DEPARTMENT OF COMPUTER SCIENCE
MILITARY COLLEGE OF SIGNALS, NUST
SOFTWARE QUALITY ASSURANCE
BESE-14 A&B

Exam: Mid Term   **Instructor**: Dr. Seemab Latif
Type of Paper: Regular   **Total Marks**: 25
Semester: Fall   **Time Allowed**: 1.5 hours

Note:
1. This question paper has 2 pages and 4 questions.
2. Attempt all questions.
3. Use of programmable calculators with memory is not allowed

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Question No.1:   **(09)**

a. **What is an equivalence class? (1)**
   A portion of a component's input or output domains for which the component's behavior is assumed to be the same from the component's specification

b. **What is UAT and BAT; briefly outline key difference. (1)**

   User acceptance testing (UAT): is conducted by the customer to ensure that the system satisfies the contractual acceptance criteria before being signed off as meeting user needs.

   Business acceptance testing (BAT): is undertaken within the supplier's development organization. The idea in having a BAT is to ensure that the system will eventually pass the user acceptance test. It is a rehearsal of UAT at the supplier's premises.
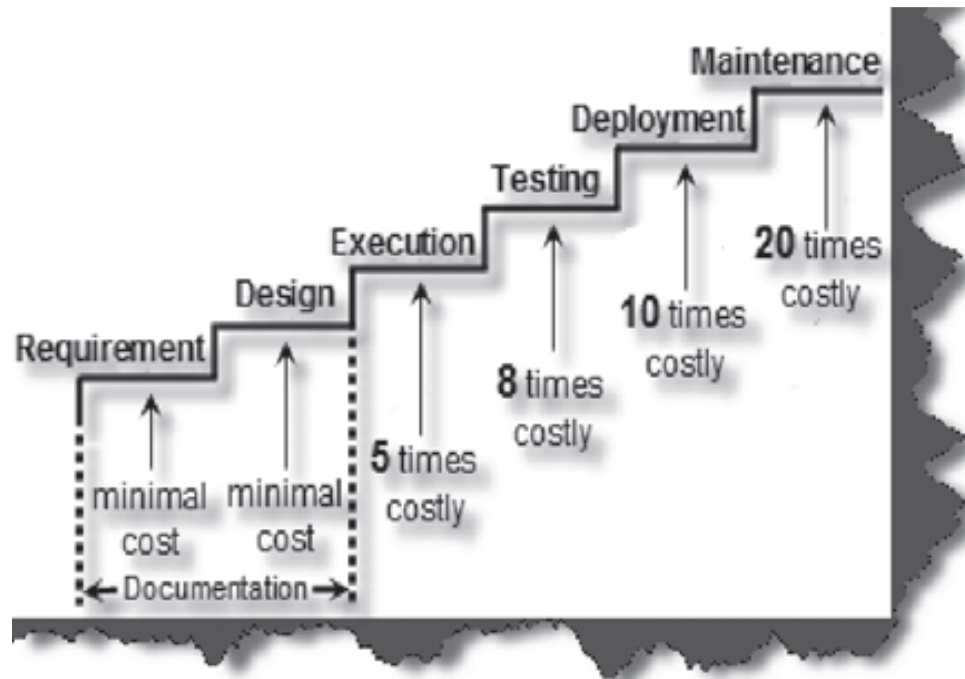
   Difference: BAT is conducted at supplier's organization while UAT is conducted at customer's organization.

c. **Increase in software testing will always be beneficial for the project. True/False with brief explanation. (2)**

   False, as it will increase the cost and delivery time of the project and the product will not be delivered on time.

d. **Cost of finding and removing defects is higher during initial or later stages of a project, kindly briefly explain your answer.(2)**
   Cost of removing the defects is higher during later stages of a project.

Maintenance

Deployment

Testing

Execution

Design

Requirement

20 times costly

10 times costly

8 times costly

5 times costly

minimal cost   minimal cost

← Documentation →

e. **What is meant by Pilot release? What are advantages of such release? (2)**
Pilot release means releasing the software to limited number of users. Its main advantage is that the developing organization will get the feedback from the users before the final release of the project.

f. **Which individuals are engineers? Why we need software quality assurance people? (1)**

Engineer is an individual who can apply his knowledge to solve real world problems and to help mankind.

Software quality assurance people are required to assess the quality of the developing project at each step of the project and to make sure that delivered project conforms to the customer's requirements.

Question No.2: (06)

a. Write valid test cases for following boundary classes (2)
   i. Valid Range: 1 to 5
   ii. Valid Range: -10 to 0
   iii. Valid Range: 0.7 to 6.8
   iv. Valid Range: -20 to -5

b. Describe the 'V' model. (2)
c. When using data flow testing, what information following time-sequenced pairs

gives us? Briefly describe each. (2)

dd   dk   kk   ku   uk   kd   du   ud

Question No.3: (06)

Create control flow graph for following C code segment using "100% multiple condition coverage". Calculate its cyclomatic complexity.

```
.
.
if( option > 0 && option < 5)
{
        switch(option)
        {
                case1: C = (F-32)*5/9;
                        Break;
                case2: F = C*9/5+32;
                        Break;
                case3: Lbs = Kg/2.2 ;
                        Break;
                case4: Kg = Lbs*2.2;
                        Break;
                default:
                        Break;
        }
}

if( a > 0 && ( c == 1 || d > 7 ))
        x = x * 22;
if(( b == 3 || d < 0 ) && z == 7 )
        y = x * 44;
.
.
.
```

Question No.4: (04)

    a. **What is Software Inspection?**
    b. **What are the stages of Inspection Process, briefly explain each stage.**
    c. **What roles are used in Inspection Process, briefly explain each role.**