

**Question Paper Code : 10385**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2012.

Fourth Semester

Information Technology

IT 2251/142401/IT 41/IT 1251 A/10144 IT 406/080250013 — SOFTWARE  
ENGINEERING AND QUALITY ASSURANCE

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Name the task regions of a Spiral model.
2. What are different approaches to the sizing problem?
3. What is the need for a Data Dictionary?
4. What is requirement validation? Who is responsible for this activity?
5. What is the importance of UI design?
6. What is design heuristics?
7. What is smoke testing?
8. Define testability.
9. Differentiate metrics with measurement.
10. What is the purpose of a SQA plan? What does it identify?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Suppose you have to develop a software for a client with minimum risk involved in development. But the client is not in a position to define the detailed input and output requirements. In this situation which software process model would you choose? Justify your answer. (8)
- (ii) What is Systems Engineering? Explain. (8)

Or

- (b) (i) Differentiate the features of various software lifecycle models highlighting their advantages and disadvantages. (10)
- (ii) Explain the concept of Business Process Engineering. (6)
12. (a) (i) Discuss the problems of using natural language for defining user and system requirements and give small examples of how structuring natural language into forms can help avoid some of the difficulties. (8)
- (ii) Explain how a software requirement document is structured. (8)

Or

- (b) An automated ticket issuing system sells rail tickets. Users select their destination, and input a credit card and a personal identification number. The rail ticket is issued and their credit card account charged with its cost. When the user presses the start button, a menu display of potential destinations is activated along with a message to the user to select the destination. Once a destination has been selected, users are requested to input a personal identifier. When the credit transaction has been validated, the ticket is issued.
- (i) Write a set of a non functional requirements setting out its expected reliability and its response time.
- (ii) Identify the ambiguities or omissions in the statement and write the system requirements using java based notation. Any reasonable assumptions could be made. (16)
13. (a) Write short notes on
- (i) User Interface Design. (8)
- (ii) Modular design. (8)

Or

- (b) Explain the various steps involved in analysing and designing a data acquisition system.
14. (a) (i) Is it beneficial to allow users to test the software before finally accepting it? If yes Why? Explain the testing through which the user tests the software. What are the various levels of testing that could be performed for a particular software. (10)
- (ii) Explain with example, how boundary conditions in a software are tested. (6)

Or

(b) Write short notes on :

(i) Regression testing

(ii) Validation testing

(iii) Mutation testing

(iv) Coverage based testing. (16)

15. (a) Design a project database system that would enable software engineer to store, cross-reference, trace, update, change, etc. all-important S/w configuration items. How would the database handle different versions of the same program? How will two developers be precluded from making different changes to the same SCI at the same time? (16)

Or

(b) (i) Explain the various types of process metric that may be collected as part of a process improvement process. Give an example for each type of metric. (6)

(ii) Explain the various levels of SEI process capability maturity model. (10)