Total No. of Questions—**7**] [Total No. of Printed Pages—**8**

Seat No.	

[5219]-2004

F.Y. B.C.A. (Science) (Second Semester) EXAMINATION, 2017

BCA-204 : RELATIONAL DATABASE MANAGEMENT SYSTEM

(2016 PATTERN)

Time : Three Hours **Maximum Marks : 70**

N.B. :— (*i*) Question No. **1** is compulsory.

(*ii*) Attempt any *two* questions from Group-I and Group-II respectively.

(*iii*) Figures to the right indicate full marks.

1. (A) Attempt all of the following : [7×1=7]

(1) A set of logically related record forms a ..... .

(*a*) database

(*b*) file

(*c*) record

(*d*) none of the above

P.T.O.

(2) ..... is the capacity to change the schema at one level of database system without having to change schema at next higher level.

(*a*) Logical data independence

(*b*) Physical data independence

(*c*) Data independence

(*d*) None of the above

(3) Which of the following is *not* an aggregate function ?

(*a*) min

(*b*) max

(*c*) avg

(*d*) order by

(4) The meaning of the notation X → Y is ..... .

(*a*) X functionally determines Y

(*b*) Y functionally depend on X

(*c*) Both (*a*) and (*b*)

(*d*) None of the above

(5) Relational data model stores the data in the form of ..... .

(*a*) row

(*b*) column

(*c*) relation

(*d*) table

(6) In entity-relationship diagram double ellipse represents ..... .

(*a*) multivalued attribute

(*b*) derived attribute

(*c*) weak entity

(*d*) primary key

(7) Process of breaking a large relation R into a set of small relations r_1, r_2, ... r_n is called as ..... .

(*a*) association

(*b*) generalization

(*c*) decomposition

(*d*) none of the above

(B) Attempt all of the following : [7×1=7]

(*a*) Define record type.

(*b*) State the users of DBMS.

(*c*) State the purpose of normalization.

(*d*) Define the term 'tuple'.

(*e*) What do you mean by strong and weak entity sets ?

(*f*) Give an example of nested subquery.

(*g*) What is ISAM ?

Group-I

2. Attempt all of the following : [5+5+4=14]

(*a*) Differentiate between File system and Database management system.

(*b*) Define Key. Explain the following terms :

(*i*) Primary key

(*ii*) Foreign key

(*iii*) Super key

(*iv*) Candidate key

(*c*) What do you mean by index organization ? How is it implemented using dense index and sparce index ?

3. Attempt all of the following : [4+4+3+3=14]

(*a*) What do you mean by fixed and variable length record ? Explain with example.

(*b*) What is data model ? Write a short note on relational data model.

(*c*) Explain any *three* types of attributes of entity relationship model in detail.

(*d*) Consider the following relations :

Book (bno, bname, publication, price)

Author (ano, aname, address)

Book and Author are related with many to many relationship. Draw an ER diagram for above scenario.

4. Attempt all of the following : [4+4+3+3=14]

(*a*) Let

$$R = \{A, B, C, D, E, F\}$$

and a set of FD's :

$$A \rightarrow BC,\ E \rightarrow CF,\ B \rightarrow E,\ CD \rightarrow EF,\ F \rightarrow D$$

Compute the closure of a set of attribute {A, B} under the given set of FDs.

(*b*) Consider the following relations :

Musician (m_no, m_name, age, m_city)

Instrument (i_no, i_name)

Play (m_no, i_no)

