BT-6/J-22   **46155**

SOFTWARE ENGINEERING
PC-IT-302A

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each of the four Sections (A-D).

Section A

1. (a) Discuss the prototyping model. What is effect of designing a prototype on the overall cost of the software project ?   **8**

    (b) Describe the type of situation where iterative enhancement model might lead to difficulties.   **7**

2. (a) Differentiate between user and system requirements.
                                                     7

    (b) Describe the requirements change management process in detail.   **8**

Section B

3. (a) What are the different categories of software according to COCOMO estimation model ? Compute the nominal effort and development time for 1 million lines of code in semi-detached software category.   **4+4**

(b) What is modularity ? State its importance and also explain the differences between coupling and cohesion. **3+4**

4. Draw data flow diagrams, class diagram and corresponding object diagrams for the following problem :

"Guests can reserve rooms in a hotel in advance or on spot depending upon the availability. The operator would add data pertaining to the guests such as name, arrival time; balance paid and type of room (i.e. AC, non-AC, Deluxe, suit). The SW should uniquely assign a token number on allotment of room. The hotel catering services manager would input the quantity and type of the food items as and when consumed by the guests along with the token number of the guest and corresponding date and time." **15**

Section C

5. (a) What is meant by software quality management ? Explain the difference between ISO and SEI-CMMI approach for software quality. **9**

(b) Explain the following terms in detail :

(i) Reliability growth modeling **3**

(ii) Code Review Techniques. **3**

6. Consider the process of ordering the food over the phone. Draw the use case diagram and also sketch the activity

diagram representing each step of the process, from the moment you pick up the phone to the point where you start eating the food. Include activities that others need to perform. Add exception handling to the activity diagram you developed. Consider at least *two* exceptions (e.g. delivery person wrote down address, delivery person brings wrong food). 15

Section D

7. (a) Design a block box test case suit to test a program which finds the age of a person by taking date of birth as an input. Draw a control flow graph of your program and find its Cyclomatic Complexity (CC). 5+5

(b) Differentiate between software verification and validation process. 5

8. What are the different types of software maintenance that a software product might need ? Explain the different maintenance process model used. 15