

UNIVERSITY OF MUMBAI
Practical Examination – November 2017
M.C.A Semester – III
LABORATORY L302
[JAVA + UML]

Duration: 3 hours

Seat No:_____

Marks: 40 Marks

General Instructions:

- *A practical consists of two parts: Part A (JAVA) and Part B (UML.) where*
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PART B (15 Marks)

Q.2 A)	<p>Consider the world of libraries. A library has books, videos, and CDs that it loans to its users. All library material has a id# and a title. In addition, books have one or more authors, videos have one producer and one or more actors, while CDs have one or more entertainers. The library maintains one or more copies of each library item (book, video or CD). Copies of all library material can be loaned to users. Reference only material is loaned for 2hrs and can't be removed from the library. Other material can be loaned for 2 weeks. For every loan, the library records the user, the loan date and time, and the return date and time. For users, the library maintains their name, address and phone number.</p> <p>Draw class diagram.</p>	10
B)	<p>Show the hardware architecture using the deployment diagram for an online travel agency.</p>	5

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PART B (15 Marks)

Q. 2 A)	Make a Use Case Diagram for online movie rental system. Movies are available in DVD and Blue-Ray. User can search for a movie, rent or return it. The system must be able to immediately answer any inquiries about a movie's stock availability and how many disks are available for rental. The system also helps to maintain inventory & generate reports.	10
B)	Create a documentation of Above Diagram generating by Templates.	5

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Q. 2	A)	<p>Consider an online reservation system for a bus company. The bus company includes several buses and realizes trips to different cities. Each bus is identified by its plate number and a separately assigned bus number. The trips are based on a predefined schedule and stop at predefined bus stations. Each bus can have only one trip per day. Seats can be reserved by customers on the web site of the bus company. The customer has the option to directly pay for the seat through the website. In that case, the seat cannot be cancelled (neither by the customer nor by the bus company). If the customer has not paid for the seat, the bus company can cancel the seat if the customer does not show up one hour before the trip. When the reservation is cancelled, the seat will become free and can be sold to another customer. Both the customer and the company staff must authenticate themselves for performing operations with the system.</p> <p>Draw a class diagram.</p>	10
	B)	<p>Show the hardware architecture using the deployment diagram for an online travel agency.</p>	5

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Q.2 A)	Draw use case diagram for School Management System. Make your own assumptions.	10
B)	Draw State chart diagram for Telephone System where caller calls and do conversation.	5

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	B)	Draw an Interaction Overview diagram for ATM.	5

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Q.2 A)	Create an Activity Diagram for the following scenario - A customer wants to draw money from his bank account. He enters his card into an ATM & enters his PIN when asked. The ATM (internally) retrieves the bank account number from the card. The ATM encrypts the PIN and the account number and sends it over to the bank. The bank verifies the encrypted Account and PIN number. If the PIN number is correct, the ATM displays “Enter amount“, draws money from the bank account and pays out the amount to the user.	10
B)	Draw State transition diagram for Washing Machine system.	5

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PART B (15 Marks)

Q. 2 A)	A scenario for booking bus could be - passenger Ali lists all scheduled busses from Delhi to Agra on December 31, 2016. He selects the one that departs at 13:00. The system displays all the seats with their status. Ali chooses seat numbered 9, which happens to be free. He completes the reservation by entering his contact information. We assume Ali had already logged on to the system prior to this scenario. Draw sequence diagram for this scenario.	10
B)	The vending machine delivers a beverage after a customer selects and pays for it. The machine starts in the waiting state in which it displays the message “Enter coins”. When the customer inserts coins into the machine, the machine enters into “Ready” state. When the customer pushes the ok button, the machine goes in “Dispense” state. In this state, the machine dispenses the corresponding item. The machine goes in “Out of Stock” state if item is not loaded. Draw the state transition diagram for above description.	5

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PART B (15 Marks)

