

Subject: DATABASE MANAGEMENT SYSTEMS

Time: 3 Hours

Max. Marks: 100

JUNE 2011

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. Structured data may include which of the following?

- | | |
|-----------------|-----------------------|
| (A) Photo image | (B) Video clip |
| (C) Dates | (D) None of the above |

b. Metadata enables database designers and users to do all of the following except:

- (A) sample data
- (B) understands what data exist
- (C) what the fine distinctions are between similar data items
- (D) what the data mean

c. In enterprise data modelling, which is incorrect?

- (A) You review current systems
- (B) You implement the new database
- (C) You describe the data needed at a very high level of abstraction
- (D) You plan one or more database development projects

d. Which is not a relevant feature of CASE tools?

- (A) The ability to help draw data models using entity-relationship notations
- (B) The ability to generate code
- (C) An information repository
- (D) Access to a DB via the Internet

e. A subtype entity name should be which of the following?

- | | |
|---------------------|----------------------------------|
| (A) A singular noun | (B) Specific to the organization |
| (C) Concise | (D) All of the above |

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- f. The blocking factor is:
- (A) a group of fields stored in adjacent memory.
 - (B) the number of physical records per page.
 - (C) attributes grouped together by the same primary key.
 - (D) attributes grouped together by the same secondary key.
- g. A rectangle represents which of the following in an EER?
- (A) Attribute
 - (B) Entity
 - (C) Optional One
 - (D) Relationship
- h. An oval represents which of the following in an EER?
- (A) Attribute
 - (B) Entity
 - (C) Optional One
 - (D) Relationship
- i. Which of the following is not a factor to consider when switching from small to large block size?
- (A) The length of all of the fields in a table row
 - (B) The number of columns
 - (C) Block contention
 - (D) Random row access speed
- j. Which of the following improves a query's processing time?
- (A) Write complex queries
 - (B) Combine a table with itself.
 - (C) Query one query within another
 - (D) Use compatible data types

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

- Q.2** a. What are the different types of database end users? State the main activities of each? (8)
- b. Describe some types of database utilities and tools and their functions? (8)
- Q.3** a. Explain entity type and entity set? (4)
- b. Describe the characteristics of a relation? (6)
- c. What is meant by recursive relationship type? Give some example of recursive relationship types. (6)

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- Q.4** a. How does Tuple relational calculus differ from domain relational calculus? (8)
- b. Explain the mapping of weak entity for E.R. model to relational model. (8)
- Q.5** Write SQL Queries for the following:
- (i) Create a database having relations
Department (DNo, DName, EMPID)
Employee (EMPID, EmpName, DNo, Sal)
Project (PID, PName, EMPID, Location)
Enforce Refrential and entity integrity in above relation. (10)
- (ii) Show the resulting salaries if every employee working on the '*ProductX*' project is given a 10 percent raise? (2)
- (iii) Update *Employee* table of employee working in 'IT' department with salary increase by 1000. (2)
- (iv) Delete *Project* table. (2)
- Q.6** a. Why should nulls in a relation is avoided as far as possible? Describe the problem of spurious Tuple and how we may prevent it? (8)
- b. Discuss normalization of relations. (8)
- Q.7** a. Explain lossless join decomposition into BCNF scheme. (10)
- b. Explain dependency preserving decomposition into 3NF scheme. (6)
- Q.8** a. Explain the buffering of blocks in data transfer. (8)
- b. Write a note on Hashing Techniques. (8)
- Q.9** a. What do you mean by cost component of query optimization? (8)
- b. Explain the implementation of aggregate operation? (8)