O/C

Roll Number:

Thapar Institute of Engineering and Technology, Patiala

Computer Science & Engineering Department

BE Third Year – CoE - (V Semester)
EST- 05 December 2019
Time: 3 hours
MM: 100

Course Code: UCS 503
Course Name: Software Engineering
Name of Faculty: Dr. Inderveer Chana, Dr. Ashima Singh, Dr. Vinod Bhalla, Dr. Sukhnandan Kaur and Ms.Harkiran Kaur

Note: *(i) Answers should be precise and legible*
(ii) Attempt all parts of a question together
(iii) Write Group No. (CoE) at the top of your answer book

Q1(a) Does data design decide the architecture design of a software? Explain with the help of a suitable example.
(b) How will you assess the software design for following quality parameters:
(i) Security
(ii) Performance
(c) List all the Software Configuration Items (SCIs) constructed during each stage of traditional Software Development Life Cycle. (6,4,4,6)

Q2 Consider the following code snippet:

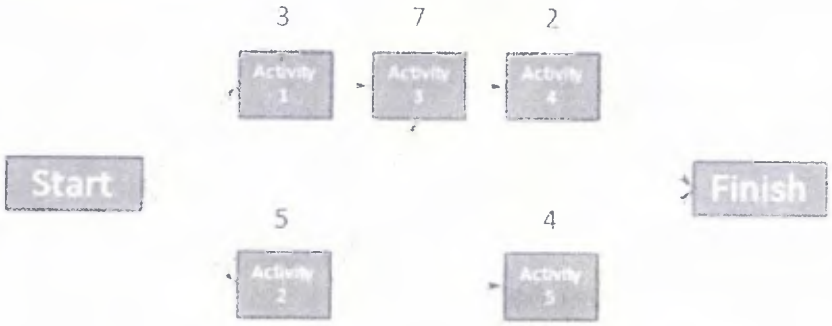
```
integer a, b, count =0;
input a, b;
        if (a == 0)
           while (b > 0)
                 {b = b-1; count++;}
        else if (a > 0)
                 while (b < 0)
                       {b = b+1; count--;}
             else
                 a = b;
                 output a, b, count;
```

(a) Draw a flow graph for the above given code.
(b) What is the cyclomatic complexity of this code and what does that signify?
(c) Write test cases to test the resultant paths. (6,6,4)

Q3 In an automated banking system, Clients may take money from their accounts, deposit money or ask for their current balance. All these operations are accomplished using either automatic teller machines (ATM) or counter tellers. Transactions on an account may be done by cheque, standing order or using the teller machine card. There are two kinds of accounts: savings accounts and cheque accounts. Saving accounts will give interest and cannot be accessed by the automatic tellers. When a cheque is deposited it must be cleared before the funds can be used by the depositor.
(a) What type of architectural style would be the best option for designing this problem? Give justification.
(b) Draw a class diagram to clearly show the design of this system.
(c) How will the system testing of this automated banking system be done? (4,8,6)

P.T.O.

Q4(a) For the following network:



(i) Find out Early Start/Late Start and Early End/Late End time corresponding to each activity.

(ii) Identify the critical path and calculate its length

(b) Compute the function point value for a project with the following information, for size estimation:

Number of user inputs = 50
Number of user outputs = 40
Number of user enquiries = 35
Number of files = 06
Number of external interfaces = 04

Assume all complexity adjustment values as moderate and weights also have average values.

(c) Give example of an error that leads to a fault in requirements and in design. (6,6,6,4)

Q5 (a) Which of the elements of analysis model are mapped to User Interface design? What inputs do they contribute towards Interface designing?

(b) How is the concept of coupling and software portability related?

(c) For the given Data Flow Diagram of an Inventory Management System:

(i) Draw a Structure Chart/WBS

(ii) Write Agile user stories for describing this system (6,4,8,6)