearly between faults, errors, and failures? (CO4)

b. Differentiate between Black Box and White Box testing, and discuss their advantages, disadvantages, and role in different levels of testing? (CO4)

c. Describe Test Cases and Test Plans? Explain how they are designed and used to ensure effective testing activities during the software testing process? (CO4)

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Q5. (2X10=20 Marks)

a. Define Software Quality Assurance (SQA) and discuss its objectives, goals, and the role of verification and validation in maintaining software reliability? (CO5)

b. Explain the classification of software qualities and describe the five levels of software quality attributes used in developing high-quality software? (CO5)

c. Define ISO 9000 Certification? Discuss its need, benefits and limitations, discuss how its requirements contribute to software process improvement? (CO5)