

D 23474

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Name \_\_\_\_\_

Reg. No. \_\_\_\_\_



**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION  
DECEMBER 2011**

IT 04 506—DATA MODELING AND DESIGN

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

**Part A**

- I. (a) Define Hierarchy and Modularity.  
(b) What is message passing? Give examples.  
(c) What is the purpose of collaboration diagrams? Explain.  
(d) Define : Asynchronous messages ; concurrent execution related to applications.  
(e) Explain conformance.  
(f) What are class invariants? Discuss the occasions where they are used.  
(g) What are the abuses of inheritance?  
(h) Differentiate objects with components.

(8 × 5 = 40 marks)

**Part B**

- II. (a) (i) Explain various types of inheritances with examples. (8 marks)  
(ii) What are the various types of abstractions seen in applications. (7 marks)

Or

- (b) Compare traditional and object oriented applications in terms of features. (15 marks)

- III. (a) (i) Explain : Aggregation ; Association with examples. (8 marks)  
(ii) Discuss the purpose of architecture and interface diagrams with suitable cases. (7 marks)

Or

- (b) (i) Explain : Collaboration diagram ; Sequence diagrams. (8 marks)  
(ii) Consider the application of passenger checking the availability of seats for train travel and reserving tickets. Draw the state transition diagram with proper states defined. (7 marks)

- IV. (a) (i) Define the following terms with details.

- Encumbrance.
- State spaces.
- Subclasses and their behaviour.
- Encapsulation structure,

(8 marks)

Turn over

(ii) What are precondition and post condition ?

(7 marks)

Or

(b) Explain (i) Domain of object classes ; (ii) Principle of type conformance and principle of closed behaviour.

(15 marks)

V. (a) (i) Discuss various types of polymorphism with examples.

(8 marks)

(ii) With an example, explain the use of heavy weight components.

(7 marks)

Or

(b) (i) What are Rings of operations ? Explain.

(8 marks)

(ii) Discuss any case study of your choice involving objects and components.

(7 marks)

[4 × 15 = 60 marks]