

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1069

Roll No.

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B.Tech.

FOURTH SEMESTER EXAMINATION, 2005-2006

OBJECT ORIENTED SYSTEMS

Time : 3 Hours

Total Marks : 100

Note : (i) Attempt *ALL* questions.

(ii) All questions carry equal marks.

(iii) In case of numerical problems assume data wherever not provided.

(iv) Be precise in your answer.

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1. Attempt *any four* parts of the following : (5×4=20)

(a) What is object oriented methodology ? Discuss the various stages in it.

(b) Explain the following terms with a suitable example :

(i) Abstraction

(ii) Encapsulation

(iii) Inheritance

(iv) Identity

(v) Polymorphism

- (c) Explain class diagram and Instance diagram with a suitable example. Prepare a class diagram from the instance diagram in the following figure.



- (d) Explain the following terms :
- (i) Links
 - (ii) Associations
 - (iii) Link Attribute
 - (iv) Multiplicity
 - (v) Role Name
- (e) Differentiate among the following by taking a suitable example.
- (i) Aggregation and Association
 - (ii) Aggregation and generalization.
- (f) Prepare a portion of an object diagram for a library book checkout system that shows the date a book is due and the late charges for an over due book as derived objects.

2. Attempt *any four* parts of the following : (5x4=20)

- (a) Explain event and state by taking a suitable example.
- (b) What do you mean by event trace ? Explain Event trace for a phone call.
- (c) What is state diagram ? Draw the state diagram for phase line.

- (d) What do you mean by scenario ? Write scenarios for the following activities.
- (i) Getting ready to take a trip in your car.
 - (ii) An elevator ride to the top floor.
- (e) What are nested state diagrams ? Explain by taking a suitable example.
- (f) Write in short about the following :
- (i) Event Generalization
 - (ii) Concurrency.

3. Attempt *any four* parts of the following : (5x4=20)

- (a) Prepare a data flow diagram for computing the volume and surface area of a cylinder. Inputs are the height and radius of the cylinder. Outputs are volume and surface area. Discuss several ways of implementing the data flow diagram.
- (b) Compare between SA/SD and OMT modelling.
- (c) Compare between JSD and OMT methodologies.
- (d) Differentiate between actor and data store with in a data flow diagram.
- (e) Prepare a data flow diagram for computing the roots of the quadratic equation.

$$ax^2+bx+c=0.$$

Real numbers, a , b and c are inputs. Outputs are values of $x=R_1$ and $x=R_2$, Which satisfy the equation. R_1 and R_2 may be real or complex depending on the values of a , b and c .

- (f) What do you mean by operation in functional modelling ? Explain the different type of operations.

4. Attempt *any two* parts of the following : (10x2=20)

- (a) (i) Differentiate between overloading and overriding.
- (ii) What is an inner class ? Explain with a suitable example.
- (iii) What is a package in JAVA language ? Explain with a suitable example.
- (iv) What is a Thread ? Discuss Java Thread Model.
- (v) Differentiate between Bytestreams and character streams.

(b) (i) Write a Java program to print the following output.

```
0
1  2
3  4  5
6  7  8  9
```

(ii) What is an exception ? Discuss how exception handling is done in JAVA language.

(c) Write short notes on the following :

- (i) Applet
- (ii) Layout Manager
- (iii) AWT
- (iv) String handling
- (v) Event handling

5. Attempt *any two* parts of the following : (10x2=20)

- (a) (i) Discuss the reasons for migrating from C++ to JAVA.
- (ii) What are JAVA beans ? What are the steps that must be followed to create a new Bean ?
- (b) Write short notes on any two of the following :
- (i) JDBC
- (ii) Dynamic bill board applet
- (iii) Lavatron Applet
- (c) (i) What is a Java servlet ? Discuss the life cycle of a servlet.
- (ii) Write in short about the following :
- (1) Java swing.
- (2) Scrabblets.