

**GANPAT UNIVERSITY**  
**B. Tech SEMESTER-III (CE/IT)**  
**Regular Examination Nov/Dec - 2011**  
**CE/IT 306: Database Management System - I**

Time: 3 Hours]

[Total Marks: 70

**Instructions:**

1. Figures to the right indicate full marks
2. Each section should be written in a separate answer book
3. Be precise and to the point in your answer

**SECTION-I**

1. (a) Discuss Weak Entity Sets. [4]
  - (b) What is DBA? Explain four basic functions of DBA. [4]
  - (c) Draw schema diagram of Banking Enterprise using following schema: [4]  
 Branch( Branch-name, City, Asset )  
 Account( Acc\_no, Branch-name, Balance )  
 Depositor( Cust-name, Acc\_no )  
 Customer( Cust-name, Cust-street, City )  
 Loan( Loan\_No, Loan\_name, Amount )  
 Borrower ( Cust-name, Loan\_no )
- [OR]
1. (a) Discuss various physical storage mediums with hierarchy diagram. [4]
  - (b) Explain difference between File System and DBMS. [6]
  - (c) Define Schema and Instance. [2]
  2. (a) Consider following relations [6]  
 Employee(name, street, city)  
 Works(name, company-name, salary)  
 Company(company-name, city)  
 Manages(name, manager-name)  
 Give an expression in the relational algebra to express each of the following  
 ( Any Three ).  
 (i) Find the names of all employees who work for 'First Bank Corporation'.  
 (ii) Find the names of all employees who earn more than every employee  
 of 'small bank corporation'.  
 (iii) Find all those employees who work for company of their own city.  
 Rename relation employee to emp.
  - (b) Discuss Candidate Key & Super key with an example. [3]
  - (c) Explain Union operation in Relational Algebra. [2]
- [OR]
2. (a) Explain RAID Levels. [6]
  - (b) Explain Aggregation. [3]
  - (c) Define: Simple Attribute, Composite Attribute. [2]
  3. Answer the followings: (Any Three) [12]  
 (i) Explain Mapping Cardinality.  
 (ii) Define: Primary Key, Unique Key, Foreign Key, Super Key.  
 (iii) Explain View of Data.  
 (iv) Explain Database Languages.



## SECTION-II

4. (a) Describe various application architectures of yahoo with an appropriate diagram and give an appropriate example. [4]  
(b) Describe notations for foreign key, disjoint generalization, total generalization, identifying relationship in terms of E-R model. [4]  
(c) Define Variable length record representations (both reserved space, Byte representation and list representation) with diagram. [4]

[OR]

4. (a) Describe various application architecture of face-book with an appropriate diagram and give an appropriate example. [4]  
(b) Describe notations for multi-value attributes, owner-entity set, many to many relationship, one to one relationship in terms of E-R model. [4]  
(c) Define Fixed length record representations (both reserved space, list representation) with an appropriate diagram. [4]

5. (a) The people's bank offers five types of accounts: loan, checking, premium, savings, daily interest saving and money market. It operates a number of branches and a client of bank can have any number of accounts. Account can be joint. For example, more than one client may be able to operate a given accounts. Identify the entries of interests and show their attributes. What relationships exist among these entities? [11]

(a) Draw the correspondent E-R diagram

(b) Reduce the E-R diagram into tables(A relational Model)

Schema as follows:

Account(acc\_no, acc\_type, balance)

Branch (branch\_id, branch-address, branch-name)

Transaction(tr\_id, amount, date, type\_of\_tr)

Client(acc\_no, name, age, address)

Relationship are Account-Branch, Account-Transaction and Account-Client.

[OR]

5. (a) Which are different types of file organizations?? Explain all types with diagram [6]  
(b) Explain Slotted page structure. [3]  
(c) Define the use of following functions [2]  
Substring, Lpad, Rpad, Ltrim

6. Write the following Queries in SQL: (Any Six) [12]

Schema:

Passengers(p\_id, p\_name, rate, age)

Train(tr\_id, tr\_name, date, seat\_no)

(1) Find all passengers who have reserved seats in western railway.

(2) Find the names of passengers who have reserved seats in train 'TR1001' for 26<sup>th</sup> October, 2008('TR1001' is a train Id).

(3) Find the names of passengers who have reserved seat number 103 for train 'TR1001'.

(4) Find the names and age of oldest passenger.

(5) Find the average age of passengers.

(6) Find all the passengers with a rate above 500.

(7) Count the number of trains for each zone.

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