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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 (2022-2023)

Subject: Software Design with UML

Time: 3 Hours

Max. Marks: 100

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

20

1. Attempt all parts:-

- | | | |
|------|--|---|
| 1-a. | Which of the following are the features of Object oriented design ? [CO1] | 1 |
| | (a) Classes
(b) Polymorphism
(c) Both 1 and 2
(d) Constructor | |
| 1-b. | The OMT consists of three related but different viewpoints each capturing important aspects of the system ? [CO1] | 1 |
| | (a) The static, dynamic, and functional behaviors of the system
(b) Analysis, Design, Coding
(c) Real life
(d) None | |
| 1-c. | Structure thing element can be ? [CO2] | 1 |
| | (a) Classes
(b) Node | |

- (c) Use Case
(d) All of These
- 1-d. DFD shows? [CO2] 1
- (a) Areas
(b) Processes
(c) Flow of Data
(d) All of above
- 1-e. In Unified Modeling Language, diagrams which captures systematic structure and provide foundation for other models is called ? [CO3] 1
- (a) Deployment diagram
(b) Class diagram
(c) Package diagram
(d) None of above
- 1-f. Use case models that can be summarized under which of this category? [CO3] 1
- (a) Use Case Diagram
(b) Use Case description
(c) Both 1 and 2
(d) None of above
- 1-g. What are things you add in Class Diagram ? [CO4] 1
- (a) Class name at top
(b) Attributes used
(c) Methods and Access Specifiers
(d) All of the mentioned
- 1-h. A package diagram consists of the following? [CO4] 1
- (a) Package symbols
(b) Groupings of Use cases, classes, components
(c) Interface
(d) Package symbols, Groupings of Use cases, classes & components
- 1-i. Which type of diagram they consider activity, collaboration, deployment diagram? [CO5] 1
- (a) Structural
(b) Non structural
(c) Behavioral

(d) Non behavioral

- 1-j. Select the statement that is incorrect about Deployment Diagram? [CO5] 1
- (a) Interconnection paths are shown through dotted lines
 - (b) path of connections among nodes are represented through communication paths
 - (c) Artifacts are deployed inside nodes where they place and run
 - (d) None

2. Attempt all parts:-

- 2.a. Describe the tools used in design phase in SASD(any two) ? [CO1] 2
- 2.b. Discuss the Usage of Factory Pattern? [CO2] 2
- 2.c. What are the different types of message in sequence diagram? [CO3] 2
- 2.d. Define Component Diagram? [CO4] 2
- 2.e. Define terms States and Sub-States ? [CO5] 2

SECTION B

30

3. Answer any five of the following:-

- 3-a. Write short note on Rumbaugh Object Modelling Technique ? [CO1] 6
- 3-b. How does the Inheritance supports the concept of code reusability? Explain with example ? [CO1] 6
- 3-c. Define Behavioral Pattern. Explain any one Behavioral pattern in detail ? [CO2] 6
- 3-d. What do you mean by Creational patterns? Discuss any Five Creational patterns ? [CO2] 6
- 3.e. Describe the Interaction diagram and its types ? [CO3] 6
- 3.f. Discuss the real life application of Package Diagram. Discuss the different notations in Package Diagram ? [CO4] 6
- 3.g. What do you mean by interface? Explain its types .Write steps for creating component diagram ? [CO5] 6

SECTION C

50

4. Answer any one of the following:-

- 4-a. Explain for ATM management system which author approach you choose Cord and Yourdon , Booch and Rumbaugh and Why? [CO1] 10
- 4-b. Differentiate between the Cord and Yourdon and Graddy Booch Approach of Designing ? [CO1] 10

5. Answer any one of the following:-

5-a. What do you mean by Structural pattern? Explain any five Structural patterns ? [CO2] 10

5-b. Describe the building blocks of UML ? [CO2] 10

6. Answer any one of the following:-

6-a. Design a Collaboration diagram for Stock Maintenance system. Discuss the purpose of collaboration diagram ? [CO3] 10

6-b. Write down all the Elements with its graphical notation used in sequence Diagram. Describe the purpose and advantages of Sequence Diagram ? [CO3] 10

7. Answer any one of the following:-

7-a. Differentiate between Dependency, Composition and Multiplicity ? [CO4] 10

7-b. Define Followings in detail: ? [CO4] 10
(A) Association
(B) Composition
(C) Interfacing

8. Answer any one of the following:-

8-a. Explain the concept of Event Handling with example of user authentication process ? [CO5] 10

8-b. Differentiate between deployment diagram and component diagram. Discuss the advantages of Deployment diagram? [CO5] 10