Q.2 A)	Draw a Sequence Diagram for an ATM machine. Make your own assumptions.	10
B)	Draw State chart diagram for Telephone System.	5

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Q.2 A)	<p>Suppose you are responsible for designing an online photograph library. Users should be able to create and modify their profile, upload and manage their images, and share their images with selected friends. Following are the requirements of the system:</p> <ul style="list-style-type: none"> – Each user should be able to create and modify their profile – Each user should be able to search for and friend other users – Each user should be able to accept or deny friend requests – Each user should be able to create, store and view albums – Each user should be able to create, delete, store, view, and organize photos – Each user should be able to mark their photos as public, private, or friends-only – Each user should be able to add comments to both photos and albums <p>Make class diagram.</p>	10
B)	<p>An institute has a placement management system that stores student data, companies’ data, and data regarding students’ selection in various companies. Students can register in it, fill in their details and also get updates regarding any planned campus recruitments. However, the system can be accessed only via the institute’s intranet. Show its hardware architecture using the Deployment Diagram.</p>	5

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PART B (15 Marks)

Q. 2 A)	Draw use case diagram for School Management System. Make your own assumptions.	10
B)	Create a documentation of Above Diagram generating by Templates.	5

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PART B (15 Marks)

Q. 2 A)	Make a Use Case Diagram for Hotel Reservation System. Make your own assumptions.	10
B)	Create a documentation of Above Diagram generating by Templates.	5

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Q. 2 A)	Model with a class diagram a student attendance management system. Make your own assumptions.	10
B)	Draw Deployment diagram for Library Management System.	5

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Q. 2 A)	Consider the air transportation system. Many flights land and depart from city's airport. Some of the big cities may have more than one airport. Every flight belongs to specific airline. The planes may have many flights to different airports. Each plane is identified with serial number and model. E.g. hypersonic. There are specific pilots for each airline and they fly many flights. Each flight is identified by flight number and date on which flight is scheduled. The passenger reserves a seat for a flight. The seat is identified by a location. Prepare a class diagram for above description.	10
B)	Prepare an object diagram for above description assuming your round trip in last month to London. Include at least one instance of each class. The flight was arranged on a hypersonic plane. Captain Johnson was your pilot on both flights. You had a different seat each way, but you noticed it was on the same plane.	5

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Q. 2	A)	<p>Consider a vending machine. Consider the processes:</p> <p>Buy a beverage: The vending machine delivers a beverage after a customer selects and pays for it.</p> <p>Perform Scheduled Maintenance:The repair technician performs the periodic service on the vending machine necessary to keep it in good working condition.</p> <p>Make repairs:The repair technician performs the unexpected service on the vending machine necessary to repair a problem in its operation.</p> <p>Load Items:A stock clerk adds items into the vending machine to add its stock of beverages.</p> <p>Draw the use case diagram for the above scenario.</p>	10
	B)	<p>Draw a communication Diagram for ATM Transactions.</p>	5

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Q.2 A)	Draw a Sequence Diagram for taking doctor's appointment in the clinic.	10
B)	An institute has a placement management system that stores student data, companies" data, and data regarding students" selection in various companies. Students can register in it, fill in their details and also get updates regarding any planned campus recruitments. However, the system can be accessed only via the institute's intranet. Show its hardware architecture using the Deployment Diagram.	5

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Q. 2 A)	A car rental agency has multiple offices/ locations where customers can test drive & then select a car for rental (local or to outstation). The periods of rental, terms & conditions for rental are flexible. Software has to take responsibility for loaning cars, keeping track of availability of cars, return of cars, billing, maintenance activities for cars & keeping track of drivers' availability & assignment in case of chauffer driven car rentals. Make an Activity Diagram covering the process of renting a car by the user.	10
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	B)	<p>Draw an Activity Diagram to depict parallel activities.</p>	5

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PART B (15 Marks)

