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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 (2023 - 2024)

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 is a type of software. (CO1) 1
- (a) System Software
 - (b) All of the above
 - (c) Application Software
 - (d) Embedded Software
- 1-b. Waterfall model is not suitable for.(CO1) 1
- (a) small projects
 - (b) accommodating change
 - (c) complex projects
 - (d) none of the above
- 1-c. Use cases are help to. (CO2) 1
- (a) Identify business process
 - (b) Gather requirement
 - (c) Describe Workflow
 - (d) Identify System Goals
- 1-d. Which of following categories of diagram model present in UML. (CO2) 1
- (a) non-behavioral
 - (b) Behavioral
 - (c) structural

- (d) Both B and C
- 1-e. A Class consists of which of these abstractions? (CO3) 1
- (a) Attributes
 - (b) Operations
 - (c) All of the mentioned
 - (d) Set of the objects
- 1-f. Objects can be considered as (CO3) 1
- (a) Use Case
 - (b) Real world entities who interact with class methods and attributes
 - (c) objects are those who do not have access to operate class methods
 - (d) Relationship cannot be created between objects
- 1-g. An attribute is a data item held by which of the following. (CO4) 1
- (a) Class
 - (b) Object
 - (c) All of the mentioned
 - (d) None of the mentioned
- 1-h. What is multiplicity for an association.(CO4) 1
- (a) The multiplicity at the target class end of an association is the number of instances that can be associated with a single instance of source class
 - (b) The multiplicity at the target class end of an association is the number of instances that can be associated with a number instance of source class
 - (c) All of the mentioned
 - (d) None
- 1-i. Who consider diagrams as a type of Class diagram, component diagram, object diagram, and deployment diagram.(CO5) 1
- (a) structural
 - (b) behavioral
 - (c) non- behavioral
 - (d) non structural
- 1-j. Activity diagram, collaboration diagram, and sequence diagram are considered as which model diagram. (CO5) 1
- (a) non-behavioral
 - (b) non-structural
 - (c) structural
 - (d) behavioral
2. Attempt all parts:-
- 2.a. Define Entity-Relationship Diagrams with types of attribute. (CO1) 2
- 2.b. Discuss any two characteristics of Unified Modelling Language.(CO2) 2

- 2.c. Discuss any two requirement elicitation techniques.(CO3) 2
- 2.d. Describe the basic notations of Use case and Class diagram (CO4) 2
- 2.e. Define any two characteristics of the event? [CO5] 2

SECTION-B

30

3. Answer any five of the following:-

- 3-a. Explain the terms :1)Functionality 2) Reliability 3)Usability 4)Portability 5)Maintainability? [CO1] 6
- 3-b. Explain the Software Development Lifecycle Model.(CO1) 6
- 3-c. Describe the process of Object oriented software development (CO2) 6
- 3-d. Describe the following Diagrams: 1)Activity diagram 2)Object diagrams 3)Collaboration diagram(CO2) 6
- 3.e. What do you understand by the Requirement engineering process. (CO3) 6
- 3.f. Explain the concept of Aggregation and Direct Association with example. (CO4) 6
- 3.g. What do you understand by activity diagram .Describe various notations of activity diagram. (CO5) 6

SECTION-C

50

4. Answer any one of the following:-

- 4-a. Differentiate between Object model and Functional model. Explain the advantages of OOAD ? [CO1] 10
- 4-b. Discuss the phases of Waterfall model with its advantages and disadvantages.(CO1) 10

5. Answer any one of the following:-

- 5-a. Describe the following terms:1.Collaboaration diagram 2.State chart diagrams 3.Dependency 4.Association 5 Realization (CO2) 10
- 5-b. Differentiate between Structural and Behavioral diagram. Discuss about the UML diagrams class and Interaction Diagrams (CO2) 10

6. Answer any one of the following:-

- 6-a. What do you understand by the Requirement engineering .Explain the requirement analysis phases in detail. (CO3) 10
- 6-b. What do you understand by the Use Case Diagrams and Design an Use Case Diagram for Stock maintenance system. (CO3) 10

7. Answer any one of the following:-

- 7-a. Write Short note on : 1)many to zero 2)Zero to many 3)one to many 4) Many to many 5) Many to one with examples (CO4) 10
- 7-b. Differentiate between Use Case diagram and Class diagram. What are common connection relation in both diagram? (CO4) 10

8. Answer any one of the following:-

- 8-a. Explain four types of deployment models with suitable example. (CO5) 10

8-b. Describe about the activity diagram , its notations , purpose , advantages and disadvantages in detail with example.(CO5)

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