MANIPAL INSTITUTE OF TECHNOLOGY
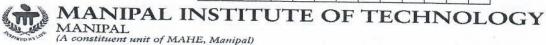MANIPAL
(A constituent unit of MAHE, Manipal)

I SEMESTER M.TECH. (SOFTWARE ENGINEERING)
END SEMESTER EXAMINATIONS, NOVEMBER 2019
SUBJECT: SOFTWARE DESIGN [ICT 5154]
REVISED CREDIT SYSTEM
(21/11/2019)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

❖ Answer **ALL** the questions.

❖ Missing data may be suitable assumed.

1A. The front office of any hotel is responsible for all room reservations, room allocations, and final settlement of bills. Any company or person can reserve the room 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 they need. Sometimes the reservations may be cancelled or the dates and number of rooms may be changed. For reservation, cancellation or modification process customer receives acknowledgement from the hotel.
For the above problem statement i) Draw use case diagram ii) Write use case specification for any two use cases recognized for the problem statement.   **5**

1B. Discuss different framework activities associated with the software development.   **3**

1C. Give a suitable context diagram and level-1 data flow diagram for lemonade stand run by an owner as manager and an employee who is paid by manager based upon working hours. Customers interact with the employee to give orders and to make payment. Manager will be able to generate weekly expenditure report. The raw materials are supplied by vendor on order request.   **2**

2A. Explain any five design concepts.   **5**

2B. Explain the various quality attributes of the software.   **3**

2C. Explain the basic steps involved in designing a real time system.   **2**

3A. Draw the complete class diagram for following problem statement.
The case study 'Online Mobile Recharge' gives us the information about all the mobile service providers. This application provides us the complete information regarding any mobile service provider in terms of their plans, options, benefits, etc. Suppose, any Airtel customer wants to have the information of all the schemes and services provided by the company, he/she can have the information and according to his convenience he can recharge the mobile from the same application. The major advantage of this proposed system is to have the recharging facility of any service provider under same roof. Service Provider is the one who is nothing but the mobile service provider like all the companies who are giving the mobile connections come under this module. Functionality of this module is to make the mobile recharging of their company basing on the availability of balance in the admin account. Request   **5**

comes from the user and it is going to be verified at the admin for the availability of balance and then the request is forwarded to the service provided to make the mobile recharge. Administrator is the one who monitors all users and user transactions. Admin also monitors all the Service Providers, all the user accounts, and amounts paid by the user and amounts paid to Service providers. When the request given by the user admin checks the available balance in the user account then request is forwarded to the Service Provider from there user request gets processed. Admin haves the complete information related to user and all the information related to the schemes and other information of different recharge. Administrator is the one who monitors all users and user transactions. Admin also monitors all the Service Providers, all the user accounts, and amounts paid by the user and amounts paid to Service providers. When the request given by the user admin checks the available balance in the user account then request is forwarded to the Service Provider from there user request gets processed. Admin haves the complete information related to user and all the information related to the schemes and other information of different recharge coupons provided by the Service Providers. All the data is maintained at the Admin level. Admin is having the rights to restrict any user. recharge coupons provided by the Service Providers. All the data is maintained at the Admin level. Admin is having the rights to restrict any user. Any person who wants to utilize the services of Online Mobile Recharge at any time from any where they should get registered in this application. After getting registered user can recharge the mobile at any time and from any where. Visitor is the one who visits the Online Mobile Recharge application and have the complete information related to the Service Providers and can make the mobile recharge by entering the bank details or by giving the credit card details.

3B. Define Devops. Explain the following devop tools 3
    i) Github   ii) Selenium   iii) Gradle

3C. What are the benefits of architectural design? 2

4A. Explain and compare following agile process models. 5
    i)Scrum   ii)XP

4B. With suitable example diagrams, explain protocol and behavioural state machines. 3

4C. Explain component and deployment design elements with suitable example. 2

5A. Draw Sequence diagram and communication diagram to "reschedule presentation usecase", in the following problem statement.
Each Instructor has a name, address and telephone number and is qualified to present one or more courses. We store the date when the instructor became qualified to teach the course. A course has at least one instructor qualified to teach it but it may have many. Each course has a number, title and a date of next revision. Each course will have several scheduled presentations. Details of the date, duration and location are recorded for each presentation. Each presentation will be given by only one instructor but one instructor may give many presentations. Sometimes a presentation needs to be rescheduled when this happens the availability of the existing instructor needs to be checked. If they are available, they are assigned to the presentation on the new date. If not we need to release the current instructor, find all other qualified instructors and check their availability to identify a replacement. 5

5B. With a neat diagram of quality requirement tree, explain various quality attributes of WebApp design. 3

5C. Draw an Activity diagram for withdrawal of money from ATM. 2