# MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

**Paper Code : ESC501 Software Engineering**

**UPID : 005505**

*Time Allotted : 3 Hours* *Full Marks :70*

*The Figures in the margin indicate full marks.*

*Candidate are required to give their answers in their own words as far as practicable*

## Group-A (Very Short Answer Type Question)

1. Answer *any ten* of the following : [ 1 x 10 = 10 ]

(I) What is a physical element that exists at runtime in UML?
a) A node b) An interface c) An activity d) None of the mentioned

(II) Each time a defect gets detected and fixed, the reliability of a software product
a) Decreases
b) Increases
c) Remains constant
d) Cannot say anything

(III) Alpha and Beta testing are forms of
a) Acceptance Testing
b) System testing
c) Integration Testing
d) Unit testing

(IV) How many CMMI's Maturity Levels are defined in a process meta-model?
a)One
b)Three
c)Five
d)Seven

(V) The most important feature of spiral model is
a) Requirement analysis
b) Risk management
c) Quality management
d) Configuration management

(VI) It is often difficult to estimate size at an early stage in a project when only a specification is available
a) True
b) False

(VII) A software configuration items is all or part of ____.
a) A work product
b) A process
c) A tracking and control
d) All of the mentioned above

(VIII) A program testing is to affirm software quality with methods that can be economically.
a)True
b)False

(IX) What is a collection of operations that specify a service of a class or component?
a) Use Case
b) Actor
c) Interface
d) Relationship

(X) In function point analysis the number of adjustment factors based on system characteristics to refine unadjusted function point are
a)12
b) 10
c) 20
d) 14

(XI) ____ is a quality control function that has one primary goal—to find errors.

a)Software testing
b)Verification
c)Validation
d)None of these

(xii) A software testing strategy should be,
a) Flexible
b) Rigid
c) Vivid
d) None of the mentioned above

## Group-B (Short Answer Type Question)

Answer *any three* of the following : [ 5 x 3 = 15 ]

2. Discuss the advantages of prototyping model over waterfall model. [5]
3. Write short notes on: Verification and Validation. [5]
4. Write short notes on: Structured Chart [5]
5. What is Data dictionary? What is the significance of its use in software design? [5]
6. Discuss why "low coupling and high cohesion" are features of good design. [5]

## Group-C (Long Answer Type Question)

Answer *any three* of the following : [ 15 x 3 = 45 ]

7. What is the difference between integration testing and system testing? What is functional testing? How does a test case help in testing? Is it recommended to have the developer involved in testing? What is the difference between a bug and and error? [ 15 ]
8. What is an Agility in context of software engineering? What is an Agile Process? List the "Manifesto for Agile Software Development. [ 15 ]
9. Consider the pseudocode for simple subtraction given below: [ 15 ]

```
Program 'Simple Subtraction'
Input (x,y)
Output(y)
If x> y then DO
x-y=z
else y-x=z
endif
output(z)
output 'End Program'
```

Perform the basic path testing and generate test cases. Explain black box and white box testing.

10. Consider the following program segment. https://www.makaut.com [ 15 ]

```
/*num is the number of function searches in a presorted integer array
arr*/
int bin_search(int num)
{
int min , max; min=0; max=100;
while(min!=max) { if(arr[(min+max)/2]>num) max=(min+max)/2;
else
if(arr[(min+max)/2] min=(min+max)/2; else return((min+max)/2);
}
return(-1); }
```

(i)Draw the control flow graph for this program segment.
(ii)Define cyclometric complexity.
(iii)Determine the cyclometric complexity for this program.
(Show the intermediate steps in your computation. writing only the final result is not sufficient)

11. Which factor is decided the success of project? What are the characteristics which makes software projects different from other project? Mention the characteristics of software projects. [ 15 ]

*** END OF PAPER ***