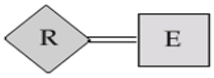
(*Please write your Exam Roll No.*) *Exam Roll No ……*

Bharati Vidyapeeth's
Institute of Computer Applications and Management
A-4, Paschim Vihar, New Delhi-63
SECOND SEMESTER [MCA] Internal Examination, February 2018

Paper Code: MCA – 108	**Subject: Database Management Systems**
Time: 2 Hours	**Maximum Marks: 45**

Note: Attempt THREE questions in all. Question No. 1 is compulsory and attempt one question from each unit.

1. Answer the following questions briefly:- ***(Any Ten)*** 1.5 x 10 = 15
   (a) Brief the roles of a Query Processor.
   (b) What do mean by terms- degree and cardinality of a relation?
   (c) Define integrity rules of relational algebra.
   (d) Give the difference between LEFT & RIGHT outer join using example.
   (e) Define functional dependency.
   (f) Write any three roles of DBA.
   (g) List the use of SEQUENCES in SQL?
   (h) Discuss the various reasons that lead to the occurrence of null values in the database.
   (i) 

   Briefly explain the above notation.
   (j) What do you mean by nested query in SQL? Give one example.
   (k) Write any three string function in SQL with syntax and example.

UNIT - I

2. (a) Construct an E-R diagram for a car insurance company whose customers own one or more cars each. Each car has associated with it zero or more accidents associated with it. Also write DDL schema with necessary constraints. 5
   (b) Describe the three levels of database system architecture? Why do we need mapping between different levels? 5
   (c) Compare ternary relationship with aggregation with suitable example. 5
3. (a) Discuss the generalization specialization hierarchy for a motor vehicle sales company. The company sells motorcycles, passenger cars, vans and buses. Justify your placement of attributes at each level of hierarchy. Explain why they should not be placed at higher or lower level. Also write DDL schema with necessary constraints. 5
   (b) Explain how data is represented in Hierarchical Data model. Also write advantages and limitations of this model. 5
   (c) Explain different types of attributes with their notations in ER Diagram. Also Explain need of Extended ER Model. 5

UNIT – II

4. (a) Explain all SET oriented operations of relational algebra along with their SQL implementations. 5

(b) List all candidate keys of R={A,B,C,D,E} 5
FDs={AB→ C, D→ A, AE→B, CD→E, BE→D}.

(c) Consider the following relations and write queries in relational algebra: 5
BOOK(**book_code**, bname, price, author, publisher)
MEMBER(**membership_no**, mname, dept, DOB)
ISSUE(**book_code, membership_no**, issue_date, return_date)

1. List the names of members who issued the books with return date '27/02/2018'.
2. List the names of books issued to members of 'MCA' department.
3. Find issue date and return date of book titled 'Let us C'.

5. (a) Why indexing is required? How index file is created in SQL? 5

(b) Consider the following relation 5
ORDER(OrderNo, OrderDate, CustName, CustEmail, ProductID, ProductNAme, Price, Quantity) with following FDs
OrderNo → OrderDate, CustName
ProductID → ProductName, Price
CustName→CustEmail
OrderNo, ItemNo→Quantity
Apply normalization until you cannot decompose it further.

(c) Write all six Armstrong's Axioms. 5