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3E1205

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B.Tech. III-Sem. (Main & Back) Examination, January/February - 2024

Artificial Intelligence & Data Science

3AID4-07 Software Engineering

AID, CAI, CS,IT,CCS, CDS,CIT,CSD, CSR

Time : 3 Hours Maximum Marks : 70

Instructions to Candidates:

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)

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory **(10×2=20)**

1. Define software. Enlist the characteristics of good software.
2. Give the difference b/w FP and LOC.
3. What is SRS?
4. Explain FSM model.
5. Why accuracy is important attribute for a data dictionaries.
6. What is software Design. Write any Four Design principles.
7. What is Input /Process/Output (IPO) approach in S/W Design.
8. What do you mean by OO concept. Write 3 OO principles.
9. Explain the term Risk Analysis. Enlist Four major categories of Risk analysis.
10. Differentiate b/w object oriented analysis (OOA) and Object Oriented Design (OOD).

PART - B

(Analytical/Problem solving questions)

Attempt any Five questions. **(5×4=20)**

1. What are the difference b/w verification and validation. Explain it with proper diagram and Example.
2. Write a short note on Object Oriented Design concepts.
3. Give the difference b/w DFD and CFD with proper example and diagram.
4. What is a good Software Design? Explain the Design Documentation with example.
5. Explain Software Development life cycle model with appropriate diagram.
6. What is prototyping? Give the sequence of events needed in prototyping.
7. Suppose that a project was estimated to be 400 KLOC. Calculate effort and time for each of three modes of development.

   Table given as:

Mode	a	b	c	d
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

PART - C

(Descriptive/Analytical/Problem Solving/Design question)

Attempt any Three questions **(3×10=30)**

1. Explain spiral model of s/w Development with a labelled diagram, state advantages and disadvantages of spiral model.
2. What do you mean by DFD. Explain its type with proper diagram. Draw 0'level and 1-level DFD for college Registration system.
3. Explain Effective modular design in terms of cohesion and coupling with all its types and diagram.
4. Define the term UML. How it is useful in object oriented modeling. Explain the following in context of UML.

   i) Use case diagram

   ii) State chart diagram.

5. Compute the function point productivity, documentation, cost per function for the following data:

Measurement Parameter	Count	Weighing Factor
i) No. of External Input (EI)	24	4
ii) No. of External output(EO)	46	4
iii) No. of External Inquiries (EQ)	8	6
iv) No. of Internal files (ILF)	4	10
v) No. of External Interfaces (EIF)	2	5

vi) Effort -36.9 PM

vii) Technical documents -265 pages

viii) User documents - 122 pages

ix) Cost = $ 7744/month

Various processing factors are: 4, 1, 0, 3, 3, 5, 4, 4, 3, 3, 2, 2, 4, 5.