

**MCA 3 Year I -Semester Practical Examination ( Main)**

**Sub:- Object Oriented systems Development Lab (OOSD LAB IX)**

**Question Bank**

1. *Draw Use case Diagram & Activity diagram with swim lane for the front office system in a 5- star hotel described below.*

Front office of any hotel is responsible for all room reservations, room allocations and final settlement of bills. Any company or person can reserve rooms for their future stay. They have to indicate from what date to what date they need the room. They also have to indicate how many rooms are required. Sometimes the reservations could be cancelled or dates or number of rooms changed. For reservation, cancellation or modification of rooms, customer receives an acknowledgement from the hotel.

2) *A major distributor of office supplies has a set of criteria for preparing bills. When the customer places the order one of the sales staff prepares the order and writes the bill, if there is an insufficient quantity of items on hand, the back order is set up for missing items. The available items are shipped and bill is prepared. The cost is billed for the back order items when they are shipped. Wholesale customers are eligible for discount if they purchase minimum of 100 items. Retail customers are not eligible for any discounts irrespective of the number of items ordered. All retail customers pay sales tax, wholesale customers don't pay any tax provided they have state tax exemption. All bills are mailed to customers. Draw use case diagram and also draw sequence diagram for one of the scenario*

3) *A century system is the statistics provider organization of all the first class cricket matches conducted across the world round the year. They compile all the statistics of the players in terms of matches played, venues, country, match type (test/one-day). For each match, statistics is compiled for each player i.e., runs scored in each innings, wickets and catchers taken, run outs, number of fours and sixes hit etc., The Company wants to develop a computer application to compile these statistics*

4) *SAM's Couriers Limited intends to computerize the recruitment process. The advertisements for a particular post appear on their website. The candidates are called for interview based on the eligibility criteria which varies from post to post. Information regarding the eligibility and vacancies is maintained in a database. The candidate is selected based on written test*

and interview. Once selected, the candidate is under probation for one year. In this period the candidate is not eligible for any special leaves and benefits. After completion of the probation period the manager evaluates the candidate's performance and will be given an appointment letter with a unique employee id. Draw use case diagram for the given scenario. Also draw the sequence diagram for one of the scenarios.

5) In a Business school, once a student is admitted, he/she will be assigned a counsellor. The student has to report to the counsellor & fill his/her personal details in the counselling file. Student's queries/problems are addressed by the counsellor, which is also recorded in the counselling files. The Principal of the school monitors the process of counselling i.e. the problems reported by the student and actions taken by the counsellor. As the strength of the school has increased, it is not possible for the principal to monitor the counselling process manually. Draw the use case diagram and activity diagram with swim lanes.

6) OTOS's pharmacy is the distributor of various pharmaceuticals products. They have a huge network of customers. The registered customers can only book orders for the specified product. If the specified product is available the required quantity is checked against the quantity on hand (QOH). If the required quantity is less than QOH a delivery challan is prepared. After the delivery of the product an Invoice is prepared by accountant which contains the cost of ordered items, deductions if any (in case of damaged or lost goods) and previous outstanding balance. Then the invoice is sent to the customer. Draw the use case diagram with use case specifications. Draw the sequence diagram for prepare invoice scenario

7) Global group requires a system to be developed for maintenance of leaves in their organization. There are different types of leaves: Casual leaves, Medical leaves, Earned leaves and special leaves. These leaves vary from employee to employee. If the employee is regular he can avail all types of leaves. An ad-hoc employee can only avail casual leaves. The medical and earned leaves can be credited in the employee's account. The maximum limit of the credit is 240. Further if an employee has availed all the leaves his salary may be deducted. Draw use case diagram and also draw the class diagram for the given scenario

8) An online railway reservation consists of the following activities. A Passenger can reserve a ticket, cancel a ticket and enquiry. Each train has limited number of reserved seats. Once a passenger cancels a ticket, required amount is deducted and the waiting list passenger is allotted the seat. Passenger may also

book a ticket in tatkaal scheme by paying additional amount. Passenger who booked the ticket under tatkaal scheme can't get any refund if the ticket is cancelled. The chart is prepared two hours before the departure of the train. Draw class diagram for the given scen

9)An organization is interested in developing new student registration system. The system allows students to register for courses and view reports cards from PC attached to the campus LAN as well over the internet. Professors will be able to access the system to sign up to teach courses as well as record grades of students. The registrar's office will continue to maintain course information through another system. At the beginning of each semester, students may request a course catalogue, containing list of course offerings for that semester. Information about each course, such as professor, dept and prerequisites will be included. Course offerings will have maximum of 10 students and minimum of 3 students. Once registration process is completed for a student the registration system sends information to the billing system so that student can be billed for semester. Professors must be able to access the online system to indicate which courses thy will be teaching. Draw class diagram and model sequence diagrams for any two scenarios.

10)The H.I Top School of Business operates international business programs in 10 locations throughout Europe. The school had its first class of 9000 graduates in 1965. The school keeps track of each graduate student. In order to maintain strong ties to its alumni, the school holds various events around the world. The school needs to keep track of which graduates have attended which events. For an attendance by a graduate at an event, a comment is recorded about information. A report is produced showing the latest information about that graduate & the information learned during the past two years from that graduate from all contacts & events the graduates attended. Since the strength of the student is increasing day by day. Draw class diagram and sequence diagram for any one of the scenario.

