



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.TECH(IT)/SEM-4/IT-401/2011  
2011**

**ANALYSIS DESIGN OF INFORMATION SYSTEM**

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) During which phase is the SRS performed ?

- a) System design phase
- b) System development phase
- c) System analysis phase
- d) All of these.

ii) Alpha testing is done by

- a) customer
- b) tester
- c) developer
- d) all of these.



- iii) COCOMO model is
  - a) Constructive Cost Model
  - b) Constructive Cost Effective Model
  - c) Constructive Cost Estimation Model
  - d) Constructive Cost Elimination Model.
- iv) The relationship of data elements in a module is called
  - a) Coupling
  - b) Cohesion
  - c) Modularity
  - d) None of these.
- v) Level-0 DFD is similar to
  - a) system diagram
  - b) use-case diagram
  - c) context diagram
  - d) none of these.
- vi) Project risk factor is considered in
  - a) waterfall model
  - b) prototyping model
  - c) spiral model
  - d) iterative enhancement model.
- vii) Software mistakes during coding are known as
  - a) Failures
  - b) Defects
  - c) Bugs
  - d) Errors.



viii) A data dictionary is a list containing details of

- a) data elements input to the system
- b) data elements output to the system
- c) all data elements, data structure and data flows
- d) none of these.

ix) Which phase needs maximum effort ?

- a) Requirement Analysis and Design
- b) Design
- c) Testing
- d) Maintenance.

x) System quality relates to its

- a) Reliability
- b) Efficiency
- c) Maintainability
- d) All of these.

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**GROUP – B**

**( Short Answer Type Questions )**

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

2. What are the characteristics of a good SRS document ? 5
3. a) What are the different types of cohesion ?  
  
b) Is it true that in a good design, the modules should have low coupling ? Why ? 3 + 2
4. a) Why we need a computer based information system ?  
  
b) Describe the management structure of a system. 2 + 3
5. What are the differences between throwaway prototyping development and exploratory development model ? 5
6. a) What is an interface ?  
  
b) What are the features of good interface ? 1 + 4



**GROUP – C**

**( Long Answer Type Questions )**

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

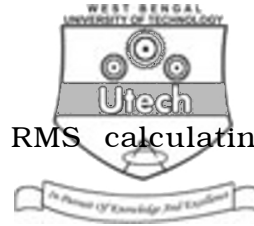
7. a) What is the impact of information systems on our everyday life ?
- b) What is system ?
- c) What is the purpose of a systems study ? What are the basic components of a business system ?
- d) What are different functional and non-functional requirements listed in SRS ?
- e) Why intermediate COCOMO is expected to give more accurate estimates than the basic COCOMO ?

$3 + 2 + 4 + 3 + 3$

8. a) Design an ER diagram for the following University database application.

An university has many departments. Each department has multiple instructor, one of them is the head of the department. An  $n$  instructor belongs to only one department. Each department offers multiple courses, each of which is taught by a single instructor. A student may enroll for many courses offered by different department.

- b) What are the differences between logical and physical data flow diagrams ?
- c) Compare and contrast between DFD and ERD.  $8 + 4 + 3$



9. a) Design a DFD for the following RMS calculating software.

RMS calculating software reads three integer numbers from the user in the range between – 1000 to + 1000 and determine the root mean square ( rms ) of the three numbers and display it.

- b) Draw Decision tree and Decision table for the business situation given below :

Consider a business scenario where a company might base discount amounts on three different values for the condition size of order over \$ 10000, between \$ 5000 to \$10000 and less than \$ 5000. For these three conditions, the actions are : take 3% discount, take 2% discount and pay full invoice amount respectively. Also given payment made within 10 days the above discount is given, otherwise pay full invoice amount. 7 + 4 + 4

10. a) Explain the concept of basic COCOMO Model.
- b) Suppose you are developing a software product in semi-detached mode. You have estimated the size of the product to be about 150,000 lines of code. Compute the nominal effort and the development time.
- c) Calculate the net present value of benefit of a three year long development with an interest rate of 10%, initial investment of \$ 1500 and an annual benefit of \$ 1000.



d) Explain any *two* of the following terms :

- i) HIPO
- ii) Beta Testing
- iii) Conversion of System ( System Implementation ).

4 + 3 + 3 + 5

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

- a) Structure charts
- b) Cyclomatic complexity
- c) File Design
- d) Structured English
- e) Spiral model.

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