

- (a) For Construction company software is to be developed with following specifications :- **10**
 Company undertakes many projects each project is at particular location. Each project is supervised by project manager, assigned by COE of the company. Record related to start of the project, completion of it is maintained. Under each PM there is a team of people of different category like designer, plumber, electrician, Architect, labour etc. Each project is marketed by team of Marketing Executives.
 (i) Draw class diagram for it.
 (ii) Draw use - case diagram.
- (b) Explain agile process with its advantages. Explain any one agile process. **10**
- (a) How to map following associations to code ? **10**
 (i) Realization of unidirectional one-to-one associations.
 (ii) Bidirectional one-to-one associations.
1. Consider the following online shopping portal :- **20**
 A customer visits the online shopping portal. A customer may buy item or just visit the page and logout. The customer can select a segment, then a category and brand to get different products in the desired brand.
 The customer can select product for purchasing. The process can be repeated for more items. Once the customer finishes selecting the product/s, the cart can be viewed. If the customer wants to edit the final cart it can be done here. For final payment the customer has to login the portal. If the customer is visiting for the first time he must register with the site, else the customer must use the login page to proceed.
 Final cart is submitted for payment and card details and address are to be confirmed by the customer. Customer is confirmed with a shipment Id and delivery of goods within 15 days. Draw a detailed class diagram and use case diagram for the above case study.
- (b) Explain the following with suitable examples :- **10**
 Composition, Association, Generalization, Aggregation.
- (a) Explain Function Point based Metrics. **10**
 (b) Draw the activity diagram of ATM activities. **10**
- Write short notes (any **two**) :- **20**
 (a) CMM levels.
 (b) Task Network and Timeline Chart
 (c) Change Control.
 (c) Explain COCOMO used for software estimation. **5**
 (d) Explain Task Network. **5**
3. (a) What is an analysis model ? List the objects of analysis model ? How do you identify these objects ? **10**
 (b) Explain Agile process with its advantages. Explain any one Agile process model. **10**
4. (a) How to map following associations to code ? **10**
 (i) Realization of unidirectional one-to-one associations
 (ii) Bidirectional one-to-one associations
 (iii) Bidirectional one-to-many associations
 (iv) Generalisation.
 (b) Explain the object oriented testing strategies. **10**

5. (a) Draw an activity diagram for any one scenario of Airline reservation system. 10
 (b) Explain coupling and cohesion. How are the concepts of coupling and cohesion useful in arriving at good software design ? 10
6. (a) What is software quality Assurance ? Explain different quality matrices. 10
 (b) What is the need of software maintenance ? Explain types of software maintenance. 10
7. Write short notes on (any two) :- 20
 - (a) Software configuration management
 - (b) Project scheduling and Tracking
 - (c) Software Architectural styles.
1. (a) Draw the detailed class diagram for the following scenario: 10
 A product is to be installed to control elevators in a building with m floors. The problem concerns the logic required to move elevators between floors according to the following constraints.
 Each elevator has a set of m buttons, one for each floor. These illuminate when pressed & cause the elevator to visit the corresponding floor. The illumination is cancelled when the elevator visits the corresponding floor.
 Each floor except the first floor & top floor has two buttons, one to request the up elevator and one to request the down elevator. These buttons illuminate when pressed. The illumination is canceled when an elevator visits the floor & then moves in the desired direction.
 - (b) Explain COCOMO model used for software estimation. 10
2. (a) Explain the following with suitable example: 10
 Aggregation, Generalization, Association, Role, Dependency.
 - (b) What is sequence diagram? What are the elements used in sequence diagram, explain each 10
3. (a) Explain coupling & cohesion. Explain different types of coupling and cohesion. 10
 (b) Explain how to map different types of association and generalization relationship to code. 10
4. (a) Construct an Activity Diagram for processing the mortgage requests. 10
 (b) Explain RAD and Spiral Model for Software development. 10

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| 6 | (a) Explain version control and change control. | 10 |
| | (b) Explain Reverse & Re-Engineering. | 10 |
| 7 | Write Short Notes (any two): | 20 |
| | (a) Types of Maintenance | |
| | (b) Regression Testing | |
| | (c) Task Network and Timeline chart | |
| 1. | (a) Construct class diagram and sequence diagram for Engineering College. | 10 |
| | (b) Construct use Case diagram and Activity diagram for online airline reservation system. | 10 |
| | (b) Explain the open source software life cycle model. | 10 |
| 3. | (a) Why is FTR necessary ? How FTR is conducted ? | 10 |
| | (b) State different types of coupling and cohesion. Explain any 4 types of coupling and cohesion. | 10 |
| 5. | (a) Explain how project scheduling and tracking is done for a software development project. | 10 |
| | (b) Explain Re-engineering in detail. | 10 |
| 6. | (a) Compare waterfall model and spiral model of software development. | 10 |
| | (b) Explain the COCOMO model used for software estimation. | 10 |
| 7. | Write short notes on (any two) :— | 20 |
| | (a) Software Architectural Style | |
| | (b) Software Testing Strategies | |
| | (c) Types of Maintenance. | |
| | (b) Compare Waterfall model and Spiral model of Software development. | 10 |
| 3. | (a) What is wrong with the following designs from the perspective of cohesion and what could be done to improve them ? | 10 |
| | There are two subsystems in a University registration system that do the following : | |
| | Subsystems A display lists of courses to a student, accepts request from the students to register in courses, ensures that the students has no schedule conflicts and is eligible to register in the courses, stores the data in the database and periodically back up the database. System B allows faculty members to input student grades and allow administrators to assign courses to faculty members, add new courses and change the student registration. It also prints the bill that are sent to students. | |
| | (b) Explain the Open Source software life cycle model. | 10 |
| 4. | (a) Explain the COCOMO used for software estimation. | 5 |
| | (c) What are the advantages of agile methodology. | 5 |
| | (d) Define a state diagram and its various elements. | 5 |