Q. 2 A)	Draw a Sequence Diagram for buying shoes on an ecommerce site say ‘flipkart’. Consider all possible scenarios like size not available, color not available, etc.	10
B)	Draw State chart diagram for Telephone System.	5

UNIVERSITY OF MUMBAI
Practical Examination – November 2017
M.C.A Semester – III
LABORATORY L302
[JAVA + UML]

Duration: 3 hours

Seat No:_____

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PART B (15 Marks)

Q. 2 A)	A car rental agency has multiple offices/ locations where customers can test drive & then select a car for rental (local or to outstation). The periods of rental, terms & conditions for rental are flexible. Software has to take responsibility for loaning cars, keeping track of availability of cars, return of cars, billing, maintenance activities for cars & keeping track of drivers' availability & assignment in case of chauffer driven car rentals. Make an Activity Diagram covering the process of renting a car by the user.	10
B)	Draw an Interaction Overview diagram for ATM.	5

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LABORATORY L302
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PART B (15 Marks)

Q. 2 A)	Make a Use Case Diagram for online movie rental system. Movies are available in DVD and Blue-Ray. User can search for a movie, rent or return it. The system must be able to immediately answer any inquiries about a movie's stock availability and how many disks are available for rental. The system also helps to maintain inventory & generate reports.	10
B)	Create a documentation of Above Diagram generating by Templates.	5

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PART B (15 Marks)

Q.2 A)	Create an Activity Diagram for the following scenario - A customer wants to draw money from his bank account. He enters his card into an ATM & enters his PIN when asked. The ATM (internally) retrieves the bank account number from the card. The ATM encrypts the PIN and the account number and sends it over to the bank. The bank verifies the encrypted Account and PIN number. If the PIN number is correct, the ATM displays “Enter amount“, draws money from the bank account and pays out the amount to the user.	10
B)	Draw a communication Diagram for ATM Transactions.	5

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Practical Examination – November 2017
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LABORATORY L302
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PART B (15 Marks)

Q. 2	A)	<p>Consider the world of libraries. A library has books, videos, and CDs that it loans to its users. All library material has a id# and a title. In addition, books have one or more authors, videos have one producer and one or more actors, while CDs have one or more entertainers. The library maintains one or more copies of each library item (book, video or CD). Copies of all library material can be loaned to users. Reference only material is loaned for 2hrs and can't be removed from the library. Other material can be loaned for 2 weeks. For every loan, the library records the user, the loan date and time, and the return date and time. For users, the library maintains their name, address and phone number.</p> <p>Draw class diagram.</p>	10
	B)	<p>Draw Activity Diagram for the scenario: - User logs successfully into his mail account.</p>	5

UNIVERSITY OF MUMBAI
Practical Examination – November 2017
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LABORATORY L302
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PART B (15 Marks)

Q. 2 A)	Model with a class diagram a student attendance management system. Make your own assumptions.	10
B)	Draw a communication Diagram for ATM Transactions.	5

UNIVERSITY OF MUMBAI
Practical Examination – November 2017
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PART B (15 Marks)

Q. 2	A)	<p>Consider an online reservation system for a bus company. The bus company includes several buses and realizes trips to different cities. Each bus is identified by its plate number and a separately assigned bus number. The trips are based on a predefined schedule and stop at predefined bus stations. Each bus can have only one trip per day. Seats can be reserved by customers on the web site of the bus company. The customer has the option to directly pay for the seat through the website. In that case, the seat cannot be cancelled (neither by the customer nor by the bus company). If the customer has not paid for the seat, the bus company can cancel the seat if the customer does not show up one hour before the trip. When the reservation is cancelled, the seat will become free and can be sold to another customer. Both the customer and the company staff must authenticate themselves for performing operations with the system.</p> <p>Draw a class diagram.</p>	10
	B)	<p>Draw an Activity Diagram to depict parallel activities.</p>	5

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PART B (15 Marks)

