Candidate Seat no…….

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY
Sixth Semester of B. Tech IT/CE Examination
May 2018
IT307/307.01/307.02 Software Engineering

Date: 08.05.2018, Tuesday **Time: 10.00 a.m. To 01.00 p.m.** **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.
4. Use of scientific calculator is allowed.

SECTION – I

Q - 1 Do as directed. **[07]**

(i) Match the following: [01]

P. Waterfall Model	1. Specification can be developed incrementally
Q. Evolutionary Model	2. Requirements Compromises are inevitable
R. Component Based Software Engg.	3. Explicit Recognition of risk
S. Spiral Development	4. Inflexible Partition of Project in to stages

(A) P-1,Q-2,R-3,S-4 (C) P-4,Q-2,R-1,S-3
(B) P-4,Q-1,R-2,S-3 (D) P-3,Q-1,R-2,S-4

(ii) If you were a lead developer of a software company and you are asked to submit a project/product within a stipulated time-frame with no cost barriers, which model would you select? [01]

(A) Water-fall (B) Spiral
(C) Incremental (D**)** RAD

(iii) Explain term: "Changing Nature of Software". [02]

(iv) **Explain which process model is most suitable for the following definition and justify it.** [03]

1. A compiler for a new language.
2. Event Management System.
3. Chess.

Q-2.a A system being developed has the following characteristics: **[04]**

Number of user inputs(I)	20
Number of user outputs(O)	35
Number of user inquiries(E)	20
Number of files(F)	06
Number of external interfaces(N)	02

It is given that the complexity weighting factors for I, O, E, F and N are 4, 5, 4, 10 and 7, respectively. It is also given that, out of fourteen value adjustment factors that influence the development effort, five factors are not applicable, each of the other four factors have value 3, and each of the remaining factors have value 4.Calculate FP (function point) for given system.

OR

Q-2.a Consider a software project using embedded mode (with Type basic COCOMO model) with 40,000 line of code (coefficient value of a=3.6, b=1.20, c=2.5 and d=0.3). **[04]**
1) Find effort estimation
2) Find Duration estimation
3) Find Persons estimation

Q-2.b Answer any TWO questions. **[10]**

(i) Explain risk management process with suitable diagram in brief. List types of risk with example.

(ii) What is management spectrum? Describe the four P's briefly.

(iii) Define the roles in Scrum? Explain Agile software development process in detail.

Q-3.a What are the factors affecting software crisis. List characteristics of good SRS document. **[04]**

OR

Q-3.a Explain Boehm's W5HH Principle. **[04]**

Q-3.b Answer any TWO questions. **[10]**

(i) Dram neat sketch of spiral model and justify why it is considered as meta model.

(ii) What is Software Architecture? Why is architecture Important? List out different types of Architectural Styles. Explain any two in detail.

(iii) What are the characteristics of software? Explain hardware and software failure curve in detail.

SECTION – II

Q - 4 Do as directed. **[07]**

(i) **Define the following terms.(Any 3)** [03]
1. Milestone
2. Fan-in
3. Fan-out
4. Beta testing

(ii) In an Examination, a candidate has to score a minimum of 24 marks in order to clear the exam. The maximum that he can score is 40 marks. Identify the Valid Equivalence values if the student clears the exam. [01]
a. 22,23,26
b. 21,39,40
c. 29,30,31
d. 0,15,22

(iii) System testing is a [01]

a) Black box testing b) White box testing
c) Grey box testing d) Both a and b

(iv) What is verification and Validation? How they are different from each other? [02]

Q–5.a Draw UML diagrams (Use Case, Activity and Sequence) for the online ticket booking system for IPL2018 Twenty 20 Tournament. **[07]**

Q–5.b Draw a control flow graph and find Cyclomatic Complexity for given code. **[04]**

```
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;
}}
```

Q–5.c Differentiate throw-away v/s evolutionary model. **[03]**

OR

Q–5.b Blackbox testing is also called functional testing. Justify and also explain boundary value approach of black box testing with example **[04]**

Q–5.c Design test case for login functionality(Invalid login, Forget Password and Lock account after 3 attempts) **[03]**

Q–6.a Draw context and data flow diagram (DFD) for BookMyShow application which includes ticket sales for movies, plays and concerts. **[04]**

Q–6.b **Answer any TWO questions.** **[10]**

(i) Draw neat sketch of CMM levels and mention different process areas of CMM.

(ii) What is difference between QA, QC and Software Testing? And also explain ISO 9000 Certification of software industry.

(iii) Justify why white box testing is also called structured testing. Explain path coverage with example.

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