REFNO070195

Roll No. 23413MCA006

M.C.A. Semester I Examination 2023-24

Master of Computer Application

CS-205 : Software Engineering

Time : Three hours **Max. Marks : 70**

(Write your roll No. at the top immediately on the receipt of this question paper)

Note: Attempt any 5 questions.

1. Explain what is Software Development Life Cycle. Differentiate between Prototyping and Iterative development models. Also discuss the type of projects where they can be applied. [14]

2. Differentiate between the following:
   a. Configuration Management Process and Change Management Process [7]
   b. Black-box and White-box testing [7]

3. Write short notes on the following:
   a. Software Re-engineering [5]
   b. Cleanroom Approach [5]
   c. Process Management Process [4]

4. a. What are the characteristics of a good SRS? Explain. Also discuss its main components. [7]
   b. Discuss in detail how Problem Analysis is done in the requirement phase. [7]

5. a. What is software architecture? Discuss the different types of architectural views. Which view is used for high level design? [7]

   b. Discuss the architecture you would choose for making a software for conducting an academic survey among the students of BHU. Give reason for your choice. [7]

6. Consider a project to develop a full-screen editor. The major components identified are (1) screen edit, (2) command language interpreter, (3) file input and output, (4) cursor movement and screen movement. The sizes for these are estimated to be 4K, 1K, 1K and 2K delivered source code lines respectively.
   a. Assuming this to be an organic project (a = 3.2, b= 1.05) use the COCOMO to determine overall effort and schedule estimates. [7]
   Different Cost drivers are:
      i. Complexity – low – 0.85
      ii. Storage - Nominal – 1.00
      iii. Experience – High – 0.91
      iv. Programmer Capability – Low – 1.17

   $8^{1.05} = 8.876$

   b. If the percentage of total effort spent in different phases is – product design 16%, detailed design 25%, code and unit test 40% and integration and test 19%. Calculate the effort estimate for different phases. [4]

   c. Suppose productivity based on experience and capability of the programmers of the organization is found to be 600 LOC per PM. Then, find the Effort estimate based on the productivity. [3]

   $P = \frac{}{E}$

7. Discuss the structure charts used in function-oriented design. Discuss the network flow and Information flow metrics related to design. Explain how structure charts can be used to calculate these metrics. [14]