

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

B.C.A. Semester – V BCA-503: Software Engineering

| Teaching Scheme (per week) | | Teaching Scheme (per semester) | | Examination Scheme | | | | | |
|----------------------------|-------------|--------------------------------|--------|--------------------|-------------|-------------|-------------|-------------|-------------|
| | | | | INT | | EXT | | TOTAL | |
| Th. (hours) | Pr. (hours) | Total Hours | Credit | Th. (marks) | Pr. (marks) | Th. (marks) | Pr. (marks) | Th. (marks) | Pr. (marks) |
| 4 | -- | 40 | 4 | 30 | -- | 70 | -- | 100 | -- |

Unit – I

[18 MARKS]

Introduction to Software Engineering

Software , Definition of Software Engineering , Software Development Approach , Evolving Role of Software , Software Characteristics , Different between Software Engineering and Computer Science , Different between Software Engineering and System Engineering, Software Costs , Software Application , Evolution of Software Engineering, Software Crisis

– Problem and Causes , Software Myths , Professional and Ethical Responsibility , Software Process , Principal of Software Engineering , Software Quality Factors , User’s Perspective , Software Quality Attributes ,Software Engineering Methods, Software Engineering Problems

Software Process Model

Software Process Model, Waterfall Model, Prototyping Model, Increment Model, The Spiral Model

Unit-2

[17 MARKS]

Software Requirement Specification

Requirement Engineering Processes, Types of Requirement, SRS (System Requirement Specification), Software Eng. Benefits , Role of Management in Software Development , Role of Metrics and Measurement

System Design

Software Design Strategy Design Patterns, Becoming Master Designer, Implementing a Design, Evaluating a Design, Problem Partitioning, Abstraction, Strategy of Design, Function, Oriented vs. Object Oriented Approaches

Unit – 3

[18 MARKS]

Coding

Programming Practices, Top Down Approach & Bottom Up Approach, Structure Programming, Information hiding , Programming Style,

Testing

Testing Fundamentals, Tops Down And Bottom Up Approaches, Test Cases and Test

criteria, Psychology of Testing, Regression testing, Functional Testing, Structure Testing, Equivalence Class Partitioning, Boundary Value Analysis, Cause – Effect Graphing, Types of Testing under White/Glass Box Testing Strategy, Driver and Stub Modules, Alpha , Beta and Gamma testing, Test cases, suites, scripts, and scenarios, Test plan, test case specification, A sample testing cycle

Unit – 4

[17 MARKS]

Software Project Management

Software Project Management , COCOMO Model , Project Scheduling , Software Configuration Management , Software Maintenance , Quality Assurance Plans , Verification and Validation , Project Monitoring Plans , Software Risk Management , Project Planning.

Software Reliability and Quality Assurance

Software Reliability , Reliability metrics , Reliability Growth Modeling , Objectives of Software quality Management , ISO -9000 Certification for software industry , Software measurement and metrics , Metrics of Functionality : Albrecht's Function Points , SEI Capability Maturing Model , Computer Aided Software Engineering CASE and its Scope, Business Process re-Engineering , Software Reverse Engineering , What is Risk ? Why Manage Risks Formally ? Risk and Uncertainty , Typical Software Risks , Risk Management and Schedule Estimation.

TEXT BOOKS:

- 1. Software Engineering** - Roger S. Pressman
- 2. Practical Approach of Software Engineering**
- Munesh Trivedi, N.N.Jani, S.S.Sarangdevot, Avinash Dwivedi

Question Paper Scheme:

University Examination Duration: 3 Hours

Q-1 – Unit -1 (18 Marks)

- E. Objective / Short Questions
- F. Descriptive / Long Questions

Q-2 – Unit -2 (17 Marks)

- E. Objective / Short Questions
- F. Descriptive / Long Questions

Q-3– Unit -3 (18 Marks)

- E. Objective / Short Questions
- F. Descriptive / Long Questions

Q-4 – Unit -4 (17 Marks)

- E. Objective / Short Questions
- F. Descriptive / Long Questions

Note: All Objective/ Short Questions are compulsory, no option will be given.