

CS/B.TECH/IT/EVEN/SEM-6/IT-603/2018-19



**MAULANA ABUL KALAM AZAD UNIVERSITY OF
TECHNOLOGY, WEST BENGAL**

Paper Code : IT-603

SOFTWARE ENGINEERING

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.
Candidates are required to give their answers in their own
words as far as practicable.*

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

10 × 1 = 10

i) Spiral Model was developed by

- a) Bev Littlewood ✓ b) Berry Boehm
✗ c) Roger Pressman d) Victor Basili

ii) Which is *not* a software characteristic ?

- a) Software does not wear out
b) Software is flexible
c) Software is not manufactured
✓ d) Software is always correct.

iii) Estimation of software development effort for Organic software in COCOMO is

a) $E = 2.4 (KLOC)^{1.05} PM$

b) $E = 3.4 (KLOC)^{1.06} PM$

c) $E = 2.0 (KLOC)^{1.05} PM$

d) $E = 2.4 (KLOC)^{1.07} PM$

iv) Integration testing techniques are

a) Top down

b) Bottom up

c) Sandwich

d) All of these.

v) Validation is

a) checking the product with respect to customer's expectation

b) checking the product with respect to specifications

c) checking the product with respect to the constraints of the project

d) all of these.

vi) Requirements elicitation means

a) gathering of requirements

b) capturing of requirements

c) understanding to requirements

d) all of these.

vii) The worst type of coupling is

a) content coupling

b) common coupling

c) external coupling

d) data coupling.

viii) Cyclomatic complexity is equal to

- a) number of independent paths
- b) number of paths
- c) number of edges
- d) none of these.

ix) Critical path is

- a) the most complex path of a program.
- b) a path where errors may occur
- c) the chain of activities that determines the duration of the project
- d) highly complex path of a project.

x) Configuration management is

- a) management of configure file of operating system
- b) Identifying and controlling changes to the configuration of the system
- c) process of configuring the management processes and practices
- d) none of these.

GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. a) Write the difference between verification and validation.
- b) What do you mean by system analysis and system design ? $2 + 3$
3. Explain software quality. What are SQAA activities ? $2 + 3$
4. Define Person-Month (PM). What are the major differences between Function Oriented Software Design and Object Oriented Software Design ? $1 + 4$
5. a) Why is intermediate COCOMO considered better than basic COCOMO ?
- b) What are the different categories of software development projects according to COCOMO model ? $2 + 3$
6. What is Coupling ? What are the factors affecting coupling ? For a good software design "low coupling - high cohesion" is desirable. Explain. $1 + 2 + 2$

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

- 7. a) Explain the different stages of waterfall model with diagram.
- b) What are the advantages and disadvantages of waterfall model ?
- c) Determine the Cyclomatic Complexity for the following snippet :

```
int find_max ( inti, int j )
{
  int max;
  if ( i > j )
    {
      if ( i > k )
        max = i;
      else
        max = k;
    }
  else
    {
      if ( j > k )
        max = j;
      else
        max = k;
    }
  return ( max );
}
```

5 + 5 + 5

8. a) Draw the network diagram and calculate the critical path :

Task	Preceding task	Duration $(t_o + 4t_p + t_m)/6$
A	-	3
B	-	4
C	B	3
D	A	1
E	A	2
F	D	3

- b) Draw the Use-Case diagram for a bank ATM system. Define use case and actor.
- c) Draw the activity diagram of any one use case of a bank ATM system. 6 + (3 + 2) + 4

9. a) Draw the decision tree and decision table for the following :

A shopping mall gives 10% discount on the purchase of above Rs. 1000 to 1999 within the first 10 days of a month. On the purchase of above Rs. 2000 to 4999, 12% discount is given for the same time period stated above and also 15% discount is given on the purchase of above Rs. 5000 within the first 10 days. After 10 days 5% discount is given on each item. Within the first 10 days full payment has to be done below the purchase of Rs. 1000.

b) What are the levels of testing in software engineering ?

c) Define quality assurance and quality control.

6 + 5 + 4

10. a) Describe 4G technique with its advantages.

b) Describe the functions of Human Resource Management.

c) Describe risk monitoring and risk control in software management.

5 + 5 + 5

11. Write short notes on any *three* of the following : 3×5

a) Gantt charts

b) Function point

c) UML Diagram

d) Black-Box Testing

e) Feasibility analysis.

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