



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



- 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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