This question paper contains 5 printed pages.

Your Roll No. 160357[illegible]

Sl. No. of Ques. Paper : **6513** **HC**

Unique Paper Code : **32341402**

Name of Paper : **Software Engineering**

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

Semester : **IV**

Duration : **3 hours**

Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

The paper has two Sections. All questions in Section A are compulsory. Attempt any four questions from Section B. Parts of a question must be answered together.

SECTION A

1. (a) Why is the Spiral Model more realistic for the development of large scale systems? 2

   (b) State six characteristics of a good SRS. 3

   (c) How do we assess the consequences of risk? How is overall risk exposure determined? 3

   (d) State the advantages and disadvantages (three each) of Waterfall model. 3

   (e) What are the advantages of Technical Reviews? 2

   (f) When do umbrella activities occur? List any *three* of them. 3

P. T. O.

(g) What is the difference between an Alpha Test and a Beta Test? 3

(h) How does interface complexity affect coupling? 3

(i) Differentiate between top-down and bottom-up approaches in the case of software design. 2

(j) A system has 5 external inputs, 8 external outputs, 3 external queries, manages 5 internal logical files, and interfaces with 3 different legacy systems (3 EIFs). All of these data are of high complexity (6, 7, 6, 15, 10) and the overall system is relatively simple. Compute Function Point for the system. 3

(k) State the significance of a Gantt Chart for scheduling and monitoring a software project. 3

(l) Explain with the help of a diagram failure curves for software. 3

(m) What is Smoke testing? 2

SECTION B

2. (a) Explain testing strategy with the help of neat diagram. 5

(b) What is Capability Maturity Model Integration (CMMI)? Explain the various layers of CMMI in detail. 5

3. (a) Explain the Incremental Model of software development process with the help of a diagram. Also state its two advantages. 5

(b) What is Boundary Value Testing? State the guidelines to create Boundary Value Testing for test cases with two examples. 5

4. (a) Draw a Context level and level 1 Data Flow Diagram for Retail Clothing Store in a mall. 6

(b) Explain four different measures of Software Quality. 4

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

```
int main()
{
 int year;
 printf("Enter a year:");
 scanf("%d",&year);
 if(year%4==0)
 {
   if(year%100==0)
   {
     if(year%400==0)
       printf("%d is a leap year.", year);
     else
       printf("%d  is not a leap year.", year);
   }
   else
     printf("%d is a leap year.", year);
 }
 else
```

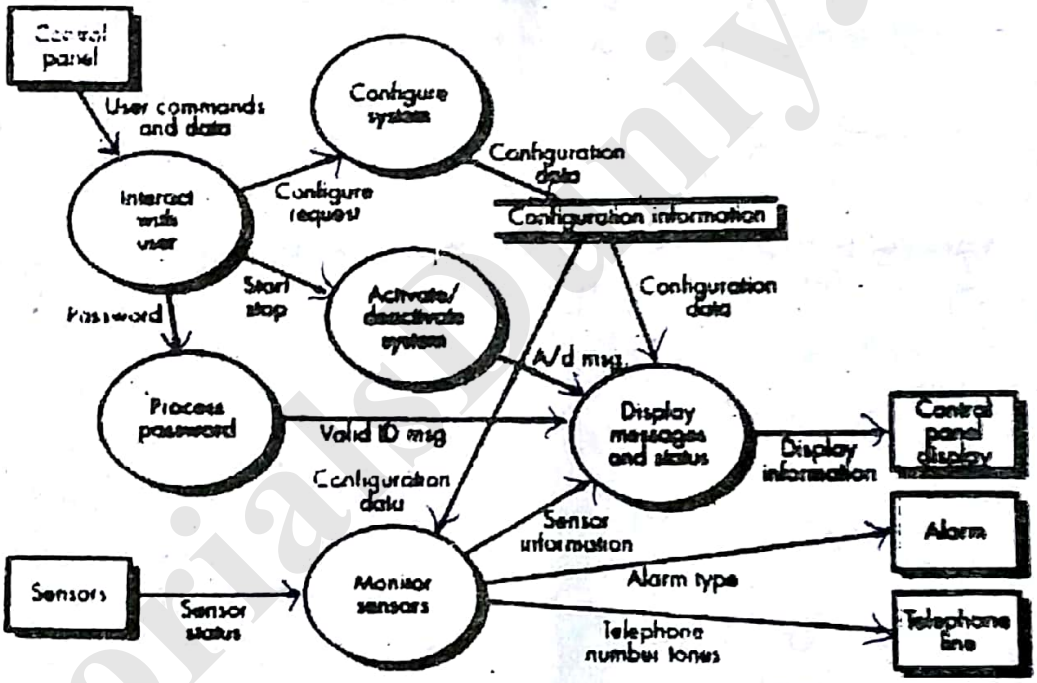
P. T. O.

```
    printf("%d is not a leap year.", year);
    return0;
}
```

6

(b) What are the components of a risk table? How is it constructed? 4

6. (a) What is Transform Mapping? Perform first level factoring for the DFD given below. 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 average complexity (Screen-2, Reports-5, 3CGL components-10) and average/developer/ environment maturity as 13. Use the application composition model with object points. 5

7. Write short notes on any *two*:

(a) Five levels of cohesion

(b) Five elements of software quality assurance

(c) Defect amplification model. 10