CS – 21
SAD, Software Quality Assurance and Testing

Unit : 1
System Analysis & Design AND Software Engineering, Concepts of Quality Assurance

- Definitions:
  System, Subsystem, Business System, Information System (Definitions only)
- Systems Analyst
  (Role: Information Analyst, Systems Designer & Programmer Analyst)
- SDLC
- Fact – finding techniques
  (Interview, Questionnaire, Record review and observation)
- Tools for Documenting Procedures and Decisions
  Decision Trees and Decision Tables
- Data Flow analysis Tool
  DFD (context and zero level) and Data
  Dictionary
- Software Engineering
  (Brief introduction)
- Introduction to QA
- Quality Control (QC)
- Difference between QA and Q
- Quality Assurance activities

Unit : 2
Basics of Software Testing, Types of Software Testing, Verification and Validation

- Introduction to software Testing
- Software faults and failures
  Bug/Error/Defect/Faults/Failures
- Testing Artefacts
  Test case
  Test Script
  Test Plan
  Test Harness
  Test Suite
- Static Testing
  Informal Review
  Walkthrough
  Technical Review
  Inspection
- Dynamic Testing
- Test levels
  Unit Testing
  Integration Testing

System Testing
Acceptance Testing

Techniques of software Testing

- Black Box Testing
  - Equivalence Partitioning
  - Boundary Data Analysis
  - Decision Table Testing
  - State Transition Testing
- White Box Testing
  - Statement testing and coverage
  - Decision testing and coverage
- Grey Box Testing
- Non-functional Testing
  - Performance Testing
  - Stress Testing
  - Load Testing
  - Usability Testing
  - Security Testing

Unit : 3

Software Development Life Cycle Models, Automated Testing

- Waterfall Model
- Iterative Model
- V-Model
- Spiral Model
- Big Bang Model
- Prototyping Model
- Introduction
  - Concept of Freeware, Shareware, licensed tools
- Testing Tools
  - Win runner
  - Load runner
  - QTP
  - Rational Suite

Unit : 4

Project Economics, Project scheduling and Tracking

- Concepts of Project Management
- Project Costing based on metrics
- Empirical Project Estimation Techniques.
- Decomposition Techniques.
- Algorithmic methods.
- Automated Estimation Tools
- Concepts of project scheduling and tracking

- Effort estimation techniques
- Task network and scheduling methods
- Timeline chart
- Pert Chart
- Monitoring and control progress
- Graphical reporting Tools

Unit : 5

CAD Project Management Tool, UML

- MS – VISIO for designing & Documentation
- MS – Project for controlling and Project Management
- UML designing and skill-based tools
- Overview of
  - Class Diagram
  - Use Case Diagram
  - Activity Diagram

	Class Room	Seminar	Expert Talk	Test	Total
No. Of Lecture	**60**	**05**	**05**	**05**	**75**

Reference Books:

1) Analysis & Design of Information System - James A. Sen.
2) Pankaj Jalote, "Software Engineering – A Precise Approach", Wiley India
3) UML Distilled by Martin Fowler, Pearson Edition, 3rd Edition
4) Fundamentals of Software Engineering – RajibMall (PHP)
5) Software Engineering – A Practitioner's Approach – Pressman
6) UML – A Beginner's Guide –Jasson Roff – TMH
7) Roger Pressman , "Software Engineering"

Reference Website

http://en.wikipedia.org/wiki/Software_testing
http://www.onestoptesting.com/
http://www.opensourcetesting.org/functional.php