DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. **Branch : AI&DS** **Semester :IV**

Subject Code & Name: DBMS BTAIC402

Max Marks: 60 **Date: 18/08/2022** **Duration: 3.45 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	What is DBMS? Explain the need of DBMS. Write any 3 application of DBMS.	**Understand**	**6**
B)	What is RDBMS? Explain data model of RDBMS. Define Schema and instances with suitable example.	**Understand**	**6**
C)	Explain Client/Server Architecture of DBMS.	**Understand**	**6**
Q.2	**Solve Any Two of the following.**		
A)	Explain following types of joins in SQL with suitable example. i) Inner Join ii) Left Outer Join iii) Natural Join	**Understand**	**6**
B)	What is the need of Normalization? Write necessary conditions for 1NF,2NF,3NF and BCNF.	**Understand**	**6**
C)	Consider the following relational schema and write following SQL query.	**Apply**	**6**

Student:

RollNo	Name	SDepartment	Class	Address

Teacher:

Tid	TName	TDepartment	Salary

Teaches:

Tid	Subjects_teaching	Class	Branch

i) Find all the teachers name whose salary is greater than 70000.

ii) Update Department ETC to ECE for all students belonging to ETC.

iii) Find all students from class TY and Department AIDS whose address is "Pune".

iv) Find total number of teachers from each department.

v) Find the name of the teacher who is teaching DBMS to Roll No CS3031

vi) Rename “Department” column in Students table to “Branch”.

Q. 3 Solve Any Two of the following.

A)	Differentiate between RDBMS and NoSQL databases.	**Understand**	**6**
B)	Describe the properties of Key-Value Store	**Understand**	**6**
C)	Describe distributed database system with suitable diagram.	**Understand**	**6**

Q.4 Solve Any Two of the following.

A) Draw Cassandra Architecture with various components. Explain each component in brief. **Understand** **6**

B) Consider the following JSON document schema and answer the MongoDB queries **Apply** **6**

```
{ "_id" : 1,
      "name" : "Arav",
      "age" : 21,
      "city" : "Aurangabad",
      "subjects" : [
            "DA",
            "java",
            "dbms" ],
      "cmarks" : {
            "DS" : 20,
            "DA" : 12},
      "roll" : 1
}
```

i) Create collection Student under “College” Database.
ii) Insert above schema in “student” collection.
iii) Show all the records in “student” collection.
iv) Update city of roll=1 to “Latur”.
v) Find names and roll numbers of students whose age is greater than 20.
vi) Update DS marks of roll=3 to 18.

C) Write a suitable example for following Cassandra operation (Query). **Apply** **6**

i) Creating keyspace with replication factor 3.
ii) Inserting records in a table under keyspace.
iii) Updating values in tables.
iv) Deleting particular record in table.
v) Dropping a keyspace.
vi) Truncate a table.

Q. 5 Solve Any Two of the following.

A)	Explain various graph representation techniques (data structures) with suitable examples.	**Understand and Apply**	**6**
B)	Explain properties of graph database model.	**Understand**	**6**
C)	Write a short note of Redis.	**Understand**	**6**

***** End *****