Time: 3 hrs   M.Marks:60

Note: Part-1 is Compulsory. Attempt any four questions from Part-II.

Part-1

Q. No.1 (a) "Early Testing is the best policy." Comment on the statement.
(b) Does mutation testing help in improving the quality of test data? Explain.
(c) Explain how bugs affect economics of software testing.
(d) What are the factors that limit complete testing of software?
(e) What is the practical approach for integration testing?
(f) Differentiate between Load and Stress Testing.
(g) What is cyclomatic complexity? How it is used for software testing.
(h) What is the purpose of integration testing? How is it done?
(i) What are the adverse effects on a project, if verification is not performed?
(j) When to stop testing is a very crucial decision. What factors should be considered for taking such a decision.

$(2*10)$

Part-II

Q. No.2 (a) Differentiate between Software Engineering and Software testing. Discuss various software testing principles.

(b) 'The testing domain is too large to test'. Demonstrate using some example programs?
$(6+4)$

Q. No.3 (a) A wholesaler has three commodities to sell and has three types of customer. Discount is given as per the following procedure.
(i) For DGS & D orders, 10% discount is given irrespective to the value of the order.
(ii) For orders more than Rs 50,000, agents get a discount of 15% and the retailer gets a discount of 10%.
(iii) For orders of Rs 20,000 or more and up to 50,000, agents get a discount of 12% and the retailer gets a discount of 8%.
(iv) For orders of less than Rs 20,000, agents get a discount of 8% and the retailer gets a discount of 5%.
The above rules do not apply to the furniture items wherein a flat rate of 10% discount is admissible to all customers irrespective of the order of the value.

Design the test cases for this software using decision table based testing.

(b) What are Stubs and Drivers? What are the benefits for designing them? $(6+4)$

Q. No.4 (a) Consider a program to classify a triangle .Its inputs are a triple of positive integers and the data type for input parameters ensures that these will be integers greater than zero and less than equal to 200.The program output may be one of the following: {Scalen, Isosceles, Equilateral, Not a triangle}.Design the boundary value, robust test and worst case test cases for the same.

(b) Define Static Testing. What are various methods for performing static testing? $(6+4)$

Q. No.5(a) Consider the following program :

```c
#include<stdio.h>
main ()
{
        int num, small;
        int i, j, sizelist, list[10], pos, temp;
        printf("\Enter the size of the list:");
        scanf("%d", &sizelist);
        for(i=0; i<sizelist;i++)
        {
                printf("enter the number");
                scanf("%d",&list[i]);
        }
        for(i=0; i<sizelist; i++)
        {
                small = list[i];
                pos = i;

                for(j=i+1; j<sizelist; j++)
                {
                   if(small > list[j]
                   {
                        small = list[j];
                        pos =j;
                   }
                }
                temp = list[i];
                list[i] = list[pos];
                list[pos] = temp;
        }
        printf("\nList of the numbers in ascending order:");
        for (i=0; i<sizelist; i++)
                printf("\n%d", list[i]);
        getch();
}
```

(a) Draw the DD graph for the program.
(b) Calculate the cyclomatic complexity of the program using all methods.
(c)List all independent paths.
(d)Design all test cases from these independents paths.

(b) Define Regression Testing. What are various regression testing techniques? (6+4)

Q.No.6 (a) Discuss V&V activities in detail.

(b) Define Mutation Testing. Discuss Mutation Testing process in detail.   (6+4)

Q.No.7Diffrentiate between the following:

(a) Functional Testing & System Testing
(b) Effective and Exhaustive testing
(c) CMM and TMM   (2.5*4)
(d) Alpha and Beta Testing