



MANGALORE INSTITUTE OF TECHNOLOGY & ENGINEERING

(A Unit of Rajalaxmi Education Trust®, Mangalore)
Autonomous Institute affiliated to VTU, Belagavi, Approved by AICTE, New Delhi
Accredited by NAAC with A+ Grade & ISO 9001:2015 Certified Institution

Model Question Paper

First Semester MCA Degree Examination, 2023-24

Software Engineering

Time: 3 Hours

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L: RBT (Revised Bloom's Taxonomy) level, C: Course outcomes.*

| | | Module -1 | M | L | C |
|------------------|----|--|----|----|----|
| Q1 | a. | Assume you are working on a software project “Student Election Management System” which will be helpful in electing a set of office bearers for any college. The software requirements have been understood very clearly by all the stakeholders. Which process model would you adopt for this project? Justify the reasons for the choice of the process model. | 10 | L3 | C1 |
| | b. | Let's say you have been given the job of creating an application for college students to adopt a digital learning environment. What do you think in your mind are the important functionalities that you will consider while creating this application? Identify the most important functionalities which you feel is of top priority and why? | 10 | L3 | C1 |
| OR | | | | | |
| Q2 | a. | XYZ is a software concern that helps ABC, a company that allows its customers to purchase all kinds of water filters and components required for water filters through the online mode. The requirements are as follows : i) The registered customers must be able to login to the online portal with their user-name and password ii) Customers should be able to subscribe to the company's mailing list so that they can get updates on component information after discount and availability of that component etc...Which model would suit this scenario. Construct the phases for the SDLC model you have identified. | 10 | L3 | C1 |
| | b. | ALPHA is a company working on a project that is totally new for the software development team. The client too is confused with his/her requirements. A decision is made to build a sample application and show it to the client for feedback. As a project manager, identify the process model you would choose while developing this project. Construct the phases of the model that you have identified with a neat sketch. | 10 | L3 | C1 |
| Module- 2 | | | | | |
| Q3 | a. | There is a mobile web application that gives information about the plumbers and electricians in a specific city. Customers at any time will need services from either an electrician or a plumber depending on their requirements. Identify the functional and non-functional requirements for this application. What do you think may be considered as extended or additional requirements for this application? | 10 | L3 | C2 |
| | b. | An online cosmetic company though its web portal allows customers to place online and offline orders for beauty products. The order fulfillment process is | | | |

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|-------------------|----|--|----|----|----|
| | | also communicated from the customer service department to the warehouse team. It has a customer care portal that gives excellent customer service to its clients. Develop an IEEE SRS document for this scenario. | 10 | L3 | C2 |
| OR | | | | | |
| Q4 | a. | You have an online garment company that allows customers to buy garments based on the user requirements. This garment company sells, apart from Indian garments, garments imported from the gulf too. As a customer what do you think could be the functional and non-functional requirements that the application should satisfy? Prepare a set of additional requirements that are important apart from the identified functional and non-functional requirements? | 10 | L3 | C2 |
| | b. | BETA is a company that is interested in designing a new online system to manage flights and passengers in turn to ease the flight management process. Develop an IEEE SRS document for this application. | 10 | L3 | C2 |
| Module - 3 | | | | | |
| Q5 | a. | Architectural design decisions are critical while drafting the architecture of any application. Irrespective of any application, model the different architectural design decisions with a neat sketch and give your own thoughts on why these decisions are important to an application. How will this help in the testing and improve the quality of the application that is under construction. | 10 | L3 | C3 |
| | b. | Make use of the MVC architecture and design an architecture for a typical web application. Draw a neat diagram for the same, identify the components and classify them based on their functionality. | 10 | L3 | C3 |
| OR | | | | | |
| Q6 | a. | Architectural views or perspectives are useful while designing and documenting a system's architecture. Model the different architectural views based on their importance with neat diagrams. What is "4+1" view model of software architecture? If yes, why is it named so? | 10 | L3 | C3 |
| | b. | There is a requirement to create a new digital learning environment for the students of a college. Make use of a Generic layered architecture and construct the architecture for the digital learning environment with the different services offered by the environment. Which testing methodology would help in improving the quality of the environment from time to time? | 10 | L3 | C3 |
| Module - 4 | | | | | |
| Q7 | a. | Is it possible to design a layered architectural model for client-server applications? If yes, what do you think would be the possible layers in this model? What functionalities would these layers offer to an application. . Justify. | 10 | L3 | C3 |
| | b. | Service composition is very much essential for software development with services. The basis for a service composition is a workflow. Build a workflow for a vacation travel package with a neat sketch. | 10 | L3 | C3 |
| OR | | | | | |
| Q8 | a. | There are two models of interaction between components in a distributed system. What are they? When will you choose these types of models? Give your own examples. | 10 | L3 | C3 |
| | b. | A travel company always engages itself in arranging a pilgrimage tour to places depending on the requirements of its customers. Identify the required services to satisfy their customers using service-oriented architecture. Develop the workflow with a neat diagram for the services offered to a customer. | 10 | L3 | C3 |
| Module - 5 | | | | | |

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| Q9 | a. | Let's say you have joined a software company as a Project Manager for Product Development. There are developers, testers and release engineers who are working in the company. The senior management tells you that there are a lot of bugs that are reported during the production release stage where the quality is affected. As a project manager, develop a 15-days, 30-days or 45-days plan to overcome this issue and to keep all products on track. | 10 | L3 | C4 |
| | b. | In a software development company where you are working, there are five new people who have joined and are reporting to you on a new project. You now have the responsibility to allocate the roles and tasks these people have to take in the project. You have a choice of using different charts for this purpose. Choose an appropriate chart that will be useful in understanding the allocation and tracking the progress of the project and depict the same with a neat sketch. | 10 | L3 | C4 |
| OR | | | | | |
| Q10 | a. | You are a software project manager and responsible for leading a group of developers, both hardware and software in developing assistive devices for the elderly. The project starts well and after sometime, you find that one of the developers is coming late to the company, the quality of work also comes down over a period of time. Plan a strategy to overcome this as a Project manager? What do you understand about the hierarchy of needs for a human being? Apply the hierarchy to the above scenario. | 10 | L3 | C4 |
| | b. | As a software engineer, you are entrusted with the responsibility to plan for a new project that has just come to your company. Develop a plan to start the process of project planning and also to take the project through the various stages right up to completion along with its associated process. | 10 | L3 | C4 |
