Q.1  a. Define software product. Mention any four characteristics of software process models.

b. Explain the role of prototyping in software development. Give an illustration.

c. Discuss the importance of cohesion and coupling in software modularity.

d. Mention any four coding standards. Give an example for each.

e. Compare brute force and backtracking debugging approaches used in software engineering.

f. Discuss software reverse engineering and software reengineering.

g. Explain CPM project scheduling strategy. Give the advantages and disadvantages.

Q.2  a. Explain how the requirement process converts the client needs to validated Software Requirement Specification (SRS).

b. Compare the requirement analysis using structured analysis model and object oriented analysis model.

c. Discuss various checks and reviews in requirement validation.

Q.3  a. With the help of an example illustrate the Object oriented design methodology using UML.

b. Explain various components of software design architecture. Give an example for illustration.

c. Give applications of top-down and bottom-up design strategies.
Q.4  
   a. Mention any six programming guidelines to be followed in software coding. (6)

   b. Compare the characteristic features of structured programming languages and object oriented programming languages. (6)

   c. Explain the following code verification techniques and give their limitations:
      (i) Code Walk-Throughs
      (ii) Code Inspections

Q.5  
   a. Compare the following functional testing and give an example for each: (2×4.5)
      (i) Boundary value analysis
      (ii) Cause effect graph technique

   b. Define the terms used in structural testing and give an example for illustration: (3×3)
      (i) Cyclomatic complexity
      (ii) Deriving Test cases
      (iii) Graph matrices

Q.6  
   a. Explain various categories of software maintenance. Mention any four maintenance cost attributes. (5+4)

   b. Explain Software Configuration Management (SCM) process and standards. Mention the features of version control, change control and configuration audit used in SCM. (4+5)

Q.7  
   a. Compare empirical and analytical project estimation techniques. Give their respective applications. (9)

   b. Explain features of COCOMO model. Give the expression to calculate effort (person months) and development time (months) in the basic COCOMO model. (9)