| | Utech |
|---------------------------|-------------------------------------|
| Name: | |
| Roll No.: | The Beautiful Standing and Standard |
| Invigilator's Signature : | |

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 :

 $10 \times 1 = 10$

- 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.

2054 [Turn over

- Alpha testing is done by iii)
 - customer a)



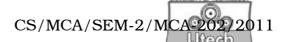


- c) developer
- d) all of them.
- Structure Charts are developed iv)
 - at the time of feasibility study a)
 - b) during the preliminary investigation
 - prior to the writing of program code c)
 - d) none of these.
- Cost-Benefit analysis v)
 - compares the cost with the benefits of introducing a) a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

b) 2n

 2^n c)

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
 - 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.

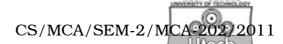
GROUP - B

(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

2054 4



- 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 |
| В | _ | 8 |
| С | _ | 20 |
| D | A | 16 |
| Е | A | 24 |
| F | B, D | 18 |
| G | С | 19 |
| Н | 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. $3 \times 15 = 45$

- 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.

$$2 + 3 + 5 + 5$$



- 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:
 - i) If the total income is less than Rs. 20,000 then no tax is deducted
 - ii) If total income exceeds Rs. 20,000 but does not exceed Rs. 30,000, then the 10% of the actual salary is deducted
 - iii) 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

2054

- 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

2054 7 [Turn over