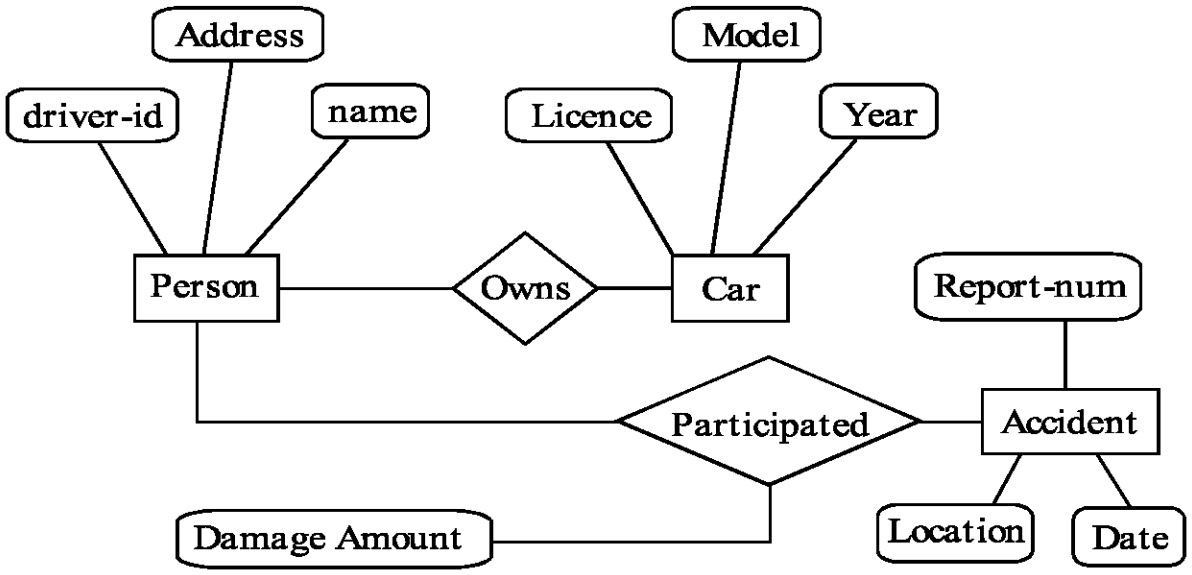
Solve the following queries :

(*i*) List all the musicians having age between 30 and 40 years.

(*ii*) List all 'violin' players who live in 'Mumbai' and their age is below 30.

(*c*) Explain 'Group by' and 'Order by' clauses in SQL with example.

(*d*) Design a relational database corresponding to the following ER diagram.



Group-II

5. Attempt all of the following : [5+5+4=14]

(*a*) Explain any *five* aggregate functions in detail.

(*b*) What are pitfalls in relational database design ?

(*c*) Write a short note on integrity constraints on database design.

6. Attempt all of the following : [4+4+3+3=14]

(*a*) What are different data types available in SQL ? Explain in detail.

(*b*) What is normalization ? Define the terms :

(*i*) 1NF

(*ii*) 2NF

(*iii*) 3NF

(*c*) Consider the following relations and solve the queries :

Item (i_code, i_name, price)

Order (o_code, date, cust_name)

Item-order (i_code, o_code, qty)

(*i*) List all order numbers along with different items.

(*ii*) List all orders before 4th October, 2010.

(*iii*) List all items along with their price.

(*d*) Write a short note on desirable properties of decomposition.

7. Attempt all of the following : [4+4+3+3=14]

(*a*) Explain pattern matching operators in SQL.

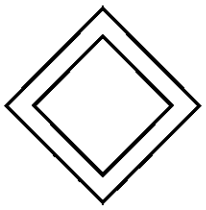
(*b*) Consider the following Relational Database 'Star' is an agency for flat booking and it has number of builders and agents who are jointly working. A customer can get a flat for residential or commercial purpose. If customer is approached through an agent, the agency and builders are giving some commission to the agent. Agent shows various flats and sites within various locations. Study above case and :

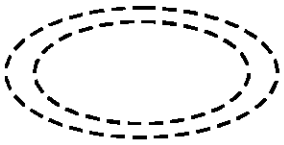
(*i*) Design an ER diagram

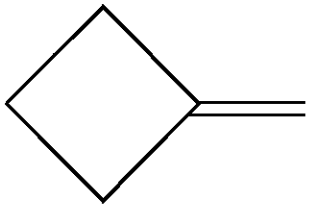
(*ii*) Identify all entities.

(*c*) Explain how insertion and deletion are done in B^+ tree index.

(*d*) Explain any *three* ER notations with example :

(*i*) 

(*ii*) 

(*iii*) 

(*iv*)