

**National Institute of Technology Calicut**  
*Department of Computer Science and Engineering*  
End – Semester Examination, Winter 2019-20

**Software Engineering (CS3004D)**

Marks: 20

Date: 06/08/2020

Time: 2 Hrs

1. Consider the following scenario,

Every day you are going to the office via train. Morning before 9.00AM and afternoon after 4.30 PM until 8.00 PM is considered to be rush hours. If you take the train in those hours then you must pay *full fare*. A *saver* ticket is available for trains between 9.00 AM and 4.30 PM, and after 8.00 PM.

- a) What are the partitions (using equivalence class partitioning) to test the train times for this ticket types? (Make use of the following table to answer this question) (2)

Scheduled departure time (partition)	Ticket Type

- b) What are the boundary values to test the train times? (2)

- c) Derive test cases for the partitions and boundaries. (Make use of the following table to answer this question) (2)

Test case scenario #	Test scenario description	Expected outcome

2. Mark the following as either true or false. Justify your answer.

- a) Coupling between two modules is nothing but a measure of the degree of dependence between them. (1)
- b) A module having high cohesion and low coupling is said to be functionally independent of other modules. (1)
- c) In procedural cohesion, a designer put together all the code that is used during the system start-up or initialization. (1)

3. System availability is a metric that measures the probability that a program is operating according to the requirements at a given point in time. Consider the situation that, an operating system crashes on the average in 40 days, that is the Mean Time To Failures (MTTF) = 40days. When this happens, it takes to recover the OS, that is, the Mean Time To Repair (MTTR) = 20 minutes. The availability of the OS with these reliability figures is approximately \_\_\_\_? (2)

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4. Which type of coupling occurs in the given code snippet? Write down your answer. (1)

```
Public void run(){
    takeAction(1)}
public void takeAction(int key){
    switch (key){
        case 1:
            system.out.println("One received");
            break;
        case 2:
            system.out.println("Two received");
            break;
    }
}
```

5. You are an architect for a signal processing application. You have designed the application in such a way that the front end component receives sensor data from devices, and the data flows from one component to the following component. Each component subsequently transforms the data it receives and passes the transformed data to the next component. The final component passes the data to a modeling and visualization unit that renders the data to the end users. The architecture style you have used in this application is \_\_\_\_\_? (1)
6. Given the following values, compute FP when all complexity adjustment factors and weighing factors are average (Assume  $\sum Fi = 42$ ). (2)
- (FP: Function Point)

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User input= 60

User output= 36

User Enquiries= 45

User files= 10

External interfaces= 4

7. Draw the control flow graph for the following code snippet and find the cyclomatic complexity for the same. (3+2)

```
int strequal(char x[], char y[])
{
    int i=0, same=0;
    if(x==y)
        same=1;
    else{
        while(x[i]==y[i])
        {
            if (x[i]=='\0'){
                same =1;
                y[i]='\7';}
            else i++;
        }/* endif*/
    }/*end while*/
}/*endif*/
Return(same);
}/*endstrequal*/
```