[This question paper contains 6 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 2797 **GC-4**

Unique Paper Code : 32341402

Name of the Paper : Software Engineering

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

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. **All** questions in **'Section A'** are compulsory.
3. Attempt any **Four** questions from **'Section B'.** Parts of a question must be answered together.

SECTION A

1. (i) List any two characteristics of Software. (2)

   (ii) State three steps for risk projection in software development ? (3)

P.T.O.

(iii) What is Regression Testing ? (3)

(iv) "A high quality SRS reduces the development cost". Comment. (3)

(v) State three types of process flow with the help of a neat diagram. (3)

(vi) How time-line chart helps in scheduling for software development? Show with an example. (3)

(vii) Differentiate between top-down and bottom-up integration testing. (3)

(viii) Explain requirement process with the help of a diagram. (3)

(ix) Write short note on Defect Removal Efficiency. (3)

(x) A system has 3 external inputs, 6 external outputs, external queries, 4 internal logical files, and interfaces with 2 different legacy systems (2 EIFs). All of these data are of average complexity (4, 5, 4, 10, 7) and the overall system is relatively simple. Compute Function Point for the system. (3)

(xi) How do we compute the "expected value" for software size ? (3)

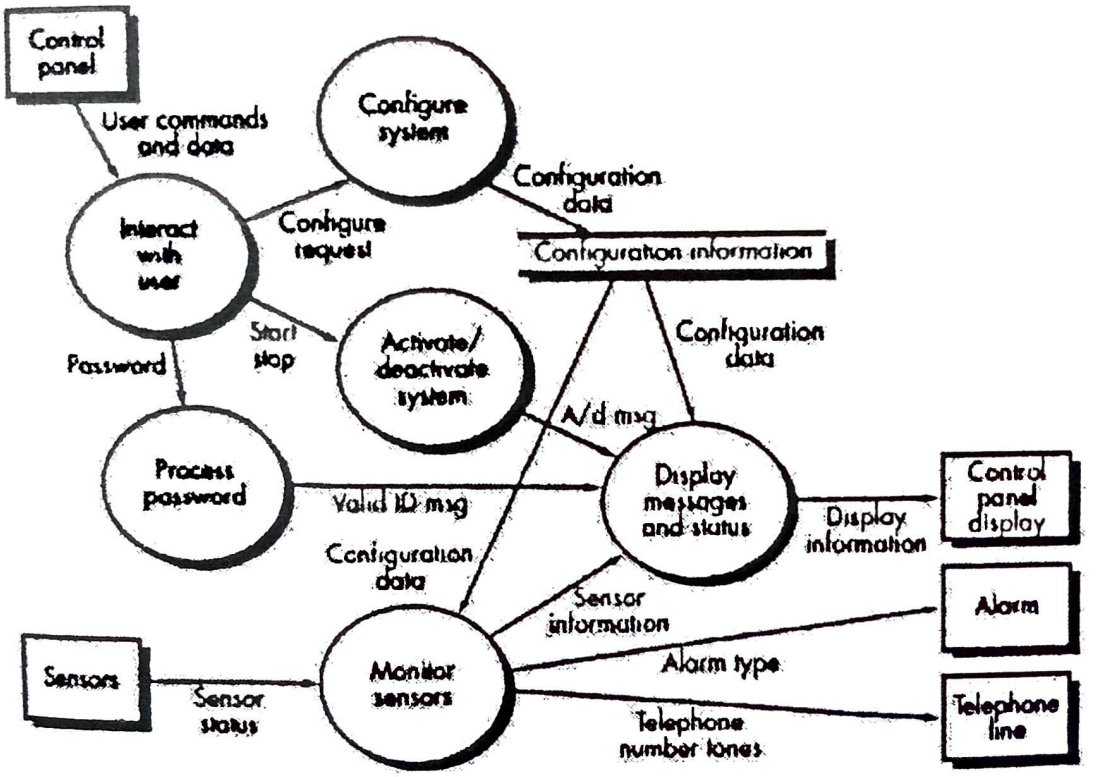
(xii) Differentiate between private and public metrics. (3)

SECTION B

2. (a) What is Cohesion ? State any three levels of Cohesion. (4)

(b) Explain the six process maturity levels in CMMI. (6)

3. (a) What is Transform Mapping ? Perform second level factoring for the DFD given below. (6)



(b) Explain with an example, how defect amplification and removal model reduces the cost for defect removal. (4)

4. (a) Draw a Context level and level 1 data flow diagram for a distance education university. The enrolment process is as follows :

- Students send in an application form containing their personal details and the desired course.
- The university checks that the course is available and that the student has necessary academic qualifications.
- If the course is available, the student is enrolled in the course and the university confirms the enrolment by sending a confirmation letter to the student.
- If the course is unavailable, the student is sent a rejection letter. (7)

(b) Explain the following two measures of Software Quality:

(i) Maintainability

(ii) Integrity (3)

5. Use the flow graph to find Cyclomatic Complexity of the following code. Also show the no. of independent paths and regions : (7)

```
main( )
{
int num1, num2, num3;
printf("Enter the values of numl, num2 and num3\n");
scanf("%d %d %d", &num1, &num2, &num3);
```

```
if (num1 > num2)
    {
        if (num1 > num3)
        {
            printf("num1 is greatest among three \n");
        }
        else
        {
            printf("num3 is greatest among three \n");
        }
    }
else if (num2 > num3)
    printf("num2 is greatest among three \n");
  else
    printf("num3 is greatest among three \n");
}
```

(b) Explain RMMM with the help of an example. (3)

6. (a) Explain prototyping model ? Give one advantage and one disadvantage of using prototyping model for software development. (5)

(b) What is equivalence class partitioning testing ? State the guidelines to create equivalence class partitioning test cases with two examples. (5)

7. (a) Explain Unit Testing. How stubs and drivers are used in Unit Testing ? (5)

(b) Use the COCOMO II model to estimate the effort required to build software that produces 10 screens and 8 reports, and will require approximately 70 software components. Assume that the software has average complexity (Screen-2, Reports-5, 3GL component-10) and average/developer/environment maturity as 13. This system is Component based development so the percent of reuse (%reuse) is 50%. Use the Application Composition model with object points. (5)