

**VIT**Vellore Institute of Technology
(Narasimharajapuram)

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School of Information Technology and Engineering**Fall Semester 2022-2023 - Fresher****Continuous Assessment Test – I****Programme Name & Branch: MCA****Course Name & code: Object Oriented Software Engineering****Class Number (s):** VL2022230106231, VL2022230105113**Slot: EI+TF1****Faculty Name (s): Prof. Sweta Bhattacharya, Ms. Nagalakshmi Vallabhaneni.****Exam Duration: 90 Min.****Maximum Marks: 50****General instruction(s):**

Q.No.	Question	Max Marks
1.	a) Analyze the stakeholders for the Air Traffic control scenario (4) b) Applying the same scenario, consider that the requirement uncertainties are really high and schedule is extremely tight, what SDLC will you adopt? Identify the advantages or disadvantages of the model. (6)	10
2.	Create a class diagram for an Inventory management system (or) online E-commerce portal.	10
3.	Write a Java/ C++ program for a banking system which has savings and checking account. Explain the conceptual use of inheritance and polymorphism.	10
4.	Evaluate the functional and nonfunctional requirements for Movie Ticket Booking system.	10
5.	For the Movie Ticket Booking system in Question 4, identify the use cases and actors. Draw a use-case diagram wherein the diagram should have "include" and "extend" relationships	10



School of Information Technology and Engineering

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Continuous Assessment Test – II

Programme Name & Branch: MCA

Course Name & code: ITA5005 Object Oriented Software Engineering

Class Number (s): VL2022230105113, VL2022230106231

Slot: F1+TF1

Faculty Name (s): Prof. Sweta Bhattacharya & Prof. Nagalakshmi V

Exam Duration: 90 Min.

Maximum Marks: 50

General instruction(s):

Q.No.	Question	Max Marks
1.	<p>The goal is to develop a system which enables all citizens to cast their vote online, thereby increase the voting percentage across the country, as in the present system people have to visit the booth to cast their vote and those people who live out of their home town are not able to cast vote during the elections. The software produced will be an online voting system. The software will be used by citizens to cast their vote online, it will also calculate the voting percentage and may be used by candidates for online registration of voter and for online nomination forms of the candidates. Using the software people get their voter-id card easily and each voter will get a unique id no. to cast their valuable vote. It will maintain the database of all the eligible citizens and candidates. It will manage all the account details of the voters such as citizen name, date of birth, their constituency area, region, state, login id and password of the voter and also of the candidate from one central location.</p> <p>Considering the above requirement, draw an Activity diagram in detail. (10)</p>	10
2.	<p>Considering the Scenario mentioned in Question 1, Draw a Sequence Diagram. (10)</p>	10
3.	<p>You have been asked to develop a web-based ticket reservation system for the Southern Indian railways. The Southern Indian Railways has approximately around 300 major Railways Stations. The Railways wants to reduce the waiting time of the passengers by automating the ticket reservation process. The passenger will mention their reservation details by writing it in the reservation form to the ticket issuer. On receiving the reservation form from the passenger, the ticket issuer will enter the details in the online ticket issue form by retrieving necessary details from the central database. The ticket issuer checks whether the specified train has enough number of seats, births and requested class in the specified date. Then if all the conditions are fine and if the passenger makes confirmation, the</p>	10

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	<p>ticket issuer collects the money from the passenger and returns the tickets with relevant information printed on the tickets with balance amount if any. The ticket issuer updates in the central database. The ticket issuer also checks whether the passenger is a senior citizen. If he/she is so, then only 50% of the ticket cost is taken. If the passenger tickets are in waiting list he can keep track of his ticket number and can check his confirmation by browsing Indian railways web site. If the passenger wants to cancel the tickets within 24 hours of journey date his/her cancellation is made and 40% of the ticket cost is returned back. If he/she cancels the ticket before 24 hours of journey only 20% of ticket cost is taken and rest is returned. Then the system allots the cancelled seat/birth to the passenger who is at present in top position in the waiting lists and his/her seat/births confirmed. Considering the above requirement, Draw a Data Flow Diagram - Level 0 and Level 1.</p>	
4.	Considering the Scenario mentioned in Question 3, Draw a State Transition Diagram. (10)	10
5.	Assuming that you are developing an ecommerce system which primarily sells women apparel. While designing the user interface for this system, how would you differentiate between utility and usability? Also mention the approaches that you would take for evaluating the user interface. (8+8)	10



KEEPING MOBILE PHONE/SMART WATCH, EVEN IN 'OFF' POSITION, IS TREATED AS EXAM MALPRACTICE

Answer ALL Questions

(10 X 10 = 100 Marks)

1. Discuss the most appropriate SDLC model that you would choose to develop a **Weather Forecasting System**. Enlist the advantages and disadvantages of the chosen model. Also highlight the difference between evolutionary and throw-away prototyping model. [2+5+3]
2. Consider the scenario of an Online Purchase and Transaction management system for a reputed five star hotel chain. The objective of the system is to automate all the activities starting from purchasing ingredients, tools and maintenance of the kitchen. The system should maintain a detailed account of all provisions bought and food served at the Hotels. Several inquiry facilities should also be provided to view expenses incurred, planned menus/cash payment. The system should keep an account of the list of items served with rates, daily menu preparation, daily transactions, availability of information on intranet for reports and inquiries, inventory, purchases, issues and generation of profit report.
For this system enlist all the functional and non-functional requirements.
3. For the scenario in Question 2, Draw a detailed activity diagram.
4. A group diary and time management system is intended to support the timetabling of meetings and appointments across a group of co-workers. When an appointment is to be made that involves number of people, the system finds a common slot in each of their diaries and arranges appointment for that time. If no common slots are available, it interacts with the user to rearrange his or her personal diary to make room for the appointment. Draw a sequence diagram showing the interactions of objects in a group diary system when a group of people arrange a meeting and also draw a state chart showing the possible state changes in one or more objects that is being defined in the application.
5. Consider developing an Enterprise Resource Planning (ERP) for Students Information System. The proposed ERP system should maintain all information related to all the students in the University. The system should allow the students to view their attendance reports, academic reports, upload project details, and download the study materials posted by their concerned faculty. Draw a detailed Class Diagram for this application.
6. The objective of developing quality user interfaces is to “provide the right information at the right time and in the right way” – Justify the statement by highlighting the interface design principles.
7. Compare and contrast between coupling and cohesion relationship describing the types of both with appropriate example.

8. Assuming your organization is intending to move from the traditional software development approach to software reuse based development, discuss the principles that you would follow to be successful in the reuse business.
9. "Architectural patterns are similar to software design pattern but have a broader scope" – Considering this statement, discuss the most commonly used architectural design patterns focusing on their usage, pros and cons.
10. Highlight the impediments in scrum with appropriate examples. Is it ever suggested to use a traditional software development approach over Scrum? If yes, explain when? [7+3]

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