

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2023
(Third Semester)

Branch – COMPUTER SCIENCE

DATABASE MANAGEMENT SYSTEMS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- 1 In Relational Algebra, which operator is used to select rows from a relation that satisfy a specified condition?
(i) Union (ii) Intersect
(iii) Selection (iv) Projection
- 2 What does the acronym "SQL" stand for in the context of database systems?
(i) Structured Query Language (ii) System Query Language
(iii) Sequential Query Language (iv) Standardized Query Language
- 3 In a DBMS, what is the main function of an exception handler?
(i) To optimize database queries for better performance
(ii) To enforce data integrity constraints like primary keys and foreign keys
(iii) To manage and respond to unexpected errors and issues that arise during database operations.
(iv) To schedule and automate routine database maintenance tasks.
4. When did the term "NoSQL" first emerge, marking the beginning of the NoSQL database movement?
(i) 1990s (ii) Early 2000s
(iii) Late 2000s (iv) 2010s
5. In a graph database, what are nodes and edges used to represent?
(i) Nodes represent data attributes, while edges represent data relationships
(ii) Nodes represent data entities, while edges represent connections or relationships between entities.
(iii) Nodes represent tables, while edges represent foreign key relationships
(iv) Nodes represent documents, while edges represent nested structures within documents.

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a What are the key characteristics of a Database Management System?
OR
b Explain the purpose and usage of the "Projection" operation in Relational Algebra with an example.
- 7 a Explain any two SQL single-row functions.
OR
b Consider a "Customers" table with columns: CustomerID, FirstName, LastName, and Age. How do you delete a customer record with a specific CustomerID (e.g., CustomerID 101)

Cont...

- 8 a Calculate and display the total salary for the employee with EmployeeID using subprogram.
OR
b List some of the commonly used predefined exceptions in Oracle PL/SQL.
- 9 a Compare and contrast SQL with NoSQL databases.
OR
b What is a graph store in the context of databases
- 10 a Why embedded documents are needed? How it can be used in MongoDB?
OR
b How you can delete multiple nodes in MongoDB? Explain.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 6 = 30)

- 11 a Explain the key components and concepts of the Entity-Relationship (ER) model, and describe how it is used to represent the structure of a database. Provide examples.
OR
b Explain the concept of normalization in the context of relational databases. What are the key normal forms and the benefits of normalizing a database?
- 12 a Explain what SQLPlus is and its primary functions in Oracle Database?
OR
b Describe the primary functions and operations of DML, and how DML statements are used to manipulate data in a database?
- 13 a Describe the key features and advantages of using PL/SQL, and provide an example of a PL/SQL block to illustrate its usage.
OR
b Discuss in detail about implicit and Explicit Cursors in Database Programming.
- 14 a Explain the four primary types of NoSQL databases.
OR
b Why MongoDB is considered as a type of NoSQL? Justify..
- 15 a Explain the concept of a flexible schema in databases with an example.
OR
b Write an overview of each CRUD operation with examples.

Z-Z-Z

END