Q.1  \((7 \times 4)\)

a. What is Software Engineering?

b. What does the Capability Maturity Model (CMM) determine?

c. What is Defect Removal Efficiency (DRE)? What does it measure?

d. What is object point? Discuss, whether it is a direct or indirect software measure?

e. What is risk mitigation, monitoring and management?

f. Explain software configuration management. Why is it important?

g. What is MTTF (Mean Time To Failure) and MTBF (Mean Time Between Failure)?

Q.2  \((9)\)

a. State Boehm[98] spiral model. What are the advantages and disadvantages of spiral model?

b. What are the different measures of software quality? Discuss all such measures.

Q.3  \((6)\)

a. Describe the difference between ‘direct’ and ‘indirect’ measure.

b. Compute the function point value for a project with the following domain characteristics:
   - No. of user inputs = 32
   - No. of user outputs = 60
   - No. of user inquiries = 24
   - No. of files = 08
   - No. of external interfaces = 02
   Assume that all complexity adjustment values are average.

c. Describe various information gathering techniques in detail.
Q.4  
   a. Describe the structure of SRS (Software Requirement Specification).  
   (6)
   
   b. What is the effect on information hiding and coupling in a ‘C’ program that has 
      (i) static functions 
      (ii) extern variables  
   (6)
   
   c. State the difference between black box testing and white box testing.  
   (6)

Q.5  
   a. Why is highly coupled module difficult to unit test?  
   (3)
   
   b. Develop a small software tool that will perform a Halstead analysis on programming 
      language source code of your choice.  
   (9)
   
   c. Describe what is maintenance. Also categorize the various maintenance activities. (6)

Q.6  
   You have been asked to build a web based order processing system for a computer 
   store:
   (i) Develop an entity relationship diagram that describes data objects, relationships 
       and attributes.  
   (6)
   (ii) Develop a context-level model for the system.  
   (3)
   (iii) Develop a level-1 DFD for the system.  
   (6)
   (iv) Develop a data dictionary for the system.  
   (3)

Q.7  
   Write short notes on any THREE of the following:-

   (i) Software reliability and availability
   (ii) Use cases and anchors.
   (iii) Prototyping model and Evolutionary development model.
   (iv) Cohesion and coupling.  
   (6×3)