Paper Code: BCA 208 **L T C**

Paper ID: 20208

Paper: Software Engineering **3 1 4**

Pre-requisite :

- None

Aim

- To understand the importance, limitations and challenges of processes involved in software development.

Objectives

- To gain knowledge of various software models.
- To gain knowledge of various software design activities.
- To learn cost estimation, software testing, Maintenance and debugging.

INSTRUCTIONS TO PAPER SETTERS: Maximum Marks: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

UNIT – I

Introduction: Software Crisis, Software Processes & Characteristics, Software life cycle models, Waterfall, Prototype, Evolutionary and Spiral Models

Software Requirements analysis & specifications: Requirement engineering, requirement elicitation techniques like FAST, QFD, Requirements analysis using DFD(with case studies), Data dictionaries & ER Diagrams, Requirements documentation, Nature of SRS, Characteristics & organization of SRS.[T1][T2] [T3] **[No. of Hrs.: 12]**

UNIT – II

Software Project Management Concepts: The Management spectrum, The People, The Problem, The Process, The Project.

Software Project Planning: Size Estimation like lines of Code & Function Count, Cost Estimation Models, COCOMO, Risk Management.[T1][T2][T3] **[No. of Hrs.: 10]**

UNIT - III

Software Design: Cohesion & Coupling, Classification of Cohesiveness & Coupling, Layered arrangement of modules, Function Oriented Design, Object Oriented Design[T1][T2]

Software Metrics: Software measurements: What & Why, Token Count, Halstead Software Science Measures, Design Metrics, Data Structure Metrics.[T1][T2] **[No. of Hrs.: 10]**

UNIT - IV

Software Testing: Code Review, Testing Process, Types of Testing, Functional Testing, Structural Testing, Test Activities, Unit Testing, Integration Testing and System Testing(Performance Testing and Error Seeding), Debugging Activities. [T1][T2][R1]

Software Maintenance: Management of Maintenance, Maintenance Process, Reverse Engineering, Software Re-engineering, Configuration Management, Documentation.[T1][T3]

[No. of Hrs.: 12]

TEXT Books:

[T1] K. K. Aggarwal & Yogesh Singh, "Software Engineering", 2nd Ed., New Age International, 2005.
[T2] Rajib Mall, "Fundamental of Software Engineering", 3rd Edition, PHI Learning Private Limited
[T3] I. Sommerville, "Software Engineering", 9th Edition, Pearson Edu.

REFERENCE:

[R1] Jibitesh Mishra and Ashok Mohanty, "Software Engineering", Pearson
[R2] R. S. Pressman, "Software Engineering – A practitioner's approach", 5th Ed., McGraw Hill Int. Ed., 2001.
[R3] James Peter, W. Pedrycz, "Software Engineering: An Engineering Approach", John Wiley & Sons.