8.  (a) Explain Unit testing. What is the need for stubs and drivers in unit testing? (5)

(b) List any five characteristics of software requirement specifications. Explain any two characteristics in detail. (5)

[This question paper contains 8 printed pages.]

**Sr. No. of Question Paper :** 6534     **E**

Unique Paper Code     : 32341402(OC)

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. This paper has **two** sections.

3. All questions in **Section A** are compulsory.

4. Attempt any **four** questions from **Section B**.

**SECTION A**

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

(3)

P.T.O.

(ii) Define any three Umbrella activities related to the process of software development.          (3)

(iii) Explain the Reactive and Proactive strategy to deal with software development risk.          (3)

(iv) Differentiate between alpha testing and beta testing.          (3)

(v) "Transform mapping helps in architectural design of the software". Justify your answer.          (3)

(vi) Explain Equivalence class partitioning as a software testing technique.          (3)

(vii) What are the advantages of Technical Review during the testing stage?          (2)

(viii) "A high-quality SRS is a prerequisite to high – quality software". Justify this statement.          (3)

(b) Draw DFD, Context level and Level 1 data flow diagram for the following scenario :

A shop owner wishes to automate his business. The potential user for the system are salesman and owner. The basic goals for the new system are as follows :

(i) The automation of the order processing.

(ii) The billing

(iii) Automate accounting

(iv) Supplier information

(v) Sale information

(vi) Stock management          (6)

7. (a) Explain Top down and Bottom up Integration Testing techniques.          (5)

(b) Explainwith an example how Defect Amplification and Removal Model reduces the cost for defect removal.          (5)

| Domain Characteristics | Count | Simple | Average | Complex |
|---|---|---|---|---|
| Number of External Inputs(EI) | 5 | 7 | 10 | 15 |
| Number of External Outputs(EO) | 4 | 5 | 7 | 10 |
| Number of External Inquiries(EI) | 1 | 3 | 4 | 6 |
| Number of External Internal Logical files(ILF) | 6 | 4 | 5 | 7 |
| Number of External Interface files(EIF) | 1 | 3 | 4 | 6 |

Various processing complexity factors are :

4, 1,0, 3, 3, 5, 4, 4, 3, 3, 2, 2, 4, 5.

Calculate Function Point Analysis using Average Weighting factor. (6)

(b) Explain RMMM with the help of an example. (4)

6. (a) Explain four different measures of Software Quality. (4)

(ix) What are the advantages of Waterfall model? (3)

(x) Define any two types of process flows with suitable diagram. (3)

(xi) Why Software Engineering is called a layered technology? (3)

(xii) What is the use of sizeoriented metrics? Explain with the help of example. (3)

## SECTION B

2. (a) List any five elements of software quality assurance. Explain any two in detail. (5)

(b) What is Cohesion? Explain any three types of cohesion. (5)

3. (a) Explain prototyping process model with the help of diagram. What are the problems that may arise when this model is used?      (5)

(b) What do you understand by Risk Exposure? In a component based system, 80 reusable software components were planned. Only 70% can be used and Rest have to be developed from the scratch.The cost for each LOC is $15.00. The probability of this risk occurrence is 85 percent. Calculate Risk Exposure.      (5)

4. (a) Explain the significance of Gantt chart for the scheduling and monitoring of a software project.      (4)

(b) Prepare the flow graph for the following code and find the cyclomatic complexity using flow graph. Also find the independent paths.      (6)

```
i=0;

n=4;

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;
```

5. (a) Compute function point value for the following information domain characteristics :