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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: IV - THEORY EXAMINATION (20.....- 20.....)

Subject: Software Design with UML

Time: 2 Hours   **Max. Marks: 50**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

*1. This Question paper comprises of **three Sections -A, B, & C.** It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A   15

1. Attempt all parts:-

1-a.   Select the basic step of system designing using Object-Oriented Modelling is?   1
        [CO1,K1]

     (a)   System analysis

     (b)   System Design

     (c)   Object Design & Implementation

     (d)   All of the above

1-b.   Identify among the following is not a valid design pattern? [CO2,K2]   1

     (a)   Factory pattern

     (b)   Singleton

     (c)   Java

     (d)   None

1-c.   Select among the optional statement is true? [CO3,K1]   1

     (a)   Associations may also correspond between instances of three

     (b)   Association lines may be unlabeled

     (c)   All of the mentioned

     (d)   None of above

1-d.   Identify among the true statement? [CO4,K1]   1

     (a)   Graddy Booch

     (b)   James Rambaugh

    (c)   Cord and Yourdon

    (d)   None

1-e.   State which of the following are composite states? [CO5,K1]   1

    (a)   A sequential composite state

    (b)   They consolidate many transitions

    (c)   All of the mentioned

    (d)   None of the mentioned

2. Attempt all parts:-

2.a.   Describe Object Oriented Analysis in short? [CO1,K2]   2

2.b.   Explain Design Patterns and its Importance? [CO2,K2]   2

2.c.   Discuss the steps for finding Use Cases in Use Case Diagram? [CO3,K2]   2

2.d.   Describe the attributes and methods in class diagram explain with example?   2
        [CO4,K2]

2.e.   Explain the physical aspects in component diagram? [CO5,K2]   2

SECTION-B   15

3. Answer any <u>three</u> of the following:-

3-a.   Discuss any six Software Quality Attributes in detail? [CO1,K1]   5

3-b.   Describe any three Behavioral patterns and also discuss advantages of design   5
        pattern? [CO2,K2]

3.c.   Illustrate Sequence diagram for "Hospital Management System"? [CO3,K1]   5

3.d.   Discuss the real life application of Package Diagram. Discuss the different   5
        notations in Package Diagram with login module example? [CO4,K2]

3.e.   Difference between activity and data flow diagram with basic example? [CO5,K4]   5

SECTION-C   20

4. Answer any <u>one</u> of the following:-

4-a.   Explain the Software Development Lifecycle Model and mention its merits and   4
        demerits? [CO1,K2]

4-b.   Differentiate and compare the Waterfall model and Spiral model of software   4
        development, also describe the advantages and disadvantages of each model, and
        explain when each is suitable? [CO1,K4]

5. Answer any <u>one</u> of the following:-

5-a.   Discuss the benefits of using Structural patterns. Discuss any two Structural   4
        Patterns? [CO2,K2]

5-b.   Discuss the following UML models? [CO2,K2]   4
        (i) Class Diagrams
        (ii) Object Diagrams
        (iii) Use case Diagrams
        (iv) Sequence Diagrams
        (v) State Machine Diagrams

6. Answer any <u>one</u> of the following:-

6-a.   Describe the Interaction diagram and also design a use case diagram for "Payment Module System" ? [CO3,K2]   4

6-b.   Describe the purpose and notations of a collaboration diagram, also explain how collaboration diagrams can be used to model object interactions and relationships? [CO3,K2]   4

7. Answer any <u>one</u> of the following:-

7-a.   Discuss about the Notations of Package diagram and Notations of Deployment diagram. Is there any common notation between both diagrams. If yes, then explain its roles in designing the diagram? [CO4,K2]   4

7-b.   Explain about the Drill Down Approach. Discuss in brief about the advantages and disadvantages of White box package diagram model? [CO4,K2]   4

8. Answer any <u>one</u> of the following:-

8-a.   Compare and contrast state diagrams and activity diagrams, discuss similarities and also state when each is useful? [CO5,K4]   4

8-b.   Illustrate with an activity diagram the "Library Management System" and also explain how events are handled in State Diagrams? [CO5,K2]   4