

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2026
(Fourth Semester)

Branch- COMPUTER SCIENCE WITH DATA ANALYTICS

MODERN DATABASE SYSTEMS

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	Which describes a Distributed Database System? a) A system with a single centralized database. b) A system where the database is stored at multiple sites connected by a network. c) A system that only supports local transactions. d) A system where data is stored in flat files.	K1	CO1
	2	What is the main promise of Distributed Database Systems? a) Increased data redundancy b) Local autonomy and improved reliability c) Reduced network dependency d) Data inconsistency	K2	CO1
2	3	What is the main goal of a Parallel Database System? a) To store data at multiple geographical locations b) To improve performance through concurrent data processing c) To replace relational databases d) To minimize data replication	K1	CO1
	4	What does load balancing ensure in a parallel database system? a) Only one processor is used at a time b) Equal distribution of data and tasks among processors c) Data redundancy increases d) Only query optimization is done	K2	CO2
3	5	What is the main reason for the emergence of NoSQL databases? a) Decrease in data volume b) Need for handling unstructured and big data efficiently c) To replace SQL syntax with a simpler query d) To reduce network communication	K1	CO1
	6	The MapReduce framework is mainly used for: a) Data modelling in relational databases b) Data aggregation and parallel processing c) Creating database schemas d) Storing graph edges	K2	CO2
4	7	What is the primary motivation behind the evolution of Next Generation Databases? a) To increase the use of manual data entry b) To handle large volumes of structured and unstructured data efficiently c) To reduce the number of users in a system d) To remove data redundancy completely	K1	CO1
	8	Hadoop is primarily written in which programming language? a) Python b) C c) Java d) C++	K2	CO1
5	9	Which of the following databases stores data in a JSON or BSON format? a) HBase b) Cassandra c) MongoDB d) Redis	K1	CO1
	10	In Column-oriented databases, data is stored: a) Row by row b) Column by column c) In files without order d) As key-value pairs	K2	CO1

Cont...

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 advantages of Distributed Database Systems.	K2	CO2
	(OR)			
	11.b.	Summarize the major design issues in Distributed Database Design.		
2	12.a.	Extend Parallel Data Placement.	K3	CO5
	(OR)			
	12.b.	Explain Load Balancing in Parallel Databases and why is it important?		
3	13.a.	Develop the value of Relational Databases in modern applications.	K3	CO3
	(OR)			
	13.b.	Illustrate Aggregate Data Models in NoSQL.		
4	14.a.	Examine the key features of Next Generation Databases.	K4	CO4
	(OR)			
	14.b.	Develop the concepts of Big Data and its characteristics.		
5	15.a.	Analyze Document Databases? Explain their features with examples.	K4	CO4
	(OR)			
	15.b.	Classify In-memory Databases. Explain their advantages and use cases.		

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	Contrast the architecture of Distributed Database Management System in detail.	K4	CO4
2	17	Analyze the process of Query Processing in Parallel Database Systems in detail.	K4	CO5
3	18	Examine the Emergence of NoSQL Databases and the Role of Graph Databases in Modern Applications.	K4	CO3
4	19	Motive the Hadoop Ecosystem and its role in managing Big Data.	K4	CO5
5	20	Compare the Distributed Database Patterns of MongoDB, HBase, and Cassandra.	K4	CO3

Z-Z-Z

END