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Question Paper Code: R4D02

B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Fourth Semester

Computer Science and Business Systems

R21UCB402- SOFTWARE DESIGN WITH UML

(Regulations R2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

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| 1. What are the different UP Phases? | CO1- U |
| 2. What are the three ways to apply UML? | CO1- U |
| 3. What are the types and categories of requirements? | CO1- U |
| 4. Define an attribute. Explain with an example using UML notation. | CO1- U |
| 5. Compare Activity and state chart diagram. Mention the Elements of an Activity Diagram. | CO1- U |
| 6. Define Package. Draw UML notation for Package | CO1- U |
| 7. Explain Creator Pattern with an example | CO1- U |
| 8. What are the steps for mapping design to code? | CO1- U |
| 9. What is GOF? | CO1- U |
| 10. Compare white and black box testing | CO1- U |

PART – B (5 x 16= 80 Marks)

11. (a) Write a problem statement for Railway Ticket Reservation System. Develop use case diagram and discover the use case and actors of this system. CO2- App (16)

Or

- (b) Write a problem statement for Course Registration System. Develop use case diagram and discover the use case and actors of this system. CO2- App (16)

12. (a) Write a problem statement for Hospital Management. Develop Class diagram and discover the notation of this system CO2- App (16)
- Or
- (b) A Library lends books and magazines to member, who is registered in the system. It also maintains the purchase of new books and magazines for the Library. A member can reserve a book or magazine that is not currently available in the library, so that when it is returned or purchased by the library, that person is notified. The library can easily create, replace and delete information about the books, members, and reservation in the system. The books transactions are stored in the database. The fine list while the member returns the book after the due date must be generated. Develop Class diagram and discover the notation of this system. CO2- App (16)
13. (a) Write a problem statement for Course Registration System and develop interaction diagram, component diagram and deployment diagram. CO2- App (16)
- Or
- (b) Build a problem statement for a movie ticket system, and develop the interaction diagram, component diagram, and deployment diagram for the system. CO2- App (16)
14. (a) Explain in detail about Adapter pattern with a diagram CO1- U (16)
- Or
- (b) Explain in detail about GRASP principles. CO1- U (16)
15. (a) Why is it important to design test cases that cover various integration scenarios? CO1- U (16)
- Or
- (b) Discuss the merits and demerits of Methods as Units and Classes as Units in OO unit testing? CO1- U (16)