

3037

B.C.A. (Sem. III) Examination, 2024-25

Booklet Series

B

Bachelor of Computer Application

Database Management System

(To be filled by the Candidate / निम्न पूर्तियाँ परीक्षार्थी स्वयं भरें)

Roll No. (in figures)

अनुक्रमांक (अंकों में)

Roll No. (in words)

अनुक्रमांक (शब्दों में)

[Time : 2 : 00 Hours

[समय : 2 : 00 घण्टे

[Maximum Marks : 70

[अधिकतम अंक : 70

Name of Examination Centre

परीक्षा केन्द्र का नाम

Signature of Invigilator

कक्ष निरीक्षक के हस्ताक्षर

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. **The booklet contains 75 questions. Examinee is required to answer any 65 questions in the OMR Answer-Sheet provided and not in the question booklet. In case Examinee attempts more than 65 Questions, first 65 attempted questions will be evaluated. All questions carry equal marks.**
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be immediately replaced.

(Remaining Instructions on last page)

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 75 प्रश्न हैं। परीक्षार्थी को किन्हीं 65 प्रश्नों को दी गई ओएमआर आन्सर-शीट पर ही हल करना है। परीक्षार्थी द्वारा 65 से अधिक प्रश्नों को हल करने की स्थिति में, प्रथम 65 उत्तरों को ही मूल्यांकित किया जायेगा। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR उत्तर-पत्रक को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका, जिसमें कुछ भाग छपने से छूट गये हों या प्रश्न एक से अधिक बार छप गये हों या किसी भी प्रकार की कमी हो, उसे तुरन्त बदल लें।

(शेष निर्देश अन्तिम पृष्ठ पर)

1. Which level of data independence involves changes to the physical storage structures without affecting the logical view of data?

- (A) Logical data independence
- (B) Physical data independence
- (C) Data security
- (D) Data concurrency

2. In an RDBMS, what is a database index used for?

- (A) Data encryption
- (B) Data compression
- (C) Faster data retrieval
- (D) Data modeling

3. What is the purpose of the ACID properties in an RDBMS?

- (A) To encrypt data
- (B) To compress data
- (C) To ensure data consistency and reliability in transactions
- (D) To optimize query performance

4. What does the "cardinality" of a relationship in the ER Model describe?

- (A) The number of attributes in an entity
- (B) The type of relationship (e.g., one-to-one, one-to-many)
- (C) The primary key of an entity
- (D) The data types of the attributes

5. What is the purpose of the SELECT DISTINCT statement in SQL?

- (A) To select only the unique values in a column
- (B) To select all columns from a table
- (C) To select data from multiple tables
- (D) To delete duplicate rows from a table

6. What component of a DBMS is responsible for ensuring that multiple users can access and modify data simultaneously without conflicts?

- (A) Data dictionary
- (B) Query optimizer
- (C) Concurrency control manager
- (D) Storage manager

7. Which SQL statement is used to add a new column to an existing table?
- (A) INSERT
(B) ALTER TABLE
(C) CREATE TABLE
(D) UPDATE
8. In a university database, what type of relationship might exist between the "Student" and "Course" entities?
- (A) One-to-one
(B) One-to-many
(C) Many-to-many
(D) Self-relationship
9. Which SQL statement is used to delete specific records from a table?
- (A) DELETE
(B) DROP
(C) TRUNCATE
(D) REMOVE
10. What is the purpose of the JOIN operation in SQL?
- (A) To update data in a table
(B) To add new data to a table
(C) To retrieve data from multiple tables based on a related column
(D) To remove data from a table
11. In an ER diagram, what is typically used to represent a many-to-many relationship between entities?
- (A) A solid line
(B) A diamond shape
(C) A double line
(D) A dashed line
12. In the relational model, what is an attribute?
- (A) A table
(B) A row
(C) A column
(D) A foreign key
13. What is the purpose of a subquery in SQL?
- (A) To create new tables
(B) To provide data for the outer query
(C) To perform transactions
(D) To define data types
14. Which SQL statement is used to retrieve data from a relational database?
- (A) INSERT
(B) DELETE
(C) SELECT
(D) UPDATE

