53 (CS 602) SWEN

2014

SOFTWARE ENGINEERING

Paper : CS 602

Full Marks : 100

Pass Marks : 30

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Identify the problems that would arise if someone tries to develop a large software product without using software engineering principles. 10

   (b) Identify *at least three* basic characteristics that differentiate a simple program from a software product. 5

   (c) Briefly discuss about software crisis. 5

2. *(a)* With a clear diagram discuss about classical waterfall model. 10

(b) Why classical waterfall model can be considered impractical and cannot be used in real projects ? 5

(c) Briefly discus how iterative waterfall model can overcome the disadvantages of classical waterfall model. 5

3. *(a)* Discuss about the computation of function point metric. 10

(b) What are the different techniques used for project estimation ? Briefly discuss *any one* of them. 3+7

4. *(a)* Let us consider the following C program.

```
main( )
{
    int a, b, c, result ;
    scanf("%d %d %d", &a, &b, &c) ;
    result = a + b – c ;
    printf ("result = %d", result) ;
}
```

Compute estimated length and volume using Halstead's metric. 10

(b) What are the advantages of democratic team over chief programmar team ? 5

(c) Identify the properties of a good software engineer. 5

5. Consider the following case study :

A hotel has a certain number of rooms. The rooms may be either single or double bed type. The room types are standard, delux. Hotel manager is responsible for deciding the room rates. Room rates may be changed by the manager based on the occupancy rate. Customer can register themselves by providing their details and the registration fees. A registered customer can book the room online. However guest customer (those who are not registered) can come to the hotel and book a room. This booking is done by the hotel manager. Create a suitable SRS for the above hotel. 15

(b) Briefly discuss about cohesion and coupling. 5

6. (a) Identify the different problems of DFD. 5

(b) Consider the following case study for withdrawing cash from ATM

To withdraw cash, customer is prompted to insert his card in the machine. If the card is invalid the card is ejected along with a message. If the card is valid then the customer is prompted to type his password. If the password is invalid an error message is shown and the customer is prompted to enter his password again. If the customer enters incorrect password consecutively for three times then his card is locked. If he enters correct password then he got the prompt to enter the amount to be withdrawn. If he enters an amount that is not multiple of Rs. 100, then he is prompted to enter the amount again. After he enters an amount that is multiple of Rs. 100 the cash is dispensed along with a transaction slip.

Create a decision tree and decision table for the above case study. 10+5

7. (a) State the differences between black box and white box testing techniques. 10

5

(b) Create a CFG for the function mentioned below

```
int fact (int n)
{
    int i, r = 1, result ;
    if (n = = 0 || n = = 1)
        result = 1 ;
    else
    {
        for (i = 1 ; i < = n ; i++)
            r = r * i ;
        result = r ;
    }
    return (result) ;
}
```

Compute Maccabe's cyclomatic complexity. 7+3
