



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/MCA/SEM-2/MCA-202/2011  
2011**

**INFORMATION SYSTEMS ANALYSIS AND 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) The relationship of data elements in a module is called
  - a) Coupling
  - b) Cohesion
  - c) Modularity
  - d) None of these.
- ii) Which of the following is not a phase in the SDLC ?
  - a) Analysing current system
  - b) Defining latest technology
  - c) Designing a new system
  - d) Developing a new system.

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- iii) Alpha testing is done by
- a) customer
  - b) tester
  - c) developer
  - d) all of them.
- iv) Structure Charts are developed
- a) at the time of feasibility study
  - b) during the preliminary investigation
  - c) prior to the writing of program code
  - d) none of these.
- v) Cost-Benefit analysis
- a) compares the cost with the benefits of introducing a computer based system
  - b) estimates the hardware and software costs
  - c) evaluates the tangible and non-tangible factors
  - d) all of these.
- vi) If the number of conditions in a decision table is  $n$ , the maximum number of rules ( columns ) possible, is
- a)  $n$
  - b)  $2n$
  - c)  $2^n$
  - d)  $\log_2 n$ .



- vii) Productivity Quality is defined as
- a) delivering a product with correct requirements
  - b) delivering a product using correct development produces
  - c) delivering a product which is developed iteratively
  - d) delivering a product using high quality procedures.
- viii) With respect to software metrics, which of the following is not true ?
- a) An indirect measure focuses on attributes of a project, which can be measured by examining a process, product or resource
  - b) A direct measure focuses on attributes of a project, which can be measured by examining a process, product or resource
  - c) External attributes are always measured indirectly
  - d) Lines of code is a direct measurement.
- ix) A system can be defined as the
- a) orderly grouping of independent components not linked together according to a plan to achieve a specific objective

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- b) orderly grouping of independent components linked together according to a plan to achieve a specific objective
  - c) orderly grouping of dependent components linked together according to a plan to achieve a specific objective
  - d) orderly grouping of interdependent components linked together according to a plan to achieve a specific objective.
- x) Which model is the meta model ?
- a) Prototyping model      b) Waterfall model
  - c) Spiral model              d) RAD model.

**GROUP – B**

**( Short Answer Type Questions )**

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

- 2. a) Why do you try to minimize coupling and maximum cohesion ?
- b) What are the different types of cohesion ?       $2 + 3$
- 3. a) What factors must be considered prior to system selection ?
- b) What is the difference between Unit Testing and System Testing ?       $2 + 3$



4. a) Define generalization and specialization. What is aggregation ?  
 b) Draw an ERD of a Hospital with all its entity and activity. 2 + 3
5. Consider the following data :

Task	Preceding Task	Duration ( in Month )
A	—	23
B	—	8
C	—	20
D	A	16
E	A	24
F	B, D	18
G	C	19
H	B, G	4
I	F,G	10

Draw a PERT chart for the above activities.

6. State the role of Mc Cabe's cyclomatic complexity.

**GROUP – C**

**( Long Answer Type Questions )**

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

7. a) What do you mean by the term 'risk' in respect of software projects ?  
 b) What do you mean by risk containment ?  
 c) Briefly describe different types of risk.  
 d) Compare and contrast different life cycle models.

2 + 3 + 5 + 5

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8. a) What is DFD ? Discuss shortcomings in DFD.  
b) Differentiate between Logical DFD and Physical DFD.  
c) Draw a Physical DFD for a Payroll System of any organization.  
d) Describe software verification and software validation.  
 $5 + 2 + 5 + 3$
9. a) What do you mean by Object Oriented Analysis and Design Process ? What are the different activities involved in that process ?  
b) What are the differences between Object Oriented and Function Oriented Designs ?  
c) Draw a use case diagram for hospital management system.  
 $5 + 3 + 7$
10. What is normalization ? Why is Normalization necessary ? What are superkey and candidate key ? What is functional dependency ? What is the difference between 2nd NF and 3rd NF relation ?  
 $3 + 2 + 5 + 5$
11. Income tax deduction is made in the month of March from the salary using the following rules :
- If the total income is less than Rs. 20,000 then no tax is deducted
  - If total income exceeds Rs. 20,000 but does not exceed Rs. 30,000, then the 10% of the actual salary is deducted
  - If total income exceeds Rs. 30,000 but does not exceed Rs. 50,000, then the 15% of the actual salary is deducted and Rs. 500 extra amount is charged



- iv) If total income exceeds Rs. 50,000 but does not exceed Rs. 1,00,000, then the 20% of the actual salary is deducted and Rs. 1,000 extra amount is charged
- v) If total income exceeds Rs. 1,00,000, then the 25% of the actual salary is deducted and Rs. 1,500 extra amount is charged
- a) Prepare a Decision Table
- b) Prepare a Decision Tree
- c) Prepare a structured English. 5 + 5 + 5

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