CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

Fifth Semester of B. Tech. Examination (C.E.)
November-2018
CE343 Software Engineering (S.E.)

Date: 24.11.2018, Saturday **Time: 10:00 a.m. To 01:00 p.m.** **Maximum Marks: 70**

Instructions:
1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Indicate clearly, the option(s) you attempt along with its respective question no.
5. Figures to the right indicate marks.

SECTION-I

Q-1 **Answer the following questions.**

1. Describe the Software Engineering Best Practices and Software Project Management Best Practices. **4**
2. Suppose the project has a very tight schedule. Suggest two ways in which productivity could be improved to help bring this project in on schedule. Discuss how each of the methods you describe actually improves productivity. In case of project running behind schedule, is it possible to catch up by adding more programmers at later stage of software development? **4**
3. Under which practical situation(s) pure waterfall model of software development is more suitable than other development models? And in which situation(s) it is not suitable **3**

Q-2

[A] Distinguish between a program, software and software product. What do you understand by the term software development life cycle (SDLC) model of software development? **4**

OR

[A] What are the primary objectives of developing CASE tools? Explain the different facilities that a CASE environment provides. **4**

[B] How do Object Oriented Design (OOD) and Structured Design differ? Which aspects of these two design methods are the same? How can one achieve functional independence in a software design? Explain with any example of your choice. **4**

OR

[B] List three common types of risks that a typical software project might suffer from Explain how you can identify the risks that your project is susceptible to Suppose you are the project manager of a large software development project point out main steps you would follow to manage risks in your software project. **4**

[C] What according to you is a good quality software product? How can such products be developed? **4**

OR

[C] What is the aim project closure analysis? Who participate in this analysis? What is the outcome of this analysis? How are the analysis results useful? **4**

Q-3

[A] Do you agree with the following statement: "The reliability of a software product increases almost linearly, each time a defect gets detected and fixed" Justify your answer. **4**

OR

[A] List five salient requirements that a software development organization must comply with before it can be awarded the ISO 9001 certificate. Why is it beneficial for a software development organization to obtain ISO 9001 certification?

[B] Consider a software project with 5 tasks T1-T5. Duration of the 5 tasks (in days) are 15, 10, 12, 25 and 10, respectively. T2 and T4 can start when T1 is complete. T3 can start when T2 is complete. T5 can start when both T3 and T4 complete. Draw the Gantt Chart and PERT charts for the project. 4

OR

[B] Discuss the problems associated with the implementation of a successful quality assurance plan in a software development organization. 4

[C] The industry average productivity figure for engineers is only 10 LOC/day. What is the reason for such low productivity? Can we attribute this to the poor programming skill of engineers? 4

OR

[C] You have estimated the nominal development time of a moderate-software product to be 10 month. You have also estimated that it will cost Rs.500,000/- to develop the software product. Now , the customer comes and tells you that he wants you to accelerate the delivery time by 10% How much additional cost you charge the customer for this accelerated delivery? 4

SECTION-II

Q-4

1. In the context of software, differentiate between error, failure and fault. 3
2. Identify the important stakeholders in software projects in order of their importance. 2
3. Is it possible to assess the quality of software before the programs are actually developed? Justify your answer. 3
4. It is often said that functionally correct software may not be reliable Give your comment. 3

Q-5

[A] What is Function Point Analysis? Compute the Functional Point Value for a software project with the following details: 4

User Inputs : 12	Number of files: 6
User Outputs:25	External Interfaces: 4
Inquiries:10	Number of algorithms:8

Assume the multiplier at their average values and all the complexity adjustment factors at their moderate to average values.

[B] In a size-oriented metric like LOC, how Productivity, Quality, Cost and Documentation is defined in terms of LOC. Also bring out the demerits using of Lines of Code as a software metric. 4

[C] Give examples of defects that you would be able to detect during code inspection and code walk through. Why is it advantageous to detect as many errors as possible during code review itself than during testing? 4

OR

Q-5

[A] Is it possible to estimate software size before coding? Justify your answer with suitable examples 4

[B] What are the different categories of software development according to the COCOMO estimation model? Suppose you are developing a software product in the organic mode. You have estimated the size of the product to be about 100,000 lines of code. Compute the nominal effort and the development time. 4

[C] Suppose you plan to undertake the development of a product with a large number of technical risks as well as the risk of frequents change by the customer. Which life cycle model (Process Model) would you adopt or prefer? Justify your answer. 4

Q-6

[A] Differentiate Corrective, Adaptive, and Perfective Maintenance in the context of a Software. 4

OR

[A] Give the problem statement and prepare DFED for Library Management System. 4

[B] Suppose an organization mentions in its job advertisement that it has been assessed at level 3 of SEI CMM, what can you infer about the current quality practices at the organization? What does this organization have to do to reach SEI CMM level 4? 4

OR

[B] What is "Software Configuration"? Why does one has to manage it? What are the five Software Configuration (SCM) tasks? Define and discuss each of them briefly. 4

[C] Consider the following program segement. 4

```
int find-maximum(int i,int j, int k)
{
    int max;
  if (i>j)  then
        if ( i>k)   then max=i:
              else max=k:
       else   if (j>k)  max=j
                 else max=k:
    return (max)  :
}
```

1. Draw the control flow graph for this program segment.
2. Determine the cyclomatic complexity for this program. (Show the intermediate steps in your computation . Writing only the final result is not sufficient)
3. How is the cyclomatic complexity metric useful in the testing process?

OR

[C] Software computes the cube root of an input integer, which can assume values from 1 to 1000. Find the test cases for this program from considerations of; 4

i) Equivalent class partitioning

ii) Boundary value analysis