

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
MCA DEGREE EXAMINATION DECEMBER 2024
(First Semester)

Branch – COMPUTER APPLICATIONS
HYBRID DATABASE MANAGEMENT SYSTEM

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	What is a relation in RDBMS? a. Key b. Table c. Row d. Column	K1	CO1
	2	A _____ is an association among several entities. a. Relationship b. Association c. Set d. Combination	K2	CO1
2	3	Which SQL statement is used to retrieve data from a database? a. Update b. Delete c. Insert d. Select	K1	CO2
	4	Identify the error in "alter table students drop column DateOfBirth date;" a. Alter table b. Drop column c. DateOfBirth d. date	K2	CO2
3	5	Which NoSQL database is known for its ability to handle complex queries and data analysis? a. HBase b. Cassandra c. MongoDB d. Couchbase	K1	CO3
	6	Which is not a type of NoSQL? a. HBase b. QBase c. CouchDB d. MongoDB	K2	CO3
4	7	What type of database is MongoDB? a. Relational b. Document – Oriented c. Graph d. Key – Value	K1	CO4
	8	What is the default port for MongoDB server? a. 27015 b. 28017 c. 27017 d. 8080	K2	CO4
5	9	Which file format is used for MongoDB configuration? a. JAON b. YAML c. XML d. INI	K1	CO5
	10	Identify the issue: db.users.find({age:"25"}) a. Incorrect collection name b. Incorrect field name c. Type mismatch in query value d. Missing query operator	K2	CO5

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the history of Database system.	K3	CO1
		(OR)		
	11.b.	Define the union, intersection and difference operations in relational algebra.		

Cont...

2	12.a.	Write a SQL statement to create a table called employee with columns employee_id , name and salary .	K3	CO2
	(OR)			
	12.b.	Write a SQL trigger to update the last_updated column whenever a row is updated in the employees table.		
3	13.a.	Describe the CAP theorem and its implications for NoSQL database design.	K4	CO3
	(OR)			
	13.b.	Explain the concepts of denormalization in NoSQL databases and its advantages.		
4	14.a.	Explain how MongoDB's replication and sharding features work.	K4	CO4
	(OR)			
	14.b.	Describe how to perform a MongoDB query using the friend() method.		
5	15.a.	Describe the difference between a MongoDB collection and a database.	K5	CO5
	(OR)			
	15.b.	Write a MongoDB query to retrieve all documents from a collection where the title field constrains the word MongoDB .		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	A company wants to design a database to store customer information, orders and products. The database should allow for efficient querying and reporting. i. Identify the entities and attributes in the given scenario. ii. Design an E-R diagram for the company database iii. Explain how you would implement data integrity and security measures in the database.	K4	CO1
2	17	Explain the concept of normalization in data base design. Discuss the benefits and limitations of normalization.	K4	CO2
3	18	Design a NoSQL database schema for a social media application, including user profiles, friendship and posts.	K5	CO3
4	19	Design a MongoDB schema for a simple blog application including posts, comments and users.	K5	CO4
5	20	Design a MongoDB based API for a simple e-commerce application, including endpoints for products, orders and customers.	K6	CO5

Z-Z-Z

END