



RAN - 1811040101020001

RAN-1811040101020001**MCA 1st Semester Examination****March / April - 2019****PAPER: 102 : Database Management Systems****(NEW Course)****Time: 3 Hours]****[Total Marks: 70****સૂચના : / Instructions**

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of signs on your answer book

Name of the Examination:

☛ **MCA 1st Semester**

Name of the Subject :

☛ **PAPER: 102 : Database Management Systems**Subject Code No.: **1811040101020001**

Seat No.:

--	--	--	--	--	--

Student's Signature

Q1: Attempt Any THREE.**[18]**

- Define Data Model. List different Data models and specify basic characteristics for each.
- Explain with example - 'union', 'intersect' and 'set difference' set operations of relational algebra
- Explain terms with example - Domain, Super key, candidate key, Primary Key
- Explain Sequential file and random file organization with its advantages and limitation.

Q2: Do as directed**[18]**

- Consider the following information for one academic institute. Primary key for student table is Roll No and branch table is Branch Code
 Student (Candidate_No, Name, Course_Enrolled, Date of Join, Branch Code) Branch (Branch Code, Branch Name, Branch City)

RAN-1811040101020001]**[1]****[P.T.O.]****P0207**

Write SQL statements for the following:

[14]

1. Create above tables with proper key constraints
 2. Insert a record in student table.
 3. Find total number of students enrolled with the institute.
 4. List names of all students with their branch name and branch city.
 5. Find total number of students enrolled for course 'Network Programming'.
 6. Find student who joined the institutes most recently.
 7. List names of branches in city 'Surat'.
- B) Followings is a set of functional dependencies for relation R (A, B, C, D, E)
- $A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A$

Find candidate keys of R using concept of the closure of a set of attributes. Also give proper justification for your answer

[04]

Q.3: Attempt Any THREE.

[18]

- A) What is decomposition? Explain loss less join decomposition with suitable example.
- B) Prove the statement "Every relation which is in BCNF is in 3NF but the converse is not true"
- C) Explain referential integrity constraint giving suitable example.
- D) Explain outer join giving suitable example.

Q4: Attempt Any TWO.

[16]

- A) List DML statements of SQL. Explain any two giving complete syntax and example.
- B) Explain cardinality ratio. How cardinality ratio affects database design.
- C) Explain various anomalies for bad database designs
