



Name :

Roll No. :

Invigilator's Signature :

CS / B.TECH(ECE-NEW) / SEM-8 / EC-803A / 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.

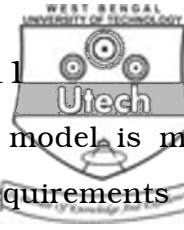
GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

10 × 1 = 10

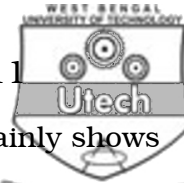
- i) Which is not a type of software maintenance ?
 - a) Primitive
 - b) Corrective
 - c) Adaptive
 - d) Perfective.
- ii) Critical path method is a task of
 - a) Project planning
 - b) Project scheduling
 - c) Risk management
 - d) Configuration management.



- iii) Which form of software development model is most suited to a system where all the requirements are known at the start of a project and remain stable throughout the project ?
- a) Waterfall model
 - b) Incremental model
 - c) Evolutionary model
 - d) Spiral model.
- iv) Which of the following statements is NOT true ?
- a) A good design methodology should provide a clear division of design from implementation
 - b) A good design methodology should not promote a top-down decomposition strategy
 - c) A good design methodology should encourage phased development of the software
 - d) A good design methodology should help to minimize future maintenance.
- v) Developing a new Database system is a/an
- a) semi-detached type of software project
 - b) embedded type of software project
 - c) organic type of software project
 - d) none of these.



- vi) COCOMO belongs to
- a) Empirical estimation technique
 - b) Heuristic estimation technique
 - c) Analytical technique
 - d) none of these.
- vii) Big-bang integration testing is useful for projects with
- a) small number of modules
 - b) large number of modules
 - c) average number of modules
 - d) none of these.
- viii) In COCOMO Model, if project size is typically 50-300 KLOC then which mode is to be selected ?
- a) Organic
 - b) Semi-detached
 - c) Embedded
 - d) None of these.



- ix) The data flow model of an application mainly shows
- a) the underlying data and the relationship among them
 - b) processing requirements and the flow of data
 - c) decision and control information
 - d) communication network structure.
- x) Usability defines the
- a) Extent to which a program can be reused
 - b) Effort required to modify a program
 - c) Effort required to locate and fix an error
 - d) Effort required to learn, operate, prepare input and interpret output of a program.

GROUP – B

(Short Answer Type Questions)

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

2. What is Risk Management ? Explain five risk management techniques. $3 + 2$
3. Why is Reliability an external attribute of the software ? List three internal product attributes that could affect reliability. $3 + 2$
4. Draw a data flow diagram for the Simple Library Management System.



5. What is a control flow graph (CFG) ? Draw CFG and calculate the cyclomatic complexity for the following code :

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

2 + 3

6. Explain the phases of Spiral Model with advantages and disadvantages.

3 + 1 + 1

GROUP – C

(Long Answer Type Questions)

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

7. a) What are conceptual models ?
 b) What are the different phases of waterfall model ?
 What are the major disadvantages in waterfall model of SDLC ?
 c) What are the desired characteristics of a software process model ?

3 + 8 + 4



8. a) What is ISO 9000 standard ? Why does software industry require this certification ?
- b) Define 'Software Quality' and 'Software Reliability'.
- c) What are the different costs associated with software quality ?
- d) Briefly discuss the different stages of 'Capability Maturity Model'. What is 'Six sigma' ?
9. a) Suppose that an on-the-shelf software product for business application costs Rs. 50,000 and that its size is 40 KLOC. Assuming that in-house engineers cost Rs. 6000 per programmer-month (including overheads), 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 ? What additional factor should be considered in making the buy/build decision ?
- b) Explain the concept of COCOMO Model.
- c) What is risk identification ? Discuss three main categories of risks which can affect a software project.

5 + 4 + 2 + 4



10. a) Draw a use case diagram for library management system.
- b) What are top-down and bottom-up design methodologies ? Give one example of each.
- c) Distinguish between black-box and white-box testing.

7 + 5 + 3

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

- a) Cohesion and coupling
- b) Reverse engineering
- c) Object-oriented design.
- d) Petri Net Models
- e) Stub and Driver modules in unit testing.

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