

FACULTY OF INFORMATICS
B.E. 3/4 (IT) I-Semester (Main) Examination, November 2013

Subject : Software Engineering

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. What is Risk management?
2. What are the various testing strategies?
3. What is module cohesion?
4. List any three limitations of waterfall model.
5. Differentiate the following:
 (a) Testing and Debugging (b) Object and Component
6. List and explain in briefly any three planning principles.
7. What is software process improvement (SPI)? What is its need?
8. Discuss some problems that occur when requirements must be elicited from three or four different customers.
9. What is Quality Function Deployment (QFD)?
10. What do mean by components-Off-The-Shelf (COTS)?

PART – B (5x10=50 Marks)

- 11.(a) Reread "The Manifesto for Agile Development". Can you think of a situation in which one or more of the Agile Principles could get a software team into trouble? Justify your answer. (5)
- (b) Discuss the concept of Scrum Process Model. Your answer shall contain a diagram describing the process, and the description of the various framework activities. (5)
- 12.(a) Auto Teller Machines (ATM) are used to Withdraw Cash, Generate Mini Statement, Changes PIN etc., Consider an example of "Withdrawal of Cash from Auto Teller Machine". Draw a 0-Level (Context Level) and First-Level Data Flow Diagram. Make necessary assumptions. (7)
- (b) Explain what is wrong with the notion that Software Engineering is too time consuming and interferes with programmer's productivity. (3)
13. Assume that you are assigned responsibility of developing a Student Admission System (SAS). Admissions take place through various modes such as accepting applications by post, online etc., SAS should accept data from all modes and create a merit list for admissions to various programmes offered by the University. The owners of the SAS would like you to develop the system in an evolving manner as this would be a complicated and expensive system to develop. For developing SAS as specified above:
 - (a) Which Software Development Life Cycle (SDLC) paradigm will you select? Justify your answer, by comparing the strengths and weaknesses of your choice. (5)
 - (b) List the functional and non-functional requirements. (5)

14.(a) Consider the program given below:

```
void main ()
{
    int i,j,k;
    readln (i,j,k);
    if (i<j) || (i>k)
    {
        Writeln {"than part"};
        if (j < k)
            writeln ("j less than k");
        else writeln("j not less than k");
    }
    else writeln ("else Part");
}
```

- (i) Draw a flow graph for the code listed above (2)
(ii) Determine the cyclomatic complexity of the code (2)
(iii) Identify all the independent path (2)
(b) One of the folk tables of software lore describes a disgruntled employee who writes a payroll program. The program contains logic that checks for the employee's identification number before producing paychecks. If the employee is ever terminated, the program creates havoc. Discuss this situation in terms of the error, fault, and failure pattern and decide which form of testing would be appropriate. (4)

15.(a) What is software architecture? Explain the following architectural styles:

- (i) Pipe and Filer Architecture (ii) Blackboard Architecture (6)
(b) McCall's quality factors were developed during the 1970s. Almost every aspect of computing has changed dramatically since the time that they were developed, and yet, McCall's factors continue to apply to modern software. What conclusions can you draw based on this fact? Justify them. (4)

16.(a) Discuss the concept of Function Point (FP) cost estimation model in detail. (6)

- (b) Discuss the following design concepts (i) Abstraction (ii) Refactoring (4)

17. Write short notes on the following: (3+4+3)

- (a) Software Configuration Management
(b) CMMI
(c) RMMM Plan
