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MIT WORLD PEACE UNIVERSITY | PUNE
TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

PRN: 1032210755

Mid Semester Examination

Oct 2023

CET4001B - Big Data Technologies

Schedule ID: 21576

Faculty/School	Faculty of Engineering and Technology	**Term**	Semester V
Program	TY BTech CSE	**Duration**	**1 Hours 30 Minutes**
Specialization		**Max. Marks**	**50**

Instructions to the Candidate:

1. Write the PRN on the top right-hand corner of the question paper.
2. Draw neat diagrams.
3. Assume suitable data, if necessary.
4. Solve any 5 questions.

Section 1 (5 X 10 Marks)
Answer any 5 questions

1	(a) What is the significance of KPIs and Key metrics to business intelligence analysts? [5M] 2.5 (b) Explain various types of big data analytics with an example of each. [5M] 4	**10 marks**	CO1	Remembering
2	(a) Name and describe different V's associated with big data. [5M] 5 (b) Discuss about the core layers of big data systems architecture [5M] 5	**10 marks**	CO1	Understanding
3	(a) How does big data analytics solve the real-world challenges faced by various organizations? [5M] (b) Brief about the motivations for NoSQL databases. [5M]	**10 marks**	CO1, CO2	Understanding
4	(a) What was the need for BASE properties over ACID properties and CAP theorem? [5M] (b) Differentiate vertical and horizontal scaling with a schematic diagram. [5M] 4	**10 marks**	CO2	Applying
5	(a) Describe sharding and various types of database sharding architectures. [5M] key, dir, range 5 (b) What are the advantages of MongoDB over traditional relational DBMS? [5M] 2	**10 marks**	CO2	Remembering

6	(a) Explain various stages of MongoDB Aggregation Pipeline. [5M]
	(b) Consider the following structure of 'restaurants' collection in MongoDB and write the queries for the question below.
	{
	"address": {
	"building": "1007",
	"coord": [-73.856077, 40.848447],
	"street": "Morris Park Ave",
	"zipcode": "10462"
	},
	"borough": "Bronx",
	"cuisine": "Bakery",
	"grades": [
	{ "date": { "$date": 1393804800000 }, "grade": "A", "score": 2 },
	{ "date": { "$date": 1378857600000 }, "grade": "A", "score": 6 },
	{ "date": { "$date": 1358985600000 }, "grade": "A", "score": 10 },
	{ "date": { "$date": 1322006400000 }, "grade": "A", "score": 9 },
	{ "date": { "$date": 1299715200000 }, "grade": "B", "score": 14 }
	],
	"name": "Morris Park Bake Shop",
	"restaurant_id": "30075445"
	}
	a) Write a MongoDB query to display all the documents in the collection restaurants. [1M]
	b) Write a MongoDB query to display the fields restaurant_id, name, borough and cuisine for all the documents in the collection restaurant. [1M]
	c) Write a MongoDB query to display all the restaurant which is in the borough Bronx. [1M]
	d) Write a MongoDB query to display the first 5 restaurant which is in the borough Bronx. [1M]
	e) Write a MongoDB query to display the fields restaurant_id, name, borough and cuisine, but exclude the field _id for all the documents in the collection restaurant. [1M]
		10 marks	CO2	Evaluating

END OF QUESTION PAPER