Roll No .....

Thapar Institute of Engineering and Technology (TIET), Patiala
Department of Computer Science & Engineering (CSED)
EST EXAMINATION

B. E. (Third Year):· Semester-VI	Course Code: UCS661 Course Name: Database Engineer MongoDB
May 15, 2023	Monday, Time: 9 am to 12 pm
Duration: 3.00 Hrs, Max. Marks: 35	Name of Instructor: Dr. Sumana Maiti

Note: Attempt all questions in sequence. Assume any missing data. Please be precise and concise while writing.

<table>
<tr><td>Q 1</td><td>Consider a collection named "Employee", which contains the following fields in each documents of the collection with different field values.
name, emp-id, age, designation, salary
(a) Using aggregation pipeline find the name and emp_id of all the employee where designaion is 'software engineer' and salary is between 4000 to 6000.
(b) Find the count of software engineer who earns more than 5000.</td><td>(5+2)</td></tr>
<tr><td>Q 2</td><td>Consiider the collection named "Product", which contains different documents with same fields. Some of the documents are as follows
<table>
<tr><td>{ _id:1,
name: "abc",
stock: [
{size: "S", color: "red", quantity: 20},
{size: "M", color: "blue", quantity: 30}],
description: "abcredblue"}</td><td>{ _id:2,
name: "pqr",
stock: [
{size: "S", color: "blue", quantity: 25},
{size: "M", color: "black", quantity: 10}],
description: "pqrblueblack"}</td><td>{ _id:3,
name: "xyz",
stock: [
{size: "S", color: "green", quantity: 15},
{size: "M", color: "black", quantity: 18}],
description: "xyzgreenblack"}</td></tr>
</table>
(a) Create an index on size and quantity fields.
(b) Create the text index on the description field.
(c) Write a query to find the quantity and name of those products, where "S' size and "red" color items are present. Only print the first two documents of the result.</td><td>(3+1+3)</td></tr>
<tr><td>Q 3.</td><td>(a) State the difference between replication and sharding.
(b) Discuss the advantages and disadvantages of both replication and sharding procedures.</td><td>(3+4)</td></tr>
<tr><td>Q 4</td><td>(a) Give an example to show how to represent a GeoJson point.
(b) State the difference between the primary key and the shard key.
(c) Define range-based sharding with a proper example</td><td>(2+2+3)</td></tr>
<tr><td>Q 5.</td><td>Consider the following document in a collection named "vehicle"
{ _id:1, make: "Audi", model : "A1", colors: ["white", "black", "blue"]}
(a) Write a query to add two more colors "orange" and "green" to the colors array of the above document and sort the elements of the array in ascending order.
(b) Write a query to remove "white" and "black" from the colors array and print only the first two values from the colors array</td><td>(4+3)</td></tr>
</table>

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Roll No .....

Thapar Institute of Engineering and Technology (TIET), Patiala
Department of Computer Science & Engineering (CSED)
MST MAKEUP EXAMINATION

B. E. (Third Year): Semester-VI	Course Code: UCS661 Course Name: Database Engineer
April 17, 2023	Monday, Time: 5:30 pm to 7:30 pm
Duration: 2.00 Hrs, Max. Marks: 25	Name of Instructor: Dr. Sumana Maiti

Note: Attempt all questions in sequence. Assume any missing data. Please be precise and concise while writing.

Q. 1. Consider the following document in a collection named "Score" (3+2)

{_id: 1, name: "Anik", age: 19, Marks: [65,78,89,98, 67]}

(a)Write the query to add [57, 85] to the array at the third position of the existing array 'Marks'.

(b) Write the query to to sort the elements of the existing array 'Marks' in descending order.

Q.2. What are the different comparison operators available in MongoDB? Discuss each one of them with proper examples. (5)

Q.3. > db.pqr.insertMany([{name: "ABC", time_days: {primary: 5, secondary: 10, advanced:15}, Status: "A", _id: "345"}, {name: "XYZ", time_days: {primary: 6, secondary: 8, advanced:12}, Status: "B", _id: "34"} (3+2)

(i). Write a query to find the names and status, where time_days for secondary is 10.

(ii). Write a query to find the time_days where status is B.

Q.4. (a). Describe briefly what are the requirement of replication in MongoDB (5)

Q.5.(a). State the difference between horizontal scaling and vertical scaling. (2+3)

(b) Describe different types of NoSQL database with proper examples.