CS / BCA / SEM-6 / BCAE-602A / 2011

2011

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 : $10 \times 1 = 10$

    i)   Estimation of development time for semi-detached is

        a) $2 \cdot 5 \, (\text{Effort})^{0 \cdot 38}$ months   b) $2 \cdot 5 \, (\text{Effort})^{0 \cdot 35}$ months

        c) $2 \cdot 5 \, (\text{Effort})^{0 \cdot 31}$ months   d) $2 \cdot 5 \, (\text{Effort})^{0 \cdot 32}$ months.

    ii) COCOMO is a/an

        a)   Empirical estimation technique

        b)   Heuristic estimation technique

        c)   Analytical estimation technique

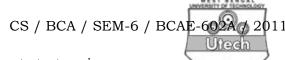   d)   none of these.

iii) Which is not a software life cycle model ?

   a)   Waterfall model   b)   Spiral model

   c)   Combo model   d)   Prototyping model.

iv) CPM means

   a)   Critical Path Method

   b)   Constructive Path Method

   c)   Critical Peer Method

   d)   none of these.

v) LOC is a

   a)   Metric   b)   Measure

   c)   Indicator   d)   None of these.

vi) ISO means

   a)   International Organization for Standardization

   b)   Interconnection of Standardization

   c)   International Organization for Standard

   d)   None of these.

vii) Risk containment strategy is

   a)   to avoid the risk   b)   to transfer the risk

   c)   risk reduction   d)   all of these.

viii) Which approach of testing is referred to as Glass-box testing ?

   a)   Black-box   b)   White-box

   c)   Gray-box   d)   None of these.

ix)   The ratio of relative effort & maintenance effort of a software product is

   a)   40 : 60   b)   40 : 20

   c)   40 : 80   d)   80 : 40.

x)   What is usability in software engineering ?

   a)   The ability of the end user to use the product successfully

   b)   A measure of the relative effort required to learn how to use a software product

   c)   The degree to which the product integrates with the environment in which it is used

   d)   A metric that describes the degree to which a software product meets its requirements.

GROUP – B

(Short Answer Type Questions)

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

2. Explain how an s/w development effort is initiated and terminated in spiral model.

3. What is coupling ? What are the factors affecting coupling ? What is the relationship between cohesion and coupling ?

$1 + 2 + 2$

4. Explain when we use PERT and GANTT. What is sliding window planning ? $3 + 2$

5. Differentiate between verification and validation.

6. Define risk analysis with Pareto principles.

GROUP – C
(Long Answer Type Questions)

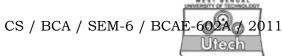Answer any *three* of the following. $3 \times 15 = 45$

7. What do you mean by SDLC ? Describe meta model of SDLC. How do we make meta model as waterfall model ? Compare classical and interactive waterfall models.

$2 + 6 + 2 + 5$

8. a) Define McCall's Quality Factor.

   b) What are the requirements of ISO 9000 ? How can we get ISO certification ?

   c) What are the components of ISO 9001 ? Compare ISO 9000 and CMM. $5 + 5 + 5$

9.   Consider the following program segment.

```
void sort ( int a [ ], int n ) {

int i , j ;

for ( i = 0 ; i < n − 1; i + + )

for ( j = i + 1 ; j < n ; j + + )

if (a [ i ] > a [ j ] )

{

temp = a [ i ] ;

a [ i ] = a [ j ] ;

a [ j ] = temp ;

}

}
```

a)   Draw the control flow graph for above program segment.

b)   Determine the cyclomatic complexity for above program. (Show all the intermediate steps in your computation).

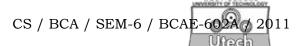c)   How is the cyclomatic complexity metric useful ?

5 + 5 + 5

10. a) The following table indicates the various tasks involved in completing a software, the corresponding activities and the estimated effort for each task in person-months.

Notation	Activity	Effort in person months
T1	Requirements Analysis	1
T2	Design	2
T3	Code actuator interface module	2
T4	Code sensor interface module	5
T5	Code user interface part	3
T6	Code control processing part	1
T7	Integrated and Test	6
T8	User Manual	3

The precedence relation $T_i < = \{ T_j, T_k \}$ implies that the task T_i must complete before either task T_j or T_k can start. The following precedence relation is known to hold among different tasks $T_1 <= T_2 <= \{ T_3, T_4, T_5, T_6 \} < = T_7$. Draw the activity network and Gantt chart representations for the project.

b) Describe SRS. What are the parameters to be treated to make a successful SRS ?

c) Differentiate between UML and class diagram in software project development. 7 + 5 + 3

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

a) Case tools

b) Function Point

c) FTR

d) Delphi Cost estimation

e) Feasibility analysis.

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