Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech(IT-OLD)/SEM-4/IT-401/2012

2012

ANALYSIS AND 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) The first step in the systems development life cycle (SDLC) is

a) Analysis

b) Design

c) Problem/Opportunity Identification

d) Development and Documentation.

ii) The classical life cycle model is also known as

a) Linear sequential model

b) Prototyping model

c) Spiral model

d) None of these.

iii) Which model is completed in very short period ?

a) Spiral model b) Waterfall model

c) RAD model d) All of these.

iv) Requirement specification is carried out

a) after requirements are determined

b) before requirements are determined

c) simultaneously with requirements determination

d) independent of requirements determination.

v) A data dictionary is a list containing details of

a) data element input to the system

b) data element output to the system

c) all data elements, data structure and data flows

d) none of these.

vi) What do you mean by verification ?

a) Are we building the right product

b) Are we building the product right

c) Are we building the good product

d) None of these.

vii) What do you mean by validatioin ?

a) Are we building the right product

b) Are we building the product right

c) Are we building the good product

d) None of these.

viii) ..... design and implement database structures.

a) Programmers

b) Project managers

c) Technical writers

d) Database administrators.

ix) White box testing is also known as

a) Behavioural testing b) Glass box testing

c) Architectural testing d) None of these.

x) What is the full form of COCOMO ?

a) Concurrent cost model

b) Constructive cost model

c) Concurrency cost model

d) Collecting cost model.

GROUP – B
(Short Answer Type Questions)

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

2. What is SDLC ? What are the steps of SDLC ?

3. Differentiate between physical and logical DFD ?

4. Distinguish between validation and verification.

5. What is coupling and cohesion is the context of software design ? What problem is likely to occur if a module has low cohesion ?

6. Explain the terms "Decision support system", "Transaction processing system" and "Expert system".

GROUP – C
(Long Answer Type Questions)

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

7. a) What is requirement analysis ? Explain in detial. 5

   b) Explain Spiral model. 5

   c) "Incremental model is a combination of waterfall model and prototype model." Justify your answer. 5

8. Depict the following problem using 3 × 5

   a) Structured English

   b) Decision Table

   c) Decision Tree.

   A univesity has the following rules for a student to qualify for a degree with Physics as the main subject and Mathematics as the subsidiary :

   i) Marks should be 50 per cent or more in Physics and 40 per cent or more in Mathematics.

   ii) If marks in Physics are less than 50 per cent then marks in Mathematics must be 50 per cent or more. However, Physics marks must be at least 40 per cent.

   iii) If marks in Mathematics are less than 40 per cent but those in Physics are 60 per cent or more, then only examination in Mathematics has to be repeated.

   iv) In all other cases the student fails.

9. a) Draw level-0, level-1, level-2 DFD and required data dictionary for an order processing system. Take necessary assumptions. 7

   b) Differentiate between white box testing and black box testing. 4

   c) Discuss bottom-up and top-down testing of computer program. 4

10. a) What are the basic modelling components of the E-R models ? How would you (Graphically) identify each of them ? 4

    b) The Hudson Engineering Group (HEG) has contacted you to created a conceptual model whose application will meet the expected database requirements for its training program. The HEG administrator gives you the following description of the training group's operating environment :

    The HEG has 12 instructors and can handle up to 30 trainnees per class. HEG offers five "advanced technology" courses, each of which may generate several classes. If a class has fewer than 10 trainees in it, it will be cancelled. It is, therefore, possible for a course not to generate any classes during a session. Each class is taught by one instructor. Each instructor

may teach up to two classes or may be assigned to do research. Each trainee may take up to two classes per session.

Given this information, do the following :

i) Draw the E-R diagram for HEG. 6

ii) Describe the relationship between instructor and course in terms of degree and cardinality. 3

c) What is integration testing ? 2

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

a) Data Dictionary

b) SRS document

c) Feasibility study

d) COCOMO

e) Structure Chart.