Q. 2 A)	A scenario for booking bus could be - passenger Ali lists all scheduled busses from Delhi to Agra on December 31, 2016. He selects the one that departs at 13:00. The system displays all the seats with their status. Ali chooses seat numbered 9, which happens to be free. He completes the reservation by entering his contact information. We assume Ali had already logged on to the system prior to this scenario. Draw sequence diagram for this scenario.	10
B)	Draw a communication Diagram for ATM Transactions.	5

UNIVERSITY OF MUMBAI
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PART B (15 Marks)

Q. 2 A)	A car rental agency has multiple offices/ locations where customers can test drive & then select a car for rental (local or to outstation). The periods of rental, terms & conditions for rental are flexible. Software has to take responsibility for loaning cars, keeping track of availability of cars, return of cars, billing, maintenance activities for cars & keeping track of drivers' availability & assignment in case of chauffer driven car rentals. Make an Activity Diagram covering the process of renting a car by the user.	10
B)	Draw an Interaction Overview diagram for ATM.	5

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	B)	Draw Deployment diagram for Library Management System.	5

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PART B (15 Marks)

Q.2 A)	<p>Suppose you are responsible for designing an online photograph library. Users should be able to create and modify their profile, upload and manage their images, and share their images with selected friends. Following are the requirements of the system:</p> <ul style="list-style-type: none"> – Each user should be able to create and modify their profile – Each user should be able to search for and friend other users – Each user should be able to accept or deny friend requests – Each user should be able to create, store and view albums – Each user should be able to create, delete, store, view, and organize photos – Each user should be able to mark their photos as public, private, or friends-only – Each user should be able to add comments to both photos and albums <p>Make class diagram.</p>	10
B)	Draw State transition diagram for Washing Machine system.	5

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PART B (15 Marks)

Q. 2	<p>A) Consider a vending machine. Consider the processes: Buy a beverage: The vending machine delivers a beverage after a customer selects and pays for it. Perform Scheduled Maintenance:The repair technician performs the periodic service on the vending machine necessary to keep it in good working condition. Make repairs:The repair technician performs the unexpected service on the vending machine necessary to repair a problem in its operation. Load Items:A stock clerk adds items into the vending machine to add its stock of beverages. Draw the use case diagram for the above scenario.</p>	10
	<p>B) Show the hardware architecture using the deployment diagram for an online travel agency.</p>	5

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PART B (15 Marks)

Q.2 A)	Create an Activity Diagram for the following scenario - A customer wants to draw money from his bank account. He enters his card into an ATM & enters his PIN when asked. The ATM (internally) retrieves the bank account number from the card. The ATM encrypts the PIN and the account number and sends it over to the bank. The bank verifies the encrypted Account and PIN number. If the PIN number is correct, the ATM displays “Enter amount“, draws money from the bank account and pays out the amount to the user.	10
B)	An online car rental agency has multiple offices/ locations where customers can test drive & then select a car for rental (local or to outstation). Software has to take responsibility for loaning cars, keeping track of availability of cars, return of cars, billing, etc. Make Deployment Diagram for the given system.	5

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PART B (15 Marks)

Q. 2 A)	A car rental agency has multiple offices/ locations where customers can test drive & then select a car for rental (local or to outstation). The periods of rental, terms & conditions for rental are flexible. Software has to take responsibility for loaning cars, keeping track of availability of cars, return of cars, billing, maintenance activities for cars & keeping track of drivers' availability & assignment in case of chauffer driven car rentals. Make an Activity Diagram covering the process of renting a car by the user.	10
B)	Show the hardware architecture using the deployment diagram for an online travel agency.	5

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PART B (15 Marks)

Q. 2 A)	Make a Use Case Diagram for Hotel Reservation System. Make your own assumptions.	10
B)	Draw State transition diagram for Washing Machine system.	5

