

ADCA / MCA (III Yr)
Term-End Examination
December, 2007

CS-16 : OBJECT ORIENTED SYSTEMS

Time : 3 hours

Maximum Marks : 75

Note : Question number 1 is **compulsory**. Answer any **three** questions from the rest.

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1. (a) In a university library materials are categorized as books, journals and magazines. A reader who may be a student or a teacher may read any material of his/her own interest. They can be issued books on their library cards. A student can be issued maximum of 6 books at a time. However a teacher can be issued double of this. Prepare a class diagram for this problem. 8
- (b) Differentiate between object oriented approach and traditional approach. Give four differences. 4
- (c) Aggregation is a special form of transitive association. Justify. 6
- (d) How does multiple inheritance differ from multilevel inheritance ? Explain with the help of an example. 6

- (e) What is a metadata ? Give an example of metadata. How are pattern and metadata related to each other ? 6
2. (a) Prepare an object diagram for a computer network consisting of three LANs. Each pair of LANs is connected through a router. LANs contain 02, 05 and 06 nodes. Two LANs are CSMA/CD and one is FDDI based. 8
- (b) What do you understand by constraints in object model ? What does a candidate key constrain in object model ? 4
- (c) Give three reasons, why overriding is used in object oriented systems. 3
3. (a) A VCR system can be playing a cassette or may be off. This has facilities of recording, forwarding, reversing, fast-forwarding, pausing and exiting. Prepare a State diagram for this system. 6
- (b) Show an event trace for withdrawing, checking balance and transferring money in the bank using ATM card. In the ATM machine user inserts the card, enters his/her PIN and performs one of the above tasks. 6
- (c) What is meant by an internal action and automatic transition ? Explain through an example. 3

4. (a) A program takes as input a file name, and validates the file name by counting the words in the name. It formats the word count for displaying it on the screen. Prepare a data flow diagram for this problem. 6
- (b) Explain the following with an example of each :
- (i) Actor
 - (ii) Data store
 - (iii) Constraints 6
- (c) With the help of an example show how functional model is related to dynamic model ? 3
5. (a) Write the steps involved in constructing a dynamic model and functional model. 10
- (b) Is Abstraction abstract or concrete ? Justify your answer. 3
- (c) Polymorphism and dynamic binding are complementary. Justify. 2

