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**Question Paper Code : 65053**

5 Year M.Sc. DEGREE EXAMINATION, MAY/JUNE 2013.

Sixth Semester

Computer Technology

XCS 361 — SOFTWARE ENGINEERING

(Common to 5 Year M.Sc. Information Technology)

(Regulation 2003)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. How does software differ from the artifacts produced by other engineering disciplines?
2. Reusable components will reduce project management process - Justify.
3. Is it possible to have a system that can automatically verify completeness of an SRS doc? Justify.
4. Give two advantages and two disadvantages of the following specification techniques:
  - (a) Questionnaires
  - (b) Client Documents.
5. What are the key elements of RMMM plan with respect to risk management?
6. How are LOC and FP used during software project estimation?
7. Why it is sensible to describe the different levels of abstraction completely? Mention its types.
8. Draw the structures chart for searching a number in a set.
9. What is structured programming? How does it help improving code quality?
10. In general, how do we know when to stop testing software and declare it 'done, or at least done for now?

PART B — (5 × 16 = 80 marks)

11. (a) Give reasons and suggest the appropriate process model for the development of the following systems.
- (i) An interactive system, which allows railway passengers to find train timings from terminals installed in stations. (8)
  - (ii) A university accounting system which is being built to replace existing system. (8)

Or

- (b) (i) Explain the activities involved in project management process in detail. With an example explain the activities. (8)
- (ii) How SCM is used to control the changes that take place during development? Explain its functionalities. (8)
12. (a) A university intends to develop an integrated student management system holding all detail of registered students including personal information, courses taken, examination marks achieved and student graduation record. Design the complete requirement engineering phases for the following application in detail. (16)

Or

- (b) List the various phases in requirements engineering. Illustrate the phase with suitable example of your choice.
13. (a) Explain in detail the methods available for project scheduling? With an example describe how to track the schedule. (16)

Or

- (b) Prepare a risk management plan for the following project.
- Assume a high staff turnover is noted as project risk in a project that you are going to manage. Based on the past history and management intuition, you estimate the staff turnover to be 80% during the course of the project. Develop a detailed strategy to handle this risk. (16)
14. (a) (i) Explain the functional independence, cohesion and coupling with respect to effective modular design. (4)
- (ii) Suggest modules that might be components in the design of the following systems:
- (1) A cruise control system for a car, which maintains a constant speed as set by the driver. The system should adjust the car controls depending upon the measured road speed. (6)
  - (2) An automated library catalogue that is queried by users to find which books are available and which books are on loan. (6)

Or

(b) Consider the following application that needs to be developed. The Telecom Management System should provide the following activities.

- Provide user authentication
- Maintain usage statistics of the customers
- Generate the bills.
- General accounting
- Maintain logs on usage
- Makes updations in the database
- Provides information details of services
- Stops services if payments not made

(i) Construct a Context Level DFD for the above. (6)

(ii) List the assumptions and constraints of the system. Expand your diagram to at least 2 levels. (10)

15. (a) (i) Why is it important to be able to partition the test space into equivalence classes? For the following code fragment, describe 3 different test cases, and for each, describe the class of test cases it represents. (10)

```
char * triangle (int x, y, z) {  
    /* requires: The parameters are in ascending order  
    (i.e.  $x \leq y \leq z$ )
```

```
effects: If x, y and z are the lengths of the sides of a triangle, this  
function classifies the triangle using one of the three strings,  
'scalene', 'isosceles' or 'equilateral'. If x, y, and z do not form a  
triangle, the empty string is returned.*/
```

```
char *r;  
r = " scalene";  
if (x == y || y == z)  
r = " equilateral";  
if (x == z)  
r = " isosceles";  
if (x <= 0 || (x + y) <= z)  
r = " ";  
return (r) ;
```

(ii) Briefly explain the reliability estimation method. (6)

Or

- (b) (i) Explain the process of code inspection or reviews in detail. (8)
- (ii) Compare the effectiveness of functional testing Vs structural testing with an example. (8)
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