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BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)
EXAMINATION : DECEMBER - 2022
SEMESTER – V
Sub : Unified Modeling Language (BCA-546-18, BCA-546-20, BCA-641)

Object Oriented Modeling & Design (BCA-CS-546-20)

Date : 19/ 12/2022   **Total Marks : 60**   **Time: 10.00 am to 12.30 pm**

Instructions:
1. *All questions are compulsory unless and otherwise stated.*
2. *Bold figures to the right of every question are the maximum marks for that question.*
3. *Candidates are advised to attempt questions in order.*
4. *Answers written illegibly are likely to be marked zero.*
5. *Use of scientific calculators, Log tables, Mollier Charts is allowed.*
6. *Draw neat and labelled diagrams wherever necessary.*

Q.1.   **Case Study**   **(20)**

"Develop a **Student Registration System** in which student gets enroll in a semester. The semester contains courses. Each course has a title and course Code. The course can be registered, dropped, withdraw, passed and failed by the students. Also a semester may be freezed or attended. There are two kinds of students; Undergraduate Students (for BCS & MCS) and Postgraduate Students (for MPhil & PhD). Each type of students enrolls in different ways."

Draw the following diagram for above problem statement.
   a. Activity Diagram
   b. Class Diagram
   c. Use case Diagram

Q.2.   **Solve (Any two)**   **(30)**

1. A Library lends books and magazines to member, who is registered in the system. It also maintains the purchase of new books and magazines for the Library. A member can reserve a book or magazine that is not currently available in the library, so that when it is returned or purchased by the library, that person is notified. The library can easily create, replace and delete information about the books, members, and reservation in the system. The books transactions are stored in the database. The fine list while the member returns the book after the due date must be generated. Analyze the users and actors of this system, and the interactions between them must be depicted.

   Draw the following diagram for above problem statement.
   a. Use case diagram.
   b. Sequence diagram.
   c. Class diagram.

2. Explain Object oriented concept of UML in detail.

3. Draw sequence diagram, activity diagram and class diagram for ordering food online from zomato/swiggy app.

Q.3. **Answer the following in 2-3 lines (Solve any 5)** **(10)**

1. Define the transitions and guards in activity diagram.

2. What are different types of relationships in building blocks of UML?

3. What is the difference between a flow chart and activity diagram?

4. Define synchronous message and asynchronous message.

5. Explain principles of modeling.

6. Give difference between Include and Extend relationship in use case.

7. Design an activity diagram for purchasing a book online. State the your assumptions

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