

B3.3-R3: SOFTWARE ENGINEERING & CASE TOOLS

NOTE:

1. Answer question 1 and any FOUR questions from 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 100

1.

- a) Which production process model is useful for developing very large complex software?
- b) Discuss how can one improve visibility of software design and code.
- c) What is software reverse engineering?
- d) What are the desirable characteristics of a good software design?
- e) How can CASE tools help in reverse engineering of software?
- f) Why is it necessary to carry out verification and validation of a software product? Who should carry out these activities in software projects?
- g) What is big-bang integration testing? Is it suitable for large software systems?

(7x4)

2.

- a) What is requirement analysis? What are some fact-finding techniques useful in the context of requirement analysis?
- b) Bring out clearly the features of a good SRS document. What are the techniques to ensure quality of an SRS document?
- c) Discuss the contents of a software requirement specification document (SRS document). Differentiate between functional and non-functional requirements.

(6+4+8)

3.

- a) Define the key concepts of Abstraction, Encapsulation and Polymorphism in the context of Object-oriented Software Engineering.
- b) What do you mean by Multiple Inheritance? Show an Inheritance Tree with Multiple Inheritances.
- c) What are Abstract Classes? What is their use? Discuss with an example.

(9+4+5)

4.

- a) What is coupling? Which form of coupling among software modules is the best? What are the various forms of coupling? Explain.
- b) Define Cohesion. What is Functional Cohesion? Does Functional Cohesion within a module bring about good software design? Give an example. What type of coupling and cohesion between/among modules is preferred for good quality software?

(9+9)

5.

- a) Define software quality. What are the different metrics of software quality? Discuss in brief.
- b) What do you mean by Software Quality Assurance? What are the seven major activities of software quality assurance?
- c) Identify some problems associated with the implementation of a successful quality assurance plan in a software development organization.

(8+6+4)

6.

- a) What is the purpose of software testing? What is a test case? How is it different from a test suite? Illustrate by a simple example.
- b) What is white box testing? Name some white box testing methods.
- c) Define maintainability in the context of software. Explain the significance of different types of maintenance.

(8+5+5)

7. Write short notes on any **three** of the following:

- a) Program complexity and its significance
- b) Design patterns
- c) Version Control and Change Control in the context of Software Configuration Management
- d) Software agents

(3x6)