

**HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN
THIRD YEAR B.C.A.**

BCA 305 : SOFTWARE ENGINEERING

Teaching Scheme (per week)		Examination Scheme					
		INT		EXT		TOTAL	
Th. (hours)	Pr. (hours)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)
3	--	30	--	70	--	100	--

Unit – 1 :-

(17 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 Requirement Specification , Software Process Model , Waterfall Model , Prototyping Model , Increment Model , The Spiral Model

Unit - 2

(18 Marks)

Software Requirement Specification

Requirement Engineering Processes, Types of Requirement, SRS (System Requirement Specification) , Requirement Process, 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 , Verification Metrics

Testing

Testing Fundamentals, Top 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 While/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.

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-I (17 Marks)
A. Objective/ Short Questions.
B. Descriptive/ Long questions.
- Q.2 - Unit-II (18 Marks)
A. Objective/ Short Questions.
B. Descriptive/ Long questions.
- Q.3 - Unit-III (18 Marks)
A. Objective/ Short Questions.
B. Descriptive/ Long questions.
- Q.4 - Unit-IV (17 Marks)
A. Objective/ Short Questions.
B. Descriptive/ Long questions.

Note: Options should be given in all questions.