Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech (IT-OLD)/SEM-6/IT-601/2013

2013

SOFTWARE ENGINEERING & PROJECT MANAGEMENT

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) Project risk factor is considered in

      a) waterfall model

      b) prototyping model

      c) spiral model

      d) iterative enhancement model.

   ii) If requirements are easily understandable and defined, which model is best suited ?

      a) Waterfall model b) Prototyping model

      c) Spiral model d) None of these.

iii) According to Intermediate COCOMO no. of cost drivers is

a) 10 b) 15

c) 20 d) 14.

iv) If requirements are not easily understandable and defined, which model is best suited ?

a) Waterfall model b) Prototyping model

c) Spiral model d) None of these.

v) Functional primitives are

a) context level of DFD

b) 1-level of DFD

c) last but one level of DFD

d) lowest level of DFD.

vi) The best type of coupling is

a) coincidental b) logical

c) informational d) functional.

vii) COCOMO refers to

a) COST CONSTRUCTION MODEL

b) CONSTRUCTIVE COST MODEL

c) CORPORATE CONSTRUCTION MODEL

d) CORPORATE COST MODEL.

viii) Organic system means

a) development team is experienced

b) development team is inexperienced

c) development team has both experienced and inexperienced staff

d) none of these.

ix) Circle symbol in DFD is used for

a) external entity b) process

c) data store d) output.

x) Software Engineering in the application of

a) Engineering principles to software development

b) Systematic and quantifiable approach to the design, development operation and maintenance of software

c) Both of these

d) None of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Why don't we use "Goto" statement in programming ? Explain it with context flow graph (CFG). Why is DFD considered as best technique for proces modelling ? 1 + 2 + 2

3. What is SRS ? Write the features of Good SRS document. 2 + 3

4. What is S/W project planning ? Comment on Norden-Rayleigh curve for staffing estimation. Why is Putnam's work staffing estimation method best suited for software staffing plan ? 2 + 2 + 1

5. Why is intermediate COCOMO expected to give more accurate estimates than the basic COCOMO ? "Good modules exhibit low coupling but high cohesion". Justify . 2 + 3

6. Suppose that a software product for business application costs Rs. 50,000 and that its size is 40000 LOC. Assuming that in-house engineers cost Rs. 6000 per programmer-month (including overheads); and along with it Dead Line is not stringent then what would it be more cost-effective, to buy the product or build it ? Which elements of the cost are not included in the COCOMO estimation model ? 4 + 1

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. Suppose you are the Project Manager of a Software Project that consists of following activities in the table and you have to draw the activity network and find the critical tasks of the project. Draw the Gantt chart of the Project. (Consider resources allocation will start from 12th March, 2010). 7 + 8

Activity No.	Activity Name	Duration (Weeks)	Immediate Predecessor
1.	Obtain requirements	4	—
2.	Analyze operations	4	—
3.	Define subsystems	2	1
4.	Develop database	4	1
5.	Make decision analysis	3	2
6.	Identify constraints	2	5
7.	Build module 1	8	3, 4, 6
8.	Build module 2	12	3, 4, 6
9.	Build module 3	18	3, 4, 6
10.	Write report	10	6
11.	Integration and testing	8	7, 8, 9
12.	Implementation	2	10, 11

8. Consider the following *C* program :

```
int compute_gcd ( x, y )
int x, y :
{
        while ( x ! = y )
                if ( x > y ) then x = x – y ;
                else y = y – x ;
        return x ;
}
```

a) Find out the estimated length, program vocabulary, program volume, effort, time. Comment on the technique that you use to solve the problem. 10

b) Compare Halstead's length and volume measures of size with LOC measure. 5

9. a) What is SDLCM ? What are its disadvantages in classical waterfall model ? 1 + 3

b) Why do we use FP instead of LOC ? Why do you think the FP need to be adjusted ? 2 + 2

c) What is the Heuristic project estimation technique ? 2

d) A project size of 200 LOC is to be developed. Software development team has average experience on similar type of project. The project schedule is not very tight. Calculate effort, time of development, average staff size and productivity of the project 5

10. a) Draw a DFD that depicts an ATM system (only withdrawal) mentioning suitable assumptions. Now build a structure chart. 5 + 2 + 3

    b) An embedded system of size 400 KLOC is to develop. Project manager has a choice of hiring from two pools of developers : very highly capable with very little experience (AEXP very high) or developers of low quality (LEXP very low) but a lot of experience. Find the values of EAF, Effort & Development Time. 5

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

    a) Team structure of an organization

    b) Risk identification & assessment

    c) Case tools

    d) Black box testing

    e) Work break-down structure & utility of PERT chart.