Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech(IT)/SEM-4/IT-401/2010

2010

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 : $10 \times 1 = 10$

i) Which model is used for cost estimation ?

a) Waterfall b) Prototyping

c) COCOMO d) Organic.

ii) Unit of effort is

a) month b) PM

c) time d) Rs.

iii) Context diagrams contain

a) one process b) two processes

c) five processes d) seven processes.

iv) During requirement analysis and specification, the user requirements are systematically organized into a

a) file b) SRS

c) table d) chart.

v) Which phase requires maximum effort ?
   a) Requirement analysis and design
   b) Design
   c) Testing
   d) Maintenance.

vi) Case tool is
   a) computer aided software engineering
   b) component aided software engineering
   c) constructive aided software engineering
   d) none of these.

vii) Project risk factor is considered in
   a) waterfall model b) prototyping model
   c) spiral model d) all of these.

viii) The relationship of data elements in a module is called
   a) coupling b) cohesion
   c) modularity d) none of these.

ix) FAN OUT of a component *A* is defined as
   a) number of components related to *A*
   b) number of components dependent on *A*
   c) number of components that are called by *A*
   d) none of these.

x) Which phase is not available is software life cycle ?
   a) Coding b) Testing
   c) Maintenance d) Abstraction.

GROUP – B
(Short Answer Type Questions)

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

2. a) State the differences between an open system and a closed system.

   b) What are the steps in SDLC ? 2 + 3

3. a) What is prototype ?

   b) Draw a systematic diagram of prototyping model of software development. 1 + 4

4. a) What is the purpose of SRS document ?

   b) What are the contents of an SRS document ? 2 + 3

5. a) What are the different levels of testing ?

   b) Distinguish between verification and validation. 2 + 3

6. a) Differentiate between cohesion and coupling.

   b) What is data dictionary ? Explain with examples. 2 + 3

GROUP – C
(Long Answer Type Questions)

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

7. a) What are the different functions of system analyst ?

   b) Why is Spiral model known as Meta model ?

   c) Describe the different Data models.

   d) Describe Feasibility study.

   e) What are the different types of costs and benefits ? Briefly discuss them. 2 + 2 + 3 + 4 + 4

8. a) What are the different tools used in data flow strategy ?

   b) What is the need of structured analysis ?

   c) What are the components of structure analysis ?

   d) What do you mean by context diagram ?

   e) Describe different types of information systems used in an organization. What characteristics distinguish one from another ? What characteristics are similar among each of the systems ? 3 + 2 + 2 + 2 + 6

9. a) Draw the Decision Table and Decision Tree of the following :

If a customer uses electricity for domestics purposes and if the consumption is less than 300 units/month then bill with minimum monthly charges.

Domestic customers with consumption of 300 units or more per month are billed at special rate.

Non-domestic users are charged double that of domestic users. (Minimum and special rates are doubled)

b) State the characteristics of testability.

c) What are the types of software based system testing ?

5 + 3 + 7

10. a) Draw the E-R diagram showing the cardinality for the following problem :

Construct E-R diagram for a car insurance company with a set of cars.

Each car has a number of recorded accidents associated with it.

b) How do you convert an E-R model to a logical record structure ?

c) What are the activities of software maintenance ?

d) What are super key and candidate key ? 4 + 4 + 3 + 4

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

a) Prototyping model

b) McCabe's cyclomatic complexity

c) Structure charts

d) SSADM

e) Waterfall model.