

[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 853 E Your Roll No.....

Unique Paper Code : 234405

Name of the Course : B.Sc. (H) Computer Science

Name of the Paper : Software Engineering

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. The paper has **two** sections.
3. All questions in '**Section A**' are compulsory.
4. Attempt **any four** questions from '**Section B**'.

SECTION A

1. (i) Define Software Engineering. Why is it called Layered Technology ? (3)
(ii) What is Prototyping Process Model ? Under what circumstances, it is recommended. (3)
(iii) "A high quality SRS (Software Requirement Specification) is a pre-requisite to a high quality software." – Justify the statement. (3)
(iv) What is Requirement Process ? What is its work product ? (3)
(v) What are the various metrics for Software Quality ? Explain any one. (3)
(vi) What is an 'object point' in the COCOMO II Model ? (2)
(vii) Explain the reactive and the proactive risk strategies to deal with software development risks. (3)

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- (viii) Explain any three levels of Cohesion. (3)
- (ix) What is Defect Removal Efficiency (DRE) ? How it is used to access the team's ability to find errors, as they are passed to the next framework activity ? (3)
- (x) Briefly explain any three roles of an SQA (Software Quality Assurance) group. (3)
- (xi) What is verification and validation ? Explain with reference to Software testing. (3)
- (xii) What is Boundary Value Analysis (BVA) ? What are the guidelines to create BVA test cases ? (3)

SECTION B

- 2. (a) What does the Capability Maturity Model Integration (CMMI) determine ? Explain its five capability levels. (5)
- (b) What are umbrella activities ? List any four umbrella activities. (5)
- 3. Assume that you have to build a software system that :
 - (i) allows students to submit their assignments,
 - (ii) provides an environment to the teachers to evaluate them and
 - (iii) generates the result with minimum input.Draw a context diagram and level 1 DFD of the above requirements of the system. (10)
- 4. (a) Create a flow graph to find the cyclomatic complexity of the following code. Also show the no. of independent paths and regions :

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```
long int factorial (int n)
```

```
{
```

```
    long int fact = 1;
```

```
    while (n > 1)
```

```
    {
```

```
        fact = fact * n;
```

```
        n --;
```

```
    }
```

```
    return fact;
```

```
}
```

(6)

(b) Explain white box and black box testing methods.

(4)

5. (a) Compute the Function Point value for a project with the following information domain characteristics :

Measurement Parameters	Count	Weighing factors		
		Low	Average	High
Number of user inputs	36	3	4	6
Number of user outputs	45	4	5	7
Number of user inquiries	48	3	6	9
Number of files	9	7	10	15
Number of external interfaces	6	5	7	10

Assume the measurement parameters equally divided among low, average and high complexity. Further, assume that the complexity adjustment value is 1.25.

(6)

- (b) Determine the cost and efforts required for the above (Q5 (a)) software project. Assume the average productivity for the project is 5 FP/pm and the labor rate of Rs. 40,000 per month.

(4)

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6. (a) State the significance of a Gantt chart for scheduling and monitoring a software project. (5)
- (b) How does the consequences of a risk in a software project assessed ? (5)
7. Write differences between the followings (Attempt any four) :
- (i) Error vs Defect
 - (ii) Analysis and Design model
 - (iii) Direct and Indirect measures of Software
 - (iv) Alpha and Beta testing
 - (v) Top-down and Bottom-up Integration Testing (10)

(200)

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