

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

**CLASS: BE
BRANCH: EEE**

**SEMESTER : VII
SESSION : MO/18**

SUBJECT: CS4205 DATABASE MANAGEMENT SYSTEM

TIME: 3 HRS.

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.
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- Q.1(a) Briefly write the benefits of using a DBMS. [2]
(b) What are the main functions of a database administrator (DBA)? [4]
(c) Briefly explain the different types of users of database management system. [6]
- Q.2(a) Explain the difference between weak and strong entity with the help of diagram. [2]
(b) Differentiate between the Generalization and Specialization with the help of an example. [4]
(c) Construct an ER diagram for a hospital with a set of patients and a set of medical doctors. With each patient a log of various conducted tests is also associated. [6]
- Q.3(a) Explain the following terms: Primary Key and Super Key. [2]
(b) What is Relational Algebra? Explain different type of Joins operation with example. [4]
(c) Consider the following relations and write the SQL expression equivalent to the following queries: [6]
BRANCH (Branch_Name, Branch_City, Assets)
CUSTOMER (Customer_Name, Customer_Street, Customer_City)
ACCOUNT (Account_No., Branch_Name, Balance)
LOAN (Loan_No., Branch_Name, Amount)
BORROWER (Customer_Name, Loan_No.)
DEPOSITOR (Customer_Name, Account_No.)
i) Find the names of all customers, who live in "MUMBAI".
ii) Find the names of all customers, who have a loan at the "MUMBAI" branch.
iii) Find the names of all customers along with their loan numbers, who have a loan at the bank.
- Q.4(a) Explain the concept of Normalization briefly with the help of an example. [2]
(b) Discuss Armstrong's Axioms. Give examples for each rule. [4]
(c) Show that every BCNF schema is in 3NF but 3NF is not in BCNF. [6]
- Q.5(a) Explain the following- Authorization and View. [2]
(b) Describe briefly, the SQL features with examples. [4]
(c) Define Relational Calculus. Explain Domain Relational Calculus. [6]
- Q.6(a) Draw and briefly explain the state transition diagram of a transaction. [2]
(b) List the ACID Properties. Explain the usefulness of each. [4]
(c) Explain the basic steps in Query Processing with the help of a diagram. [6]
- Q.7(a) What is Rigorous and Strict Two Phased Locking? [2]
(b) How Time Stamp Ordering is achieved? [4]
(c) What is Serializability? Discuss its various types. [6]

:::03/12/2018:::M