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) Discuss why the prototyping approach to software development cannot be used for developing all types of software projects. When this approach is more useful?

b) What do you mean by visibility of software design and code? What is its importance?

c) Discuss how to improve code efficiency in the design of a software.

d) Differentiate Alpha, Beta and Acceptance testing for software.

e) It is often said that functionally correct software may not be reliable. Give your comments.

f) What is Component-based software engineering process? How is it conducted?

g) Why is it necessary to carry out verification and validation of a software product? How are they carried out?

(7x4)

2.

a) What is requirement analysis? What is its importance? How will you obtain the required information for requirement analysis?

b) Why is the software requirement specifications document (SRS document) also known as the black box specifications of a system?

c) What does a software requirement specification document (SRS document) contain? Discuss in detail.

(8+4+6)

3.

a) What is Coupling? Which form of Coupling among software modules is the best? What are the other forms of Coupling?

b) Define Cohesion. What is functional Cohesion? Does Functional Cohesion within a module bring about good software design? Give an example.

c) What is the difference between coding standards and coding guidelines? What are the importance of these in software development?

(8+6+4)

4.

a) Define maintainability in the context of software. Differentiate corrective, adaptive, perfective and preventive maintenance in the context of software.

b) What are some problems associated with software maintenance?

c) What is Reverse Engineering in the context of maintenance of software? How are the concepts of Restructuring, Re-engineering and Design Capture connected to Reverse Engineering?

(8+4+6)

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) Why is it necessary to conduct software testing? How is it conducted?

b) What is white box testing? Discuss in detail two white box testing methods.

c) What is stress testing? What are its utilities?

(5+8+5)

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

a) Structured approach versus Object Oriented approach for software design

b) Benefits of using CASE tools for software development

c) Version control and Change control

d) Cleanroom approach to software engineering

(6+6+6)