Semester VI (B.Tech)

15381

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Academic Year: 2022-23

Jaypee University of Engineering & Technology, Guna

T-3 (Even Semester 2023)

18B11CI612 – SOFTWARE ENGINEERING

Maximum Duration: 2 Hours

Maximum Marks: 35

Notes:

1. This question paper has 05 questions.
2. Write relevant answers only.
3. Do not write anything on question paper (Except your Er. No.).

			Marks	CO No.
Q1.	**(a)**	Design a class diagram for a basic banking system. The system should have the following classes: Account, SavingsAccount, CheckingAccount, and Bank. I. Account should have data members for the account number, balance, and account holder name, as well as methods for depositing and withdrawing money. II. SavingsAccount should be a subclass of Account and should have an additional data member for the interest rate and a method for calculating the interest. III. CheckingAccount should be a subclass of Account and should have an additional data member for the overdraft limit and a method for checking if the account is overdrawn. IV. Bank should have a data member for a list of accounts and methods for adding and removing accounts, as well as a method for transferring money between accounts.	[04]	CO4
	(b)	Enumerate the different types of coupling that might exist between modules. Give examples of each.	[03]	CO4
Q2.	**(a)**	Tabulate the advantages and disadvantages of LOC based size estimation with Function Point based size estimation.	[04]	CO3
	(b)	Discuss the importance of software maintenance. Explain the different categories of software maintenance with suitable example.	[03]	CO3
Q3.	**(a)**	Analyze about the requirement engineering process and how these requirements are managed.	[04]	CO4
	(b)	With the help of Venn Diagram, explain the different program behaviors during testing process. Highlight the section in Venn diagram which emphasis the testing objective.	[03]	

Q4. Consider the following pseudo code: **[07]** **CO5**

```
i = 0;
n=4; //N-Number of nodes present in the graph
        while (i<n-1) do
                j = i + 1;
                while (j<n) do
                        if A[i]<A[j] then
                        swap(A[i], A[j]);
                end do;
                i=i+1;
        end do;
```

Estimate the upper bound of independent paths in above code with the help of CFG method.

Q5. Suppose you are the manager of a software project requiring the following activities. **[07]** **CO5**

Activity No.	Activity Name	Duration (weeks)
1	A1	5
2	A2	5
3	A3	3
4	A4	5
5	A5	4
6	A6	3
7	A7	9
8	A8	13
9	A9	19
10	A10	11
11	A11	9
12	A12	3

The precedence relation $A_i <= \{A_j, A_k\}$ implies that the activity A_i must complete before either activity A_j or A_k can start. The i^{th} milestone represented by m_i. The following precedence relation is known to hold among these activities:

$A_1(m1)<=\{A_3, A_4\}$

$A_2(m2)<=A_5(m4)<=A_6(m5)<=A_{10}$

$\{A_3, A_4, A_6\}(m3)<=\{A_7, A_8, A_9\}(m6)<=A_{11}$

$\{A_{10}, A_{11}\}(m7)<=A_{12}$

Estimate Earliest Start Time, Earliest Finish Time, Latest Start Time, Latest Finish Time, and Slack Time for each activity