Candidate Seat No.____

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

Fifth Semester of B. Tech (CE) Examination

January 2022 [Backlog Examination]

CE343: SOFTWARE ENGINEERING

Date: 22.01.2022, Saturday Time: 11.00 AM. To 02.00 PM Maximum Marks: 70

Instructions:

1. The question paper comprises two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.

Section – I

Q1. Answer the following [20]

(a) Compare the relative advantage of using the iterative waterfall model and the spiral model of software development. Explain with the help of examples, the type of problems for which you would adopt the waterfall model of software development, and the type of problems for which you would adapt the spiral model.

(b) Draw a control flow graph and find Cyclomatic Complexity for given code.

```
insertion_procedure (int a[], int p [], int N)
{
(1) int i,j,k;
(2) for ((2a)i=0; (2b)i<=N; (2c)i++)
(3) p[i] = i;
(4) for ((4a)i=2; (4b)i<=N; (4c)i++)
  {
   (5) k=p[i];j=1;
   (6) while (a[p[j-1]] > a[k]) {
   (7) p[j] = p[j-1];
   (8) j--
  }
(9) p[j] = k;
}}
```

(c) Identify the CASE support that can be availed of during a large maintenance effort concerning a large legacy software

(d) If a team want to develop a “Customer Address Book” using the Waterfall methodology and you are the part of this team, the order of work would be as follows. Product manager creates Use-cases document that include the following Use-cases:

- User can login to the system.
- User should be able to create new contacts.
- User should be able to view their contacts.

- User should be able to import contacts from other programs.
- User should be able to email their contacts from the address book.
- User should be able to add pictures to represent their contacts.
- There is one admin who can manage all these things.

Q2. Do as directed [Attempt any 3] **[15]**

(a) What formal techniques are available for assessing the software process?

(b) If members of the software team are to drive the characteristics of the process that is applied to build software, mention the key traits that must exist among the people on an agile team and the team itself.

(c) Is it ethical for a software engineer to agree to deliver a software system with known faults to a customer? Does it make any difference if the customer is told of the existence of these faults in advance? Would it be reasonable to make claims about the reliability of the software in such circumstances?

(d) Explain how the project manager would carry out the risk analysis? What would be the outcome of the risk analysis? How would the outcome of your analysis be used to manage the risk?

Section II

Q3. Answer the following: **[20]**

(a) What do you mean by version control? What do you mean by Change control? What is the relationship between Software configuration management (SCM) and Software maintenance? Explain in brief.

(b) The requirements model as a bridge between the system description and the design model. Justify.

(c) What is software testing and why is it required? Explain the general guidelines for performing software testing? Differentiate between Black-Box testing and Structural (White-Box) Testing. What are the types of White-Box testing?

(d) Schematically draw the architecture of a CASE environment and explain how the different tools are integrated?

Q4. Answer the following **[15]**

(a) Explain which process model is most suitable for the following definition and justify it:

1. A compiler for new language
2. Event management system
3. Chess (03)

(b) Compute the function point value for a project with the following domain characteristics:

1. No. of Input =30
2. No. of Output=62
3. No. of user inquires = 24
4. No. of files = 8
5. No. of external interfaces = 2 (05)

Assume that all the complexity adjustment values are average. Assume that 14 algorithms have been counted.

(c) Consider a software project using embedded mode (with type basic COCOMO model) with 40,000 LOC (coefficient value of a=3.6, b=1.20, c=2.5, d=0.3)

1. Find effort estimation
2. Find duration estimation
3. Find persons estimation (04)

(d) Why SRS document also known as black-box specification of a system? What are the contents of the SRS. (03)

****ALL THE BEST****