

N. B. : 1. Questions **No. 1** is **compulsory**.

2. Attempt **any four** out of remaining **six**.

3. Elaborate **each** answer with the help of **an example**.

1. (A) Draw the class diagram and object diagram for the following scenarios: **10**
 Consider a university database that keeps track of students and their majors, transcript and registration and the university courses. Several sections of each course are offered and each section is related to the instructor who is teaching. It also keeps track of the sponsored research projects of faculty and graduate students of the academic departments of the particular college. The database also keeps track of research grants and contracts awarded to the university. A grant is related to one principle investigator and to all researchers it supports.
 - (B) Explain 3-tier logical architecture **10**
 2. (A) Explain functional view of UML architecture. **10**
 - (B) Differentiate between **10**
 - i. Link v/s association
 - ii. <extend> v/s <include>
 3. (A) What are swim lanes? Illustrate its use with example? **10**
 - (B) Draw sequence diagram to IRCTC ticket booking with invalid net banking pin use. **10**
 4. (A) Explain reusability with respect to black box and white box framework. **10**
 - (B) Explain the three approaches to identify classes. **10**
 5. (A) Explain noun phrase approach for developing class diagram. State the benefits and drawbacks. **10**
 - (B) Describe EMA and explain all its components in detail. **10**
 6. (A) What is UML? What are the different views of UML? **10**
 - (B) Differentiate between sequence diagram and collaboration diagram? **10**
 7. Explain **any four** of the following terms : **20**
 - (A) Events & states
 - (B) Packages
 - (C) Realization
 - (D) Generalization
 - (E) Actor class
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