15. Revoke and grant are commands of?
- (A) DDL
(B) DML
(C) VDL
☒ (D) DCL
16. Second Normal Form is based on feature?
- (A) Redundancy
☒ (B) Functional Dependency
(C) Transitivity
(D) Join Property
17. Which of the following is not a type of Join operation?
- (A) Natural
(B) Equal
(C) Theta
☒ (D) Beta
18. Which of the following is DDL command?
- ☒ (A) alter
☒ (B) update-
(C) insert
(D) revoke
19. Which of the following is an example of aggregation?
- (A) Select
☒ (B) Sum
(C) Set
(D) None of these
20. Which of the following is higher level of database?
- ☒ (A) BCNF
(B) 1 NF
(C) 3 NF
(D) None of these

21. Select command is associated with?

☒ (A) DDL

(B) DCL

(C) DML

(D) VDL

22. Functional Dependencies are the types of constraints that are based on ____.

☒ (A) Key

(B) Key revisited

(C) Superset key

(D) None of the above

23. Which operator retrieves the column attribute from a table?

(A) \bowtie

(B) Π

(C) σ

(D) None of these

24. What kind of Joins is a default in SQL?

(A) Inner

(B) Outer

☒ (C) Self

(D) Natural

25. Which of the following are NOT the example of aggregate functions?

(A) SUM ()

(B) MIN ()

(C) MAX ()

☒ (D) RAND ()

26. In the ____ normal form, a composite attribute is converted to individual attributes.

☒ (A) First

☒ (B) Second

(C) Third

(D) Fourth

27. Which of the following is not an example of DBMS?
- (A) My SQL
(B) Microsoft Access
(C) IBM DB₂
(D) Google
28. Which of the following is not a feature of DBMS?
- (A) Minimum Duplication and Redundancy of Data
(B) High Level of Security
(C) Single User Access only
(D) Support ACID Property
29. The ability to query data, as well as insert, delete and alter tuples, is offered by ____.
- (A) TCL (Transaction Control Language)
(B) DCL (Data Control Language)
(C) DDL (Data Definition Language)
(D) DML (Data Manipulation Language)
30. Using which language can a user request information from a database?
- (A) Query
(B) Relational
(C) Structural
(D) Compiler
31. Which of the following is not a valid aggregate function?
- (A) COUNT
(B) COMPUTE
(C) SUM
(D) MAX
32. Which of the following system is responsible for ensuring durability?
- (A) Recovery system
(B) Atomicity system
(C) Concurrency control system
(D) Compiler system
33. After groups have been established SQL applies predicates in the ____ clause, allowing aggregate functions to be used.
- (A) Where
(B) Having
(C) Group by
(D) With

34. The logical design, and the snapshot of the data at a given instant in time is known as?
- (A) Instance & Relation
 - (B) Relation & Schema
 - ☒ (C) Domain & Schema
 - ☒ (D) Schema & Instance
35. _____ consists of a sequence of query and/ or update statements.
- ☒ (A) Transaction
 - (B) Commit
 - (C) Rollback
 - (D) Flashback
36. Which of the following makes the transaction permanent in the database?
- ☒ (A) Commit
 - (B) View
 - (C) Rollback
 - (D) Flashback
37. In case of any shutdown during transaction before commit which of the following statement is done automatically?
- (A) View
 - (B) Commit
 - (C) Rollback
 - ☒ (D) Flashback
38. What is DBMS?
- (A) DBMS is a collection of queries
 - (B) DBMS is a high-level language
 - (C) DBMS is a programming language
 - ☒ (D) DBMS stores, modifies, and retrieves data
39. Which of the following is not a valid SQL type?
- (A) FLOAT
 - (B) NUMERIC
 - ☒ (C) DECIMAL
 - (D) CHARACTER
40. Foreign key is the one in which the _____ of one relation is referenced in another relation.
- (A) Foreign key
 - ☒ (B) Primary key
 - (C) References
 - (D) Check constraint

41. What does the following code snippet do?

Delete from student where AGE = 12; Rollback;

(A) Performs an undo operation on the delete operation

(B) Deletes the rows from the table where AGE = 12;

(C) Deletes the entire table

(D) None of the above

42. In the given query which of the keyword has to be inserted?

Insert into employee _____

(92, Rahul, 2000);

(A) Table

(B) Values

(C) Relation

(D) Field

43. How many primary keys can have in a table?

(A) Only 1

(B) Only 2

(C) Depends on no. of columns

(D) Depends on DBA

44. A system is in a _____ state if there exists a set of transactions such that every transaction in the set is waiting for another transaction in the set.