UNIVERSITY OF MUMBAI
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Q. 2 A)	Make a Use Case Diagram for online movie rental system. Movies are available in DVD and Blue-Ray. User can search for a movie, rent or return it. The system must be able to immediately answer any inquiries about a movie's stock availability and how many disks are available for rental. The system also helps to maintain inventory & generate reports.	10
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B)	Draw State transition diagram for Washing Machine system.	5

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PART B (15 Marks)

Q. 2 A)	Make a Use Case Diagram for online movie rental system. Movies are available in DVD and Blue-Ray. User can search for a movie, rent or return it. The system must be able to immediately answer any inquiries about a movie's stock availability and how many disks are available for rental. The system also helps to maintain inventory & generate reports.	10
B)	Draw an Activity Diagram to depict Swimlanes.	5

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LABORATORY L302
[JAVA + UML]

Duration: 3 hours

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PART B (15 Marks)

Q.2	A)	Create an Activity Diagram for the following scenario - A customer wants to draw money from his bank account. He enters his card into an ATM & enters his PIN when asked. The ATM (internally) retrieves the bank account number from the card. The ATM encrypts the PIN and the account number and sends it over to the bank. The bank verifies the encrypted Account and PIN number. If the PIN number is correct, the ATM displays “Enter amount“, draws money from the bank account and pays out the amount to the user.	10
	B)	An online car rental agency has multiple offices/ locations where customers can test drive & then select a car for rental (local or to outstation). Software has to take responsibility for loaning cars, keeping track of availability of cars, return of cars, billing, etc. Make Deployment Diagram for the given system.	5

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PART B (15 Marks)

Q.2 A)	Draw a Sequence Diagram for taking doctor's appointment in the clinic.	10
B)	Draw State chart diagram for Telephone System where caller calls and do conversation.	5

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PART B (15 Marks)

Q. 2 A)	Make a Use Case Diagram for Hotel Reservation System. Make your own assumptions.	10
B)	Draw an Activity Diagram to depict Swimlanes.	5

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PART B (15 Marks)

Q.2 A)	Draw a Sequence Diagram for taking doctor's appointment in the clinic.	10
B)	Draw a Timing Diagram for ATM Transactions.	5

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PART B (15 Marks)

Q.2	A)	<p>Consider an online reservation system for a bus company. The bus company includes several buses and realizes trips to different cities. Each bus is identified by its plate number and a separately assigned bus number. The trips are based on a predefined schedule and stop at predefined bus stations. Each bus can have only one trip per day. Seats can be reserved by customers on the web site of the bus company. The customer has the option to directly pay for the seat through the website. In that case, the seat cannot be cancelled (neither by the customer nor by the bus company). If the customer has not paid for the seat, the bus company can cancel the seat if the customer does not show up one hour before the trip. When the reservation is cancelled, the seat will become free and can be sold to another customer. Both the customer and the company staff must authenticate themselves for performing operations with the system.</p> <p>Draw a class diagram.</p>	10
	B)	<p>An institute has a placement management system that stores student data, companies’ data, and data regarding students’ selection in various companies. Students can register in it, fill in their details and also get updates regarding any planned campus recruitments. However, the system can be accessed only via the institute’s intranet. Show its hardware architecture using the Deployment Diagram.</p>	5

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PART B (15 Marks)

Q. 2 A)	A scenario for booking bus could be - passenger Ali lists all scheduled busses from Delhi to Agra on December 31, 2016. He selects the one that departs at 13:00. The system displays all the seats with their status. Ali chooses seat numbered 9, which happens to be free. He completes the reservation by entering his contact information. We assume Ali had already logged on to the system prior to this scenario. Draw sequence diagram for this scenario.	10
B)	Draw a Timing Diagram for ATM Transactions. .	5

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PART B (15 Marks)

Q. 2 A)	Prepare a State Diagram for an elevator. Make your own assumptions.	10
B)	An online car rental agency has multiple offices/ locations where customers can test drive & then select a car for rental (local or to outstation). Software has to take responsibility for loaning cars, keeping track of availability of cars, return of cars, billing, etc. Make Deployment Diagram for the given system.	5

