KUMARAGURU
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Register Number:……

MCA DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2020)

Third Semester

MASTER OF COMPUTER APPLICATIONS

P20CAE0002: Object Oriented Analysis and Design

COURSE OUTCOMES

CO1: Understand the basic concepts to identify state and behavior of real world objects.

CO2: Apply the various object oriented methodologies and choose the appropriate one for solving the problem with the help of various case studies.

CO3: Understand the concept of analysis, design and testing to develop a document for the project.

CO4: Implement analysis, design and testing phases in developing a project using object orientation.

CO5: Understand and apply testing techniques for object oriented software.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

1.	Even though the OOAD ideas of abstraction and encapsulation both assist us in hiding the fundamental features of class properties, how do they vary from one another?	CO1	[K_2]
2.	Tell us the difference between activity and sequence diagrams.	CO2	[K_2]
3.	Which model suits to describe the timely behaviour of an Object over a period of time? Brief the model.	CO2	[K_3]
4.	List the criteria for identifying super-sub class relationships.	CO3	[K_1]
5.	Diagrammatically describe the aggregation to represent the relationship of Engine and Radio are part of Car; Carburetor is a part of Engine.	CO3	[K_3]
6.	How will the visibility of attributes in a "class" be determined?	CO4	[K_2]
7.	Brief the characteristics of Object Oriented Design.	CO4	[K_1]
8.	Define Object persistence.	CO4	[K_1]
9.	What is a view layer and its responsibilities?	CO4	[K_1]
10.	List out the different types of testing strategies.	CO5	[K_1]

PART B (6 x 5 = 30 Marks)

11.	Compare Rumbaugh, Booch and Jacobson Object oriented Modeling methodologies.	CO2	[K_2]
12.	A patient record and scheduling system in a doctor's office is used by the receptionists, nurses, and doctors. The receptionists use the system to enter new	CO3	[K_6]

patient information when first-time patients visit the doctor. They also schedule all appointments. The nurses use the system to keep track of the results of each visit including diagnosis and medications. For each visit, free form text fields are used captures information on diagnosis and treatment. Multiple medications may be prescribed during each visit. The nurses can also access the information to print out a history of patient visits. The doctors primarily use the system to view patient history. The doctors may enter some patient treatment information and prescriptions occasionally, but most frequently they let the nurses enter this information. -- Each patient is assigned to a family. The head of family is responsible for the person with the primary medical coverage. Information about doctors is maintained since a family has a primary care physician, but different doctors may be the ones seeing the patient during the visit.
Draw a use-case diagram for the aforementioned case study and discuss each one.

13. Detail the different types of coupling among objects. CO4 [K_1]

14. Distinguish OODBMS from the conventional, widely used RDBMS CO4 [K_2]

15. Discuss the process of designing view layer classes. CO4 [K_1]

16. How Usability testing differs from other testing. Describe the phases of Usability Testing. CO5 [K_2]

Answer any FIVE Questions

PART C (5 x 10 = 50 Marks)

17. Describe development life cycle of an object-oriented system. CO1 [K_1]

18. Our team has been asked by your management to assist with computerizing your library. Your library's features were examined by our system analyst team, who then provided the analysis report below. CO2 [K_6]

KCT library database needs to store information pertaining to its users (or customers), its workers, the physical locations of its branches, and the media stored in those locations. We have decided to limit the media to two types: books and videos. The library must keep track of the status of each media item: its location, status, descriptive attributes, and cost for losses and late returns. Books will be identified by their ISBN, and movies by their title and year. In order to allow multiple copies of the same book or video, each media item will have a unique ID number. Customers will provide their name, address, phone number, and date of birth when signing up for a library card. They will then be assigned a unique user name and ID number, plus a temporary password that will have to be changed. Checkout operations will require a library card, as will requests to put media on hold. Each library card will have its own fines, but active fines on any of a customer's cards will prevent the customer from using the library's services. The library will have branches in various physical locations. Branches will be identified by name, and each branch will have an address and a phone number

associated with it. Additionally, a library branch will store media and have employees. Employees will work at a specific branch of the library. They receive a paycheck, but they can also have library cards; therefore, the same information that is collected about customers should be collected about employees.
Functions for customers:

- Log in
- Search for media based on one or more of the following criteria:
  - type (book, video, or both)
  - title 3
  - author or director
  - year
- Access their own account information:
  - Card number(s)
  - Fines
  - Media currently checked out
  - Media on hold
- Put media on hold
- Pay fines for lost or late items
- Update personal information:
  - Phone numbers
  - Addresses
  - Passwords

Functions for librarians are the same as the functions for customers plus the following:

- Add customers
- Add library cards and assign them to customers
- Check out media
- Manage and transfer media that is currently on hold
- Handle returns
- Modify customers' fines
- Add media to the database
- Remove media from the database
- Receive payments from customers and update the customers' fines
- View all customer information except passwords

For implementation, our team has chosen to use an object-oriented paradigm. Being an authority, Make a UML diagram.

19.	Deliberate various approaches for identifying classes.	CO3	[K_1]
20.	Could you please explain why designers are favoring MVC patterns? Also, characterize its architecture.	CO4	[K_4]
21.	Do you feel that User Interface design is much important? If yes, Justify your answer and describe the User Interface development process.	CO4	[K_4]
22.	Explain the significance of the Test Case and Plan. Also describe the procedures to be used in creating it.	CO5	[K_2]

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