11)The Zero bicycle company builds custom bicycles. It has a comprehensive help system that describes the company and the individual forms. The database contains realistic data for hundreds of customers and bicycles. One of the most important tasks at the zero bicycle company is to take orders of new bicycles. Several features have been included to help non-experts select a good bicycle. As the bicycles are built, the employees record the construction on the Assembly form. When the bicycle is shipped, the customers are billed. Customer payments are recorded in the financial forms. As components are installed on bicycles, the inventory quantity is automatically decreased. Merchandise is ordered for suppliers and payments are made when shipment arrives. Draw the use case diagram and class diagram

12)The book club has members. The book clubs sells books to its members. The member places orders for books, which the book club full fills. Each order contains one or more than one books. The books are written author(s). The publisher publishes the book. An author can write more than one books and a book can have more than one author. A book is published by a publisher, but a publisher publishes many books. A member can place more than one order. The member also can choose not to place an order. The book club sells many books. Draw a use case diagram with suitable relationships between use cases and model a class diagram.

13)LAH University offers P.G program for working men. Candidates submit the application form to the registrar. The registrar's office issues call letters to the candidates for writing the written test based on the following criteria: The first criterion for selection is that the candidate should be an engineering graduate or must have a PG degree (non-engineering). The second criterion is that the candidate should put a minimum of 2 years full time experience after the qualifying degree. The candidates qualified in written test are called for spot admissions and the seats are allotted based on the following distribution of seats: 30% of seats are reserved for ST, 10% for SC, 10% for BC & 20% for women and the remaining seats are under open competition. Draw a use case diagram.

14)A customer is charged for using various data services on the mobile network. When a call is made the signal is sent to the tower. The tower has a switch in which the files are stored. Each call which is made is stored in form of a record in the file. This file consists of a header which will give the number of records present. The record will consist of information such as (i) From which number the call was made (ii) To which number (iii) call duration (iv) pulse rate, etc. This will differ from call to call (Local, STD, ISD). Draw use case diagram and sequence diagram for one of the scenario.

15)You have been hired to design a system for small health care organization. The clinic consists of several examining rooms and few rooms for short term critical care patients. A core staff of seven physicians is supplemented by internists from a local teaching hospital. Patient's medical data is stored in the central database. Patients first sign in at the front desk. Clerk checks the billing records, prints a summary status sheet and obtains file number from the system. The clerk then selects the examination room for the patient based on the case. After waiting for the physician, the clerk moves the data packet and the patient to the examination room. A nurse records basic medical data (weight, B.P etc). The physician makes additional notes to both the medical and billing data and generally writes the prescription order which is given to the patient and recorded on the charts. When the patient leaves, the clerk

enters the new billing data into the system (if any). The new billing data is forwarded to appropriate insurance company. Identify the classes and draw the class diagrams with appropriate relationships, multiplicities etc.

16)OU's Central library issues books to the staff and students. Students can avail 3 books and staff can avail max of 5 books. The books are issued to the students for a period of one month. Thereafter a fine of Rs. 1/- for each day is charged. The faculty members don't pay any fine. However they have to return the book at the end of semester. The Library receives the requisition from various departments to new books. Once it is approved the order is placed to the various vendors. University gives an order of the books to a particular vendor based on the competitive prices they offer.

17)Mega super market has three checkout counters. In order to improve the checkout process a PC has been set up at each of these counters along with the printer. Each item in the super market is packed & each packet carries on it a price tag on which are printed its item code and price. Each customer picks out the desired packet from the shelves place them in the standard shopping basket supplied by the super market and carries the basket to one of the checkout counters. The counter operator takes out each of the packets from the basket, keys in the 12 digit item code. The amount is collected from the customer and a bill is printed and issued to the customer. Identify the classes and draw class diagram with suitable relationships, multiplicities and roles.

18)A laboratory has several chemists who work on one or more projects. Chemists (Empid, Name, Phone no) also may use certain kinds of Equipment (Serial no, cost) on each project (Projectid, start date). The organization wishes to record assign- date i.e., the date when the given equipment item was assigned to a particular Chemist working on a specified project, as well as total number of hours the chemist has used the equipment for the project. The chemist must be assigned to at least one project and one equipment item. Draw the use case diagram and class diagram.

19)An Online examination system maintains a huge database of questions which are classified according to different parts of the syllabus and also according to difficulty level. In the beginning a student is considered to be an average student with a percentile of 50 and is given questions of medium difficulty randomly from the total syllabus. From here the type of questions presented varies according to the performance. The score starts with a value equal to the score obtained by a person with a percentile of 50. The score is calculated after every question and the change in score depends on difficulty

level of the question. There is a restriction on the minimum number of questions of each type and a test taker may get more questions in any particular section if his performance in that section is below his overall performance. Draw sequence Diagram

20. Draw the Sequence Diagram for Software Development Life Cycle
21. Draw the Class Diagram for a customer order from retail catalog. (Class: orders, Customer, Payment, cheque or credit and items)
22. Draw a State Chart diagram for logging onto online banking system. The logging consisting of SSN, PIN, Validating and rejecting.
23. Draw an activity diagram for withdrawing money from a bank account through an ATM
24. Perform Unit and integration testing using testing tool.
25. Draw the interaction diagram for Credit card processing System.
26. To withdraw cash from a bank account, draw a Use case diagram and activity diagram.
27. Draw the State Chart Diagram for ATM System.
28. Draw the interaction diagram for online admissions
29. Draw the Activity diagram for Online Auction.
30. Draw the State chart Diagram for Online shopping.