

Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/MCA/SEM-2/MCA-202/2010  
2010**

**INFORMATION SYSTEM ANALYSIS & DESIGN**

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 of the following are not reviewed in the various Review phases of the Spiral model ?
  - a) Options
  - b) Alternatives
  - c) Constraints
  - d) All of these are reviewed at same time.
- ii) System maintenance is necessary because
  - a) humans never get it right the first time
  - b) the deployment platform may change over time
  - c) the user's needs may change over time
  - d) all of these.



- iii) A software process model is
  - a) a representation of the way in which software is developed
  - b) a representation of the way in which software processes data
  - c) a representation of the way in which software is used
  - d) a representation of the way in which software may fail.
  
- iv) Which of the following increases as the Spiral model process moves outwards ?
  - a) Risk
  - b) Time-to-delivery
  - c) Time-to-completion
  - d) None of these.
  
- v) Which of the following is hard to measure ?
  - a) Costs ( effort, time, expenditure )
  - b) Quality ( robustness, reliability, stability )
  - c) Remediation ( errors found during coding, testing, or after delivery )
  - d) All of these
  - e) None of these.



vi) Which of the following components are represented in the Data-flow perspective ?

- a) Inputs and outputs
- b) Inputs, outputs and dependencies
- c) Data transformation activities
- d) Roles/activities of the people involved in the software process.

vii) Indicate what information is provided by Functional requirements ?

X1 : The constraints on the services or functions offered by the system such as timing constraints.

X2 : How the system should behave in particular situations.

X3 : The constraints on the development process standards.

X4 : How the system should react to particular inputs.

of these :

- a) X2, X4
- b) X1, X2, X4
- c) X1, X3
- d) X2, X3, X4.

viii) The Spiral model was suggested by

- a) Spirato Alighieri in 1792
- b) Barry Boehm in 1988
- c) Roger Pressman in 1988
- d) Ian Sommerville in 1998
- e) the ACM Advisory Committee on Software Development in 1993.



- ix) Integration is important because
- a) it ensures that the software is familiar to those who will use it.
  - b) it ensures that the software is friendly to those who will use it.
  - c) it ensures that the software works where it is to be used.
  - d) it ensures that the software replaces the existing system simultaneously everywhere it is to be used.
- x) The Waterfall Model is inadequate because
- a) water is a continuous medium whereas code comes in discrete chunks ( *i.e.* functions, objects, *etc.* ), so all water-based analogies for software development are doomed to failure.
  - b) it incorrectly suggests that the sequence of development is a stately progression from stage to stage, with no backward steps.
  - c) it incorrectly suggests that the sequence of development is a random process of rising and falling from stage to stage, with backward progress just as likely as forward.
  - d) it incorrectly suggests that the sequence of development is a process unpredictable in the details, but predictable in its overall effect, like a waterfall.



**GROUP – B**

**( Short Answer Type Questions )**

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

2. a) What do you mean by SDLC ? Why is it required ?  
b) What are the different phases of software development ?  
 $2 + 1 + 2$
3. a) What do you mean by a software process ? Mention the differences between a methodology and a process.  
b) On which phase should we give maximum effort while developing a S/W using waterfall model ? Why ?  $3 + 2$
4. What do you mean by feasibility study ? What are the important activities carried out during this phase of S/W development ?  
 $1 + 2 + 2$
5. Explain the following terms with suitable examples :  
 $2 \frac{1}{2} + 2 \frac{1}{2}$
- i) Object oriented modelling  
ii) Polymorphism.
6. Draw a structure chart of the following program :

```
for_sum ( )  
{  
    int i, sign = 1;  
    float s = 0;  
    for ( i = 0; i<5; i + + )  
    {  
        s = s + ( ( sign ) * i/factorial ( i ) );  
        sign = - sign;  
    }  
}
```



**GROUP – C**

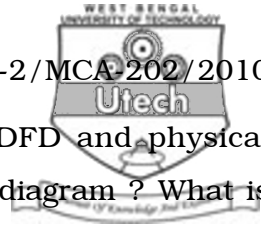
**( Long Answer Type Questions )**

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

7. a) Define Normalisation.  
 b) What is functional dependency ?  
 c) When is BCNF required ?  
 d) Normalise the following data to 3NF :
- INVOICE ( Cust\_no, Cust\_Name, address, Order\_No,  
 Order\_date, delivery\_date, Item\_No, Item\_Description, rate,  
 Qty\_order ) 2 + 3 + 2 + 8
8. Explain COCOMO as a tool for estimation of the cost of a S/W product. What are the limitations of the COCOMO ? What is quality assurance ? Explain its importance. What is S/W quality metric ? 5 + 3 + 3 + 4
9. Consider the following :

<i>Task</i>	<i>Preceding Task</i>	<i>Duration ( Months )</i>
A	–	3
B	–	5
C	B	3
D	A	1
E	A	2
F	D	4

- a) Draw the PERT chart for the above activities.  
 b) Calculate the Earliest Starting Time and Earliest Finishing Time for all the activities.  
 c) Determine the critical path. 4 + 6 + 5



10. What is data dictionary ? Draw logical DFD and physical DFD for a payroll system. What is context diagram ? What is black box testing ?

2 + 8 + 2 + 3

11. Write short notes on any *three* :

3 × 5

- a) Alpha and Beta testing
- b) Transaction Flow
- c) CASE Tool
- d) UML
- e) Prototype Model.

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