

PGDCA / MCA (I Yr)
Term-End Examination
June, 2007

**CS-06 (S) : DATABASE MANAGEMENT
SYSTEM**

Time : 3 hours

Maximum Marks : 75

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

1. (a) A film distribution and promotion company maintains information about films, which further contains information about movie-stars and studios. Movies have a title, language, year of production, duration and film type. Stars have a name and address. Studios have a owner and a banner. Movies are shot in studios which own them. A movie is shot in only one studio. Stars are connected to one or more studios but can act in any film, which may or may not be owned by the studio.

Design and draw ER diagram, clearly indicating the attributes, keys, the cardinality ratio and participation constraints.

8

- (b) Explain the significance of knowledge representation schemes. Discuss the Frame Based Representation Scheme with the help of an example. 8
- (c) Explain entity integrity and referential integrity. Also, give an example of each. 6
- (d) With the help of a diagram, explain all the elements of DBMS. 8
2. (a) Consider the following relations with primary keys underlined.
- Salesman (S_No, S_name, Position)
- Domain (D_No, D_name, Manager_no)
- Product (P_No, P_name, Price)
- SDP (S_No, D_No, P_No)
- Answer the following queries using SQL : 8
- (i) List the names of all the products that are sold in all domains.
- (ii) Get the product numbers which are marketed by at least two salesmen.
- (iii) Find the names of all salesmen who are not managers.
- (iv) Get the S_No of all the salesmen who distribute a particular product.
- (b) Discuss the design issues that are specific to distributed databases. 7

3. (a) Construct a B+ tree for the following set of key values where the number of key values that fit in a node is 3.
 Key values : 3, 10, 12, 14, 29, 38, 45, 55, 60, 68
 Show the steps involved in the insertion of key values 11 and 30. 9
- (b) Explain the concept of two phase locking. Also, show that it guarantees serializability. 6
4. (a) Define the following operations of relational algebra giving an example for each : 6
- (i) Division
 - (ii) Cartesian product
- (b) Discuss trade-offs between mainframe systems and Client/Server environment. 6
- (c) Write at least three differences between RDBMS and Object-Oriented DBMS. 3
5. (a) What is meant by un-normalized relation ? Define Boyce-Codd Normal Form. With the help of an example differentiate BCNF with Third Normal Form. 7
- (b) Differentiate between the following : 8
- (i) Network vs. Hierarchical Model
 - (ii) Knowledge Base System vs. DBMS
 - (iii) Multilist vs. Inverted File organisation
 - (iv) Procedural vs. Non-procedural DML

