

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION MAY 2026
(Sixth Semester)**

Branch – INFORMATION TECHNOLOGY

NoSQL DATABASES

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 one of the following is the characteristics of Big Data? (i) Low Volume (ii) Fixed Format (iii) High Volume (iv) Manual Processing	K1	CO1
	2	Infer the combination that defines the three V's of Big Data. (i) Volume, Velocity, Variety (ii) Value, Vision, Voice (iii) Volume, Value, Vision (iv) Velocity, Voice, Value	K2	CO1
2	3	What is the purpose of the _id field in MongoDB? (i) Store Password (ii) Unique identifier (iii) Foreign key (iv) Index file	K1	CO2
	4	Show which part of the MongoDB cluster manages sharding configuration information. (i) Shard (ii) Config server (iii) mongos (iv) mongo shell	K2	CO2
3	5	Choose the correct conditional operator for less-than. (i) \$gt (ii) \$lt (iii) \$eq (iv) \$ne	K1	CO3
	6	Infer the correct context in which regular expressions are applied in MongoDB. (i) In aggregation (ii) In conditional queries (iii) In indexing (iv) In replication	K2	CO3
4	7	Name the storage engine that Cassandra uses. (i) Long structured storage engine (ii) Short unstructured engine (iii) Flat file engine (iv) In-memory only	K1	CO4
	8	Rephrase the concept of optimization in Cassandra by selecting the appropriate technique used to improve performance and scalability. (i) Partitioning and replication (ii) Vertical scaling only (iii) Removing nodes (iv) Disabling writes	K2	CO4
5	9	Where is a table defined in Cassandra? (i) Inside a keyspace (ii) On the server root (iii) Outside keyspace (iv) Only in client application	K1	CO5
	10	Infer the correct command that removes all table data while keeping the table available for future use. (i) DROP TABLE (ii) TRUNCATE TABLE (iii) DELETE ALL (iv) REMOVE TABLE	K2	CO5

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.	Outline the three V's of Big Data? Define each briefly.	K2	CO1
		(OR)		
	11.b.	Summarize the design philosophy of MongoDB briefly with SQL databases.		
2	12.a.	Compare Master/Slave Replication and Replica Sets in databases.	K3	CO2
		(OR)		
	12.b.	Explain the role of sharding component and how they work together to distribute and balance data in a MongoDB.		
3	13.a.	Determine the different ways to create a collection in MongoDB.	K3	CO3
		(OR)		
	13.b.	Demonstrate the different ways to create a collection in MongoDB.		
4	14.a.	Analyse how to create and remove a keyspace in CQL	K4	CO4
		(OR)		
	14.b.	Examine the drawbacks of Cassandra and mention basic optimization techniques.		
5	15.a.	List the drawbacks of Cassandra and basic techniques to optimize its performance.	K4	CO5
		(OR)		
	15.b.	Identify how aggregate functions work in Cassandra and how they are used in data analysis.		

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	Illustrate any two technologies commonly used for Big Data processing.	K4	CO1
2	17	Explain MongoDB Sharding and describe its components, data distribution and data balancing process.	K4	CO2
3	18	Identify how documents can be inserted by explicitly specifying the _id field. Why is it important?	K4	CO3
4	19	Analyze the concepts of Cassandra's distributed and decentralized architecture to design a suitable solution.	K4	CO4
5	20	Identify the table operations in Cassandra including creating, viewing, dropping and truncating tables.	K4	CO5

Z-Z-Z

END