

- (ii) Reviews and Audits
- (iii) Security Management
- (iv) Error/defect collection and analysis
- (4)

[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 2229

A

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) Explain failure curve for software with the help of a labeled diagram. (3)
- (ii) List the different steps in the requirement process. Also, draw the diagram for requirement process. (3)

- (iii) State any two advantages of Spiral model. (3)
- (iv) Explain Integrity as a measure of Software Quality Assurance. (3)
- (v) How do we assess the consequences of risk in software development? How is overall risk exposure computed? (3)
- (vi) What is the difference between Verification and Validation? (3)
- (vii) How time-line chart helps in scheduling for software development? Show with an example. (3)
- (viii) What is the significance of abstraction in software design? List the two common abstraction mechanisms for software design system. (3)
- (ix) What is the purpose of using DRE as a quality metric for software quality assurance activities? Compute DRE for the design activity. Given that 50 errors were introduced during the design activity and 15 errors were uncovered during the testing activities that were traceable to errors which were not discovered in the design activity. (3)

- and interfaces with 1 different legacy systems (1 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. (5)
- (b) What is Capability Maturity Model Integration (CMMI)? Explain the various layers of CMMI in detail. (5)
7. (a) Explain the effect of high Cohesion and low coupling between modules in the process of software design? Also explain any two levels of Cohesion. (6)
- (b) What are the components of a risk table? How is it constructed? (4)
8. (a) Explain how umbrella activities help in development of software. Write brief note on any four umbrella activities. (6)
- (b) Write brief note on following Elements of Software Quality Assurance.
- (i) Change Management

```

{
    if(a%i == 0)
    {
        count++;
        break;
    }
    i++;
}
if(count == 0 && a != 1)
{
    printf(" %d ", a);
}
a++;
}
return 0;
}

```

- (b) Explain how Project Management Techniques and Quality Control help a software team achieve high software quality. (4)
6. (a) A system has 6 external inputs, 5 external outputs, 2 external inquiries, manages 2 internal logical files,

- (x) Describe the transform mapping. (3)
- (xi) Define Software Risk. List different components of software risk. (3)
- (xii) Describe Smoke testing. (2)

SECTION B

2. (a) Explain different levels of testing with the help of suitable diagram. (5)
- (b) Use the COCOMO II model to estimate the effort required to build software that produces 12 screens and 6 reports, and will require approximately 50 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)
3. (a) Explain the V Model of Software development process with the help of a diagram. Also state its two advantages. (5)

(b) What is Black Box Testing? Explain Boundary Value Analysis as a Black box testing technique.

(5)

4. (a) Draw a Context level and level 1 data flow diagram for Food Wastage Management System.

The main objective of this system is to reduce restaurant food wastage by giving waste food to NGOs. NGOs will raise a request, whether any restaurants have leftover food. This request is sent to the restaurant manager of that particular restaurant who is having leftover food. The NGO Manager then approves the request and assigns it to one of the NGO employees for takeaway and forwards the request to the restaurant. The leftover food at the restaurant can be given to NGOs at the end of the day.

The features which are required to be incorporated in the above system is as follows :

- Restaurants and NGOs can register themselves and get the credentials.
- They can Login to the system with credentials.

- Registered Restaurants will have the facility to donate left over food.

- NGOs will have facility to collect left over food.

- The admin can track the history of restaurants and NGOs for the leftover food. (6)

(b) Explain different determinants for software quality and organizational effectiveness with the help of diagram. (4)

5. (a) Use the flow graph to find Cyclomatic Complexity of the following code. Also show the no. of independent paths : (6)

```
int main()
{
int i, a = 1, count;
while(a <= 100)
{
count = 0;
i = 2;
while(i <= a/2)
```