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PART B (15 Marks)

Q.2	A)	<p>Consider the world of libraries. A library has books, videos, and CDs that it loans to its users. All library material has a id# and a title. In addition, books have one or more authors, videos have one producer and one or more actors, while CDs have one or more entertainers. The library maintains one or more copies of each library item (book, video or CD). Copies of all library material can be loaned to users. Reference only material is loaned for 2hrs and can't be removed from the library. Other material can be loaned for 2 weeks. For every loan, the library records the user, the loan date and time, and the return date and time. For users, the library maintains their name, address and phone number.</p> <p>Draw class diagram.</p>	10
	B)	<p>The vending machine delivers a beverage after a customer selects and pays for it. The machine starts in the waiting state in which it displays the message "Enter coins". When the customer inserts coins into the machine, the machine enters into "Ready" state. When the customer pushes the ok button, the machine goes in "Dispense" state. In this state, the machine dispenses the corresponding item. The machine goes in "Out of Stock" state if item is not loaded. Draw the state transition diagram for above description.</p>	5

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Q. 2 A)	Consider the air transportation system. Many flights land and depart from city's airport. Some of the big cities may have more than one airport. Every flight belongs to specific airline. The planes may have many flights to different airports. Each plane is identified with serial number and model. E.g. hypersonic. There are specific pilots for each airline and they fly many flights. Each flight is identified by flight number and date on which flight is scheduled. The passenger reserves a seat for a flight. The seat is identified by a location. Prepare a class diagram for above description.	10
B)	Prepare an object diagram for above description assuming your round trip in last month to London. Include at least one instance of each class. The flight was arranged on a hypersonic plane. Captain Johnson was your pilot on both flights. You had a different seat each way, but you noticed it was on the same plane.	5

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PART B (15 Marks)

Q. 2 A)	Consider a vending machine. Consider the processes: Buy a beverage: The vending machine delivers a beverage after a customer selects and pays for it. Perform Scheduled Maintenance: The repair technician performs the periodic service on the vending machine necessary to keep it in good working condition. Make repairs: The repair technician performs the unexpected service on the vending machine necessary to repair a problem in its operation. Load Items: A stock clerk adds items into the vending machine to add its stock of beverages. Draw the use case diagram for the above scenario.	10
B)	Draw a Timing Diagram for ATM Transactions.	5

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PART B (15 Marks)

Q.2 A)	A car rental agency has multiple offices/ locations where customers can test drive & then select a car for rental (local or to outstation). The periods of rental, terms & conditions for rental are flexible. Software has to take responsibility for loaning cars, keeping track of availability of cars, return of cars, billing, maintenance activities for cars & keeping track of drivers' availability & assignment in case of chauffer driven car rentals. Make an Activity Diagram covering the process of renting a car by the user.	10
B)	Draw Deployment diagram for Library Management System.	5

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PART B (15 Marks)

Q. 2	A)	<p>Consider the world of libraries. A library has books, videos, and CDs that it loans to its users. All library material has a id# and a title. In addition, books have one or more authors, videos have one producer and one or more actors, while CDs have one or more entertainers. The library maintains one or more copies of each library item (book, video or CD). Copies of all library material can be loaned to users. Reference only material is loaned for 2hrs and can't be removed from the library. Other material can be loaned for 2 weeks. For every loan, the library records the user, the loan date and time, and the return date and time. For users, the library maintains their name, address and phone number.</p> <p>Draw class diagram.</p>	10
	B)	Draw State chart diagram for Telephone System.	5

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PART B (15 Marks)

Q. 2 A)	Draw a Sequence Diagram for buying shoes on an ecommerce site say ‘flipkart’. Consider all possible scenarios like size not available, color not available, etc.	10
B)	Draw a Timing Diagram for ATM Transactions.	5