

Roll No.

Paper Code

3E1205

B.Tech. III-Sem (Main & Back) 2025-26
Artificial Intelligence
3CS4-07 Software Engineering
AID,CAI,CS,IT,CCS, CDS,CIT,CSD,CSR,AI
3E1205

Time : 3 Hours

Maximum Marks : 70

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

1- _____

2. _____

Part A**(Answer should be given upto 25 words only)****All questions are compulsory.****10x2=20**

- Q.1^{T-44B} Explain the requirement analysis of software design life cycle.
 Q.2 Define SRS.
 Q.3 Explain LOC estimation.
 Q.4 Define effort estimation.
 Q.5 Explain Data dictionary. Where it is used.
 Q.6 What do you mean by procedural design?
 Q.7 Explain design principles.
 Q.8 Define data Modelling.
 Q.9 Explain design documentation.
 Q.10 Name two key OOD concepts.

Part B**(Analytical / Problem/Solving questions)****Attempt any five questions.****5x4=20**

- Q.1^{T-44B} Explain verification and validation in software engineering.
 Q.2 Explain cohesion and coupling in effective modular design.
 Q.3 Explain risk analysis in software project management.
 Q.4 Differentiate Data flow diagrams (DFDS) and control flow diagram (CFDs)

- Q.5 Define architectural design with help of examples.
 Q.6 Explain class and object relationships in object oriented design.
 Q.7 Define UML in object oriented modeling.

Part-C**(Descriptive / Analytical / Problem Solving/ Design question)****Attempt any three questions.****3x10=30**

- Q.1 Explain waterfall model of software development model with their advantages and disadvantages.
 Q.2 A software project is estimated to have 50,000 lines of code (LOC), ie. 50 KLOC. This project is semi-detached type. Calculate the :
 1. Effort (in person- months)
 2. Development time (in months)
 3. Average staffing

Given data for basic COCOMO Model is :

Project Type	a_b	b_b	c_b	d_b
organic	2.4	1.05	2.5	0.38
semi-detached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

- Q.3 Explain finite state machine (FSN). Explain its components and applications in software development.
 Q.4 Define behavioural modeling. Explain its techniques and significance in structured analysis.
 Q.5 Consider a project with the following functional units.
 10 low external inputs, 12 high external outputs, 20 low internal logical files, 15 high external interface files, 12 average external inequiries and a value of complexity adjustment factor of 1.10.
 (1) What are the unadjusted and adjusted function point counts.
 Functional units with weighting factors is as follows.

Functional units	Weighting factors		
	Low	Average	High
External input (EI):	3	4	6
External output (EO)	4	5	7
External Inquiries (EQ)	3	4	6
Internal logical files (ILF)	7	10	15
External Interface files (EIF)	5	7	10