MASTER OF COMPUTER APPLICATIONS (MCA) (REVISED)

Term-End Examination

June, 2025

MCS-032 : OBJECT ORIENTED ANALYSIS AND DESIGN

Time : 3 Hours   *Maximum Marks : 100*

Note : *Question No.* **1** *is compulsory. Attempt any* **three** *questions from the rest.*

1. (a) Identify class, objects, generalization and association in the context of a library management system :   5

    (i) Library-Book

    (ii) Book-Fiction

    (iii) Librarian-Patron

    (iv) Computer

    (v) Member-Premium Member

(b) Differentiate between structural and behavioral diagrams. 5

(c) In ABC Hospital, the staff members are categorized as doctors and nurses. The main services provided by the hospital are patient admission, patient discharge, medical consultation, medical tests, prescription issuing and surgery scheduling. The hospital administration wants to computerize the entire operation. Draw the following diagrams to computerize the system. Make necessary assumptions : 5+5

   (i) Class diagram

   (ii) Sequence diagram

(d) What is generalization ? Where is it used and why ? Explain with an example. 5

(e) Draw DFDs upto level 2 for online examination system. Make necessary assumptions. 10

(f) Differentiate between a Relational Databases and Object Oriented Databases. 5

2. (a) Explain the following terms with appropriate examples : 5+5

   (i) Design Optimization

   (ii) Persistency

   (b) What is state chart diagram ? Explain basic implementation strategy of state chart with an example. 10

3. (a) Briefly discuss the object modeling, dynamic modeling and functional modeling. Also, describe the relationship among them. 10

   (b) What is Deployment diagram ? Draw Deployment diagram for online examination system. 10

4. (a) List the diagrams used in object modeling. Draw an object diagram for library management system, which manages books, members and borrowing transactions. 10

(b) How would you map classes to tables in a relational database for a school system that manages students, teachers and courses ? Provide an example to illustrate the mapping process.   10

5. (a) Draw a use-case diagram for a restaurant booking system. Identify actors and use-cases.   10

(b) What is concurrency in a transaction ? How are concurrencies identified ? Briefly discuss the concept of aggregation concurrency in a state diagram.   10

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