

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MCA DEGREE EXAMINATION MAY 2023
(First Semester)

Branch – COMPUTER APPLICATION

HYBRID DATABASE MANAGEMENT SYSTEM

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Which of the following is known as a set of entities of the same type that share same properties, or attributes?
(i) Relation set (ii) Tuples
(iii) Entity set (iv) Entity Relation model
- 2 What is the function of the following command?
(i) Clears entries from relation
(ii) Deletes relation
(iii) Deletes particular tuple from relation
(iv) All of the mentioned
- 3 Which among the following is an example of machine-generated structured data?
(i) Satellite Data (ii) Sensor Data
(iii) Radar or Sonar Data (iv) All of these
- 4 _____ command is used to prints a list of all the databases on the system.
(i) show dbs (ii) show database
(iii) show databases (iv) show db
- 5 In MongoDB, which among the following command returns Boolean value ?
(i) query (ii) update (iii) remove (iv) sort

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a How does super key and candidate Key is related between them?
OR
b State any three types of user interfaces that have been designed for the different types of users.
- 7 a Write a SQL query to find the names of all instructors in the Computer Science department who have salary greater than \$70,000 and write the output table as well.
OR
b Write queries which shows how triggers can be used to ensure referential integrity on the time slot id attribute of the section relation.

Cont...

- 8 a Discuss any three important characteristics of Neo4J graph database.
OR
b State any three real-time applications of Riak implementations.
- 9 a Write a sample query for find operations and also write appropriate query to search the user documents where the *last_name* is smith and *age* greater than 30.
OR
b With proper example discuss range queries in MongoDB, also incorporate upper and lower boundaries in range queries.
- 10 a Tabulate the comparison of SQL commands to the aggregation framework operators.
OR
b Write a code to query for all products in the Gardening Tools category also give a code to query for all categories from a given product.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Construct a schema diagram for your university database.
OR
b Discuss on database languages:
(i) Data manipulation language
(ii) Data Definition Language
- 12 a What are the highlights of second normal form (2NF), with proper example explain the working principles and outcomes of 2NF.
OR
b Briefly describe the usage of recursion in SQL, write a sample recursive query.
- 13 a Explore the two major categories for sources of big unstructured data such as machine generated and human generated in detail.
OR
b Justify how CouchDB document database evolved as a part of ecosystem. Also discuss the three ways of implementing the CouchDB.
- 14 a Tabulate the MongoDB versus other databases with respect to sophisticated key-value stores, relational databases, and document databases.
OR
b Write a Java script version of JSON document representing an entry on a social news site in MongoDB.
- 15 a Discuss how Category hierarchy is being implemented in MongoDB? Draw appropriate hierarchy diagram to support your implementation.
OR
b Elaborate the need of capped collections towards the high performance logging scenario. Write the listing for simulating of user actions to a capped Collection.