

MCA (Revised)

Term-End Examination

June, 2011

MCS-043 : ADVANCED DATABASE DESIGN

Time : 3 hours

Maximum Marks : 100

Question number one is compulsory. Answer any three questions from the rest.

1. (a) Which MVDs (multivalued dependency) hold for the following table : 5

P-No.	Colour	Size
P ₁	C ₁	S ₁
P ₁	C ₂	S ₁
P ₁	C ₁	S ₂
P ₁	C ₂	S ₂
P ₁	C ₁	S ₃
P ₁	C ₂	S ₃
P ₂	C ₃	S ₁
P ₂	C ₃	S ₃

Each product (P) comes in a range of colours (C) and sizes (S)

- (b) The organization called ABC undertakes several kinds of projects. Each employee can move on one or more projects. Each project is undertaken on the request of a client. A client can request for several projects. Each project has only one client. A project can use a number of items from different manufacturers and an item may be used by several projects. Before delivery of items to a client, it is tested by testing group in the organization. 10

Draw an E-R diagram and convert it into a relational schema. Also identify primary key in each relation.

- (c) Discuss the shadow paging recovery scheme. 5
- (d) Describe object definition language with the help of an example. 4
- (e) How does embedded SQL differ from Dynamic SQL ? With the help of an example, describe the implementation of cursors and triggers. 6
- (f) How does oracle manage database security ? 5
- (g) When is it useful to have replication or fragmentation of data in distributed system ? Explain. 5

2. (a) Distinguish between the followings with examples. 8
- (i) Time stamping and Two-Phase locking.
 - (ii) Data mining queries and database queries.
- (b) Consider the following relations : 6
- Teacher (T#, T Name)
- Practical-Paper (P#, P-Name, Tname)
- Conducts (T#, P#)
- Write the relational algebra expression for the following queries.
- (i) Get those teacher numbers (T#) who are not conducting practical number P₂.
 - (ii) Get details of those teachers who are conducting practical numbers P₁ to P₄.
- (c) What problems occur in the database system when transactions do not satisfy ACID properties ? Explain explicitly using suitable examples. 6
3. (a) What is ODBC ? What are requirements of ODBC ? Describe the components required for implementation of ODBC. 7

- (b) What are the different types of index in PostgreSQL ? Explain each one of them. 7
- (c) What is the difference between document type definition and XML schema ? Explain with an example. 6
4. (a) What do you understand by query optimization ? What are query trees ? Explain with an example. 7
- (b) What is multiversion concurrency control ? Explain how multiversion concurrency control can be achieved based on time stamp ordering ? 8
- (c) List steps involved in building of Dataware house. 5
5. (a) What are views ? How are they implemented can views be used for data manipulation ? Explain with help of an example. 6
- (b) Describe normalization using join dependency with the help of an example. 6
- (c) Explain the following terms in the context of DBMS : 8
- (i) Multilevel Security
 - (ii) Auditing and Control
 - (iii) Redo log files
 - (iv) Characteristics of DBMS