Subject: Principles of Software Engineering

UNIT-I

1. What is software Engineering. Explain its importance.
2. What is information hiding?
3. What do you mean by Software Process? Explain.
4. What are project metrics? Differentiate between size oriented and function oriented metrics
5. Explain iterative enhancement model software development life cycle.
6. Explain waterfall model of software development. Also, Discuss its merits and demerits.
7. Discuss the parameters for the selection of life cycle model.
8. Describe the term Software Crisis. What are the causes associated with it? How it led to the development of software engineering as a discipline?
9. What are major phases in spiral model of software development? Explain.
10. What is SRS? What are the characteristics of good SRS?
11. How do you calculate function points using FPA? Explain with example.
12. Explain COCOMO Model in detail.
13. What are different risk management activities?
14. What are software risks? What is meant by risk identification and risk projection?
15. Explain how risk identification of a project is done?
16. Explain Prototyping.
17. Discuss the common sources and types of risks in software development projects and strategies to deal with them.
18. Explain one model for estimating the cost of software.
19. What are the key concepts in designing a software?
20. What is Cost Benefit Analysis? Explain cost benefit evaluation techniques in detail.
21. What are the core functions associated with project management? Explain.

UNIT-II

22. Describe the basic components of DFD. Make a DFD of Library Information System.
23. Draw level-1 DFD for Railway Reservation System.
24. Draw level-1 DFD for Library Management System.
25. Define the following terms:

    Error, Bug, Fault, Defect, Failure, Test Case, Test Suite.
26. Explain life cycle of bug.
27. Explain the complete architectural design process.
28. Explain the following terms:
    a) Abstraction
    b) Refinement
    c) Functional Independence
29. What is software design? Discuss design principles in detail.
30. Differentiate between coupling and cohesion. Explain various types of cohesion. Which one is best and which one is worst?

UNIT-III

31. What is Software Testing? What are various testing principles?
32. Differentiate between unit testing and integration testing.
33. Describe equivalent class partitioning as used in software testing.
34. Differentiate between the following:
    a) Black Box and White Box Testing
    b) Alpha and Beta Testing
    c) Verification and Validation
35. What are different levels of testing?
36. Design various test cases to find out roots of a quadratic equation.
37. Write a short note on Boundary Value Analysis.
38. What are the resources and nature of resources? Explain resource allocation techniques.
39. Differentiate between data warehouse and database. What is the utility of data warehouse in current scenario?
40. What is software maintenance? Describe various categories of maintenance.

UNIT-IV

41. What is Software Reliability? Explain any one reliability model in detail.
42. Discuss how reliability changes over life time of software product and hardware product.
43. Explain various methods for software reviews.
44. Write short notes on the following.
    a) CMM
    b) CASE Tools
    c) Data Dictionary
    d) Coupling and Cohesion
    e) ISO 9000
45. Explain the concept of Re-engineering.
46. Describe the role of Formal Technical Review(FTR) as quality assurance activity. How is it conducted?
47. Why CASE approach is recommended in case of large complex software solution? Comment how CASE approach affects the following:
    a) Documentation
    b) Programming Effort
48. Differentiate between Revise Engineering and Re-Engineering.
49. What is software configuration management? Explain.
50. Explain SQA activities in detail.