

Note: 1) Question no. 1 is compulsory.

2) Solve any three out of remaining five questions.

3) Assume suitable data wherever necessary.

Q.1 . a) Define software testing. Explain software testing model with a neat diagram. (05)

b) Classify bugs based on SDLC. (05)

c) Is white-box testing really necessary? Give reasons. (05)

d) "Regression testing produces quality software". Justify with reasons. (05)

Q.2. a) What are the features of V-testing model? Explain in detail. (10)

b) Which type of testing is possible with equivalence class partitioning? (10)

A program takes an angle as input within the range [0,360] and determines in which quadrant the angle lies. Design test cases using equivalence class partitioning method.

Q.3. a) Consider the following program for calculating the factorial of a number. It consists of main( ) program and the module fact( ). Calculate the individual cyclomatic complexity number for main( ) and fact( ) and then the cyclomatic complexity for the whole program. Draw DD graph. List all independent paths and design test cases from independent paths.

```
main()
{
    int number;
    int fact();
    clrscr();
    printf("enter the number whose factorial is to be found out");
    scanf("%d", & number);
    if (number < 0)
        printf("factorial cannot be defined for this number");
    else
        printf("factorial is %d", fact(number));
}
```

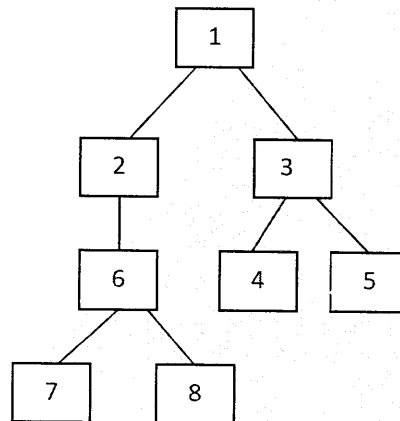
```
int fact( int number )
{
    int index;
    int product=1;
    for ( index=1; index<=number; index++)
```

```
    product=product*index;  
    return(product);  
}
```

b) Describe types of static testing in detail. (10)

Q.4. a) Why do we need integration testing? (10)

Perform top-down and bottom-up integration procedure from the following system hierarchy.



b) What is the need for software measurement? Discuss various types of software metrics. (10)

Q.5.a) What are the components of a test plan. Illustrate test plan hierarchy with a neat diagram. (10)

b) Describe the procedure for Test Point Analysis (TPA) with a neat diagram. (10)

Q.6. Write a short on any two. (20)

- a) Software Quality Measurement.
  - b) Object Oriented Software testing.
  - c) Web based system testing.
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