

**INFORMATION SYSTEM ANALYSIS AND DESIGN
(MCA1105)**

Time Allotted : 2½ hrs

Full Marks : 60

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 4 (four) from Group B to E, taking one from each group.*

Candidates are required to give answer in their own words as far as practicable.

Group – A

1. Answer any twelve:

12 × 1 = 12

Choose the correct alternative for the following

- (i) Strategic information is needed for
(a) Day to day operations (b) Meet government requirements
(c) Long range planning (d) Short range planning.
- (ii) Operational information is
(a) Haphazard (b) Well organized
(c) Unstructured (d) Partly structured.
- (iii) The responsibilities of a system analyst include
1. Defining and prioritizing information requirement of an organization
2. Gathering data, facts and opinions of users in an organization
3. Drawing up specifications of the system for an organization
4. Designing and evaluating the system
(a) 1 and 2 (b) 1, 2 and 4
(c) 1, 2, 3 and 4 (d) 1, 2 and 3.
- (iv) What is the primary goal of cost-benefit analysis in feasibility analysis?
(a) To maximize the system's performance
(b) To compare the costs and benefits of alternative solutions
(c) To minimize the time for system deployment
(d) To increase the system's scalability.
- (v) Which of the following best describes a Data Flow Diagram (DFD)?
(a) A graphical representation of data processing in a system
(b) A textual description of system requirements
(c) A type of database schema
(d) A project management tool.
- (vi) Decision table description of data processing is
(a) non-procedural specification (b) procedural specification
(c) purely descriptive specification (d) very imprecise specification.

- (vii) In an Entity-Relationship model, by relation cardinality we mean
 - (a) number of items in a relationship
 - (b) number of relationships in which an entity can appear
 - (c) number of items in an entity
 - (d) number of entity sets which may be related to a given entity.
- (viii) Entities are identified from the word statement of a problem by
 - (a) picking words which are adjectives
 - (b) picking words which are nouns
 - (c) picking words which are verbs
 - (d) picking words which are pronouns.
- (ix) In form design, what is the purpose of form controls?
 - (a) To facilitate user interaction
 - (b) To ensure the security of data entry
 - (c) To enforce consistency and prevent errors
 - (d) To enhance system audit processes.
- (x) Which type of control is essential for ensuring that input data is accurate and complete?

(a) Output controls	(b) Input data controls
(c) System audit controls	(d) Network controls.

Fill in the blanks with the correct word

- (xi) _____ process models are iterative in nature and produce working versions of software quite rapidly.
- (xii) _____ is an agile software development method that was conceived by Jeff Sutherland and his development team in the early 1990s.
- (xiii) The context diagram in a DFD represents the system's _____ environment.
- (xiv) A _____ is a set of attributes that are unique to a weak entity but are not enough to identify the entity on their own.
- (xv) One of the main objectives of form design is to provide a _____ user experience.

Group - B

- 2. (a) Distinguish between data and information. Give an example of data and information obtained by processing that data. [[CO1](Apply/IOCQ)]
- (b) Explain the key principles of Agile methodology and how they differ from traditional Waterfall methodology. Provide an example to illustrate the difference. [[CO2](Analysis/IOCQ)]
- (c) Discuss what may be the operational information needs of a Hospital. [[CO1](Apply/IOCQ)]

4 + 4 + 4 = 12

3. (a) What is operational information? In what way is it different from strategic information? For hospital information system what would be the operational information required? *[[CO1](Analyse/IOCQ)]*
- (b) Compare and contrast the Incremental Process Model and the Evolutionary Process Model in software development. *[[CO2](Analyse/IOCQ)]*
- 6 + 6 = 12**

Group - C

4. (a) Explain the significance of information gathering in the context of system development. *[[CO3](Understand/LOCQ)]*
- (b) Discuss the different strategies and methods for gathering system requirements, highlighting their pros and cons. *[[CO3](Remember/LOCQ)]*
- 4 + 8 = 12**
5. (a) What is the difference between logical and physical DFDs? *[[CO4](Understand/LOCQ)]*
- (b) A company wants to develop an online shopping system. The system should allow customers to browse products, add them to a shopping cart, and place orders. The system should also support payment processing and order tracking. Draw a Level 1 DFD for the online shopping system that includes the following processes:
- I. Product Catalog Management
 II. Shopping Cart Management
 III. Order Processing
 IV. Payment Processing
 V. Order Tracking.
- [[CO4](Apply/IOCQ)]*
- 4 + 8 = 12**

Group - D

6. (a) The policy followed by a company to process customer orders is given by the following rules:
- (i) If the customer order \leq that in stock and her/his credit is OK, supply her/his requirement.
- (ii) If the customer credit is not OK do not supply. Send her/him an intimation.
- (iii) If the customer credit is OK but items in stock are less than her/his order, supply what is in stock. Enter the balance to be sent in a back-order file.
- Obtain a decision table for the above policy. *[[CO4](Apply/IOCQ)]*
- (b) Differentiate between specification oriented design and procedure oriented design. *[[CO4](Analyse/IOCQ)]*
- 6 + 6 = 12**
7. (a) Draw an ER diagram for a library management system where books, borrowers, and staff are entities, and they have relationships such as borrowing and managing. *[[CO4](Apply/IOCQ)]*

- (b) Analyse the benefits and drawbacks of using decision tables for making decisions in the design of an information system.

[[CO4](Analyse/IOCQ)]

6 + 6 = 12

Group - E

8. (a) Evaluate the process of validating input data, emphasizing its role in maintaining data accuracy.

[[CO5](Analyse/IOCQ)]

- (b) Elaborate steps in data capture process.

[[CO5](Remember/LOCQ)]

6 + 6 = 12

9. (a) Explain the difference between risk analysis and threat analysis in system security.

[[CO6](Analyse/IOCQ)]

- (b) Identify and discuss different types of threats to computer systems and propose control measures for each.

[[CO6](Apply/IOCQ)]

4 + 8 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	22.92	77.08	0