

2012

*This question paper contains 6 printed pages.]*

**6619**

Your Roll No. ....

**B.Sc. (H) Computer Science / IV Sem. B**

**Paper 402 – Software Engineering**

(Admissions of 2001 to 2010)

Time : 3 Hours

Maximum Marks : 75

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

*Section A is compulsory.*

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

**Section 'A'**

(All questions are compulsory)

1. (a) List any two important characteristics of Software ? 2
- (b) Which of the Incremental/Linear sequential Software Process Model is more effective and Why ? 2
- (c) How the Fish-Bone Diagram helps in diagnosis of defects ? 3

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- (d) What does the Capability Maturity Model (CMM) determine ? Explain the five process maturity levels defined by Software Engineering Institute ? 4
- (e) What is a State Transition Diagram (STD) ? Draw STD for photocopier software. 4
2. (a) What do you understand by Risk Exposure? Explain how it can be computed. 3
- (b) What is the significance of Timeline Charts in Project Scheduling ? Give suitable example of a Timeline chart. 4
- (c) How structural partitioning can help to make software more maintainable ? 3
3. (a) What is Regression Testing? How it can be used for incremental Software development ? 4
- (b) How Status Reporting in Software Configuration Management plays a vital role in the success of large Software development project ? Describe in your own words. 3

- (c) What do you understand by the term Software Reliability ? How it is related to Software availability ? Explain. 3

### Section 'B'

(Attempt any four questions)

4. (a) Describe the Component Based Development process model in detail. 7
- (b) What are the different "Organizational Paradigms" for Software Engineering teams? 3
5. (a) Using COCOMO II Model, estimate the effort required to build a software that produces 14 screens, 12 reports and will require 85 3GL components. Assume that the complexity is difficult with weights as 3,8,10 respectively and the productivity rate is 13. The software is developed using component based development process model and hence 30% of the components are reused. 5
- (b) How the RMMM plan contributes as an effective strategy for Risk Analysis activities. 5

6. (a) What are the steps involved in Change Control Process for Software Configuration Management? 5
- (b) Define Equivalence Class Partitioning used in Software Testing. Describe the guidelines to create Equivalence Class Partitioning test cases. 5

7. Consider the following code:

```
void Binary (boolean found)
{
    int top, bott, mid, x;
    int a[20];
    boolean found=false;
    bott=0;
    top=size-1;
    mid=(top+bott)/2;
    if (a[mid]==x)
        found=true;
    else
        found=false
    while(bott<=top && ! found)
    {
        mid=top+bott)/2;
```

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```
if(a[mid]=x)
    found=true;
else
    if(A[mid]<x)
        bott=mid+1;
    else
        top=mid-1;
} // end of while
return found;
} //end of binary
```

- (a) Draw the Flow Graph for above program. 5
- (b) Find out the Cyclomatic Complexity and identify all independent paths. 5
8. Assume that you are asked to build a Web Based Order Processing System for a Computer Store.
- (a) Develop an Entity/Relationship diagram that describe the data objects/relationships and attributes.
- (b) Develop a Context Level Model for the system. (5×2=10)

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[P.T.O.]

9. Differentiate among the following: (4×2.5= 10)

- (a) Verification and Validation
- (b) Top Down and Bottom-Up approach
- (c) Alpha and Beta testing
- (d) Cohesion and Coupling