Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/B.Tech/ICE/NEW/SEM-6/IC-604A/2013

2013
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 any *ten* of the following :

$$10 \times 1 = 10$$

i)   Which of the following is not a characteristic of software ?

   a)   Availability   b)   Maintainability

   c)   Usability   d)   Efficiency.

ii) Which of the following models requires the maximum involvement of users ?

   a)   V Model

   b)   Spiral Model

   c)   Prototyping Model

   d)   Formal methods Model.

6476   [Turn over

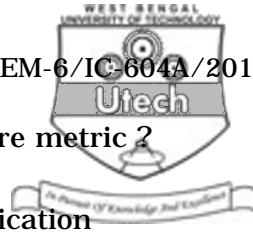iii) Which of the following is not a step in the requirement engineering process ?

a) Requirement specification

b) Requirement analysis

c) Feasibility study

d) Requirement prioritization.

iv) Which of the following is not an advantage of code guideline ?

a) Code reuse   b) Reduced complexity

c) Reduced costs   d) None of these.

v) Which of the following is a type of control structure testing ?

a) Data flow testing   b) Loop testing

c) Both (a) and (b)   d) None of these.

vi) Which of the following is not a software metric ?

    a) Process   b) Application

    c) Product   d) Project.

vii) Which of the following parameters are followed for identifying the critical path ?

    a) ES & EF   b) LF & LS

    c) Both (a) and (b)   d) None of these.

viii) Which of the following is / are the categories in which COCOMO model divides the projects ?

    a) Embedded projects

    b) Organic projects

    c) Semi-detached projects

    d) All of these.

ix) COCOMO-II estimation model is based on

    a) Complex approach

    b) Algorithmic approach

    c) Bottom-up approach

    d) Top-down approach.

x) What does ISO stand for ?

 a) International Standardisation for Organisation

 b) Indian Standardisation for Organisation

 c) International Structure for Organisation

 d) None of these.

xi) What is 10 KLOC ?

 a) 10 kilo lines of source codes

 b) 10 kilo lines of static codes

 c) 10 lines of codes

 d) None of these.

GROUP – B
(Short Answer Type Questions)
Answer any *three* of the following. $3 \times 5 = 15$

2. Suppose you have to develop software for a client with minimum risk involved in development. But the client is not in a position to define the detailed input and output requirements. In this situation which software process model would you use ? Justify your answer.
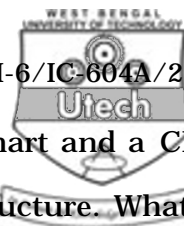
3. What are the similarities between a PERT chart and a CPM diagram ? Describe the work breakdown structure. What is coupling ?   2 + 2 + 1

4. A software comprises six functions, namely, user interface, word processing, file storage & retreival, database management, word processor & peripherial control. Estimated size table is given below. Find the size of software in terms of LOC :

Function	Pessimistic	Most Likely	Optimistic
User interface	1400	1800	2200
Word processing	1800	2500	3100
File storage & retrieval	1700	2200	2500
Database management	2400	3100	4200
Word processor	1200	1600	2300
Peripheral control	1400	1700	2100

5. Distinguish between Black Box & White Box testing. What is driver & stub model ? What is Algorithmic model for software cost estimation ?   2 + 2 + 1

GROUP – C
(Long Answer Type Questions)
Answer any *three* of the following.　　3 × 15 = 45

6. a) Let us consider the following *C* program :

```
main()

{

int a,b,c,avg;

        scanf("%d%d%d',&a,&b,&c);

        avg=(a+b+c)/3;

        printf("avg=%d",avg);

}
```

Estimate the volume & the estimated length of the above prorgam.

b) What is reliability ? Define ROCOF, POFOD, MTTF, MTTR. What is cyclomatic complexity ?　　3 + 2 + 8 + 2

7. a) Assume that the size of an organic type software product has been estimated to be 32,000 SLOC. Assume that the average salaty of software developers is Rs. 15,000/month. Determine the effort required to develop the software product, the nominal development time and the cost to develop the product.

b) Explain coupling and cohesion.

c) Draw the structure chart for the following program :

```
main()
{
int x,y;
x=0;
y=0;
a();
b();
}
a()
{
x=x+y;
y=y+5;
}
b()
{
x=x+5;
y=y+x;
}
```
3 + 8 + 4

8. The following table shows the job of a network along with their time estimates :

Job	1 to 2	1 to 6	2 to 3	2 to 4	3 to 5	4 to 5	6 to 7	5 to 8	7 to 8
a (days)	1	2	2	2	7	5	3	3	8
m(days)	7	5	14	5	10	5	8	3	17
b(days)	13	14	26	8	19	17	29	9	32

Draw the project network & find the probability of the project completion days.

9. a) Construct a network for each of the projects whose activities and their precedence relationships are given below : 5

Activity	A	B	C	D	E	F	G	H	I	J	K
Predecessor	-	-	-	A	B	B	C	D	E	H,I	F,G

   b) Write short notes on the following: 5 × 2

      i) Risk scheduling & Risk control

      ii) Integration testing

      iii) Spiral model

      iv) Project scheduling

      v) Application composition model.

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