

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)

CLASS: MCA/MBA  
BRANCH: MCA/MBA

SEMESTER : II/BL  
SESSION : SP/2014

SUBJECT: MCA2005 DATABASE MANAGEMENT SYSTEM

TIME: 3.00 HOURS

FULL MARKS: 60

INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

- 6
- Q.1(a) What is a data model? How schema is different from instances? Give examples. [6+6]  
Q.1(b) Name different database users and explain the responsibilities of DBA.
- Q.2(a) What do you mean by mapping constraints? Distinguish between primary key and foreign key. [6+6]  
Q.2(b) What do you mean by ISA relationship? Explain the concept of aggregation with a suitable example.
- Q.3 Consider the relational schema: [3X4]  
employee(empno, name, office, age)  
books(isbn, title, authors, publisher)  
loan(empno, isbn, date)  
write the following queries in relational algebra.  
(i) Find the names of employees who have borrowed a book published by McGraw-Hill.  
(ii) Find the names of employees who have borrowed all books published by McGraw-Hill.  
(iii) Find the names of employees who have borrowed more than six different book published by McGraw-Hill.  
(iv) For each publisher, find the names of employees who have borrowed more than seven books of that publishers.
- 7 Q.4(a) Why do we normalize a database? What are different normal forms? [6]  
Q.4(b) What is DKNF? Explain multi-valued dependency. [6]
- 7 Q.5(a) What do you mean by referential integrity constraint? Explain. [6]  
Q.5(b) What do you mean by data encryption? Why do we need statistical databases? [6]
- 7 Q.6(a) Define transaction. Discuss the problems associated with concurrent execution of multiple transactions. [6]  
Q.6(b) Explain timestamp ordering protocol for concurrency control. [6]
- 6 Q.7(a) What are the fragments of relations in distributed systems? Give examples. [6]  
Q.7(b) Discuss the advantages of Distributed Database Management System. [6]