(A) Idle

(B) Waiting

(C) Dead lock

(D) Ready

45. The deadlock state can be changed back to stable state by using _____ statement.

(A) Commit

(B) Rollback

(C) Savepoint

(D) Deadlock

46. The situation where the lock waits only for a specified amount of time for another lock to be released is?

(A) Lock timeout

(B) Wait-wound

(C) Time out

(D) Wait

47. Boyce Codd Normal Form is slightly stronger version of which of the form of database normalisation?
- (A) HNF
(B) 3NF
(C) 2NF
(D) None of the above
48. A relation in which every non key attribute is fully functionally dependent on the primary key and which has no transitive dependencies is said to be in :
- (A) BCNF
(B) 2NF
(C) 3NF
(D) 4NF
49. Which is the AS clause used for ?
- (A) Rename
(B) Selection
(C) Join
(D) Projection
50. The _____ operation, denoted by '-', allows us to find tuples that are in one relation but are not in another.
- (A) Union
(B) Set-difference
(C) Difference
(D) Intersection
51. What does the following code snippet do?
- ```
ALTER TABLE STUDENT
ADD (Address Varchar)
```
- (A) Adds a column called Address in the table student  
(B) Checks if a column called Address is present in the table student  
(C) Invalid syntax  
(D) None of the above
52. What is data redundancy in the context of databases?
- (A) Storing data in multiple locations for backup  
(B) Storing duplicate data in the same database  
(C) Using multiple database systems for redundancy  
(D) Storing data in a remote server for redundancy

53. Which of the following commands is used to delete all rows and free up space from a table?

- (A) TRUNCATE
- (B) DROP ✓
- (C) DELETE
- (D) ALTER

54. Which type of user interacts directly with the DBMS through queries and data retrieval?

- (A) Database administrators
- (B) Application developers
- (C) End-users
- (D) Data architects

55. The descriptive property possessed by each entity set is \_\_\_\_\_.

- (A) Entity
- (B) Attribute
- (C) Relation ✓
- (D) Model

56. In a three-tier architecture, what are the three tiers typically composed of?

- (A) Presentation, application, and data
- (B) Client, server, and middleware
- (C) User interface, application logic, and database access ✓
- (D) Front-end, middleware and Record

57. Which of the following is a key characteristic of the database approach in DBMS?

- (A) Data redundancy is encouraged
- (B) Data is stored in separate, unconnected files
- (C) Data is organized into a centralized repository ✓
- (D) Data is stored in flat text files

58. Which component of a DBMS is responsible for maintaining metadata about the database, such as table and column descriptions?

- (A) Query optimizer
- (B) Data Dictionary ✓
- (C) Concurrency control manager
- (D) Application server

59. Which component of a DBMS is responsible for defining the relationships between tables in the database schema?

- (A) Data Dictionary
- (B) Query optimizer
- (C) Foreign key constraints ✓
- (D) Database instance

60. What is the output of the query?

```
SELECT COUNT (*) FROM orders
WHERE customer_id IN (SELECT
customer_id FROM customers
WHERE city = 'New York');
```

- (A) Total number of customers
  - ☒ (B) Total number of orders placed by customers from 'New York'
  - (C) List of customer IDs from 'New York'
  - (D) Total number of orders in the table
- <https://www.rmpssuonline.com>

61 Consider the query below. What does it do?

```
SELECT employee_id, name FROM
employees WHERE department_id
= (SELECT department_id FROM
departments WHERE department_
name = 'Sales');
```

- ☒ (A) Fetches employees who work in the 'Sales' department
- ☒ (B) Lists all departments except 'Sales'
- (C) Fetches the department ID of the 'Sales' department
- (D) Displays department names

62. What will the following query return?

```
Select name
FROM students
WHERE marks = (SELECT MAX
(marks) FROM students);
```

- ☒ (A) The names of students with the minimum marks
- ☒ (B) The name of the student with the highest marks
- ☒ (C) All students with the same marks
- ☒ (D) The highest mark in the table

63. What does the SQL "BETWEEN" operator do?

- ☒ (A) Tests if a value is within a specified range
- ☒ (B) Joins two tables based on a common column
- (C) Combines two or more strings into one
- (D) Counts the number of rows in a table

64. Which SQL operator is used to sort the result set in ascending order?
- (A) SORT
  - (B) ASCENDING
  - ☒ (C) ORDER BY
  - (D) None above
65. What is the primary characteristic of a Hierarchical DBMS?
- (A) It uses a tabular structure to store data.
  - ☒ (B) It represents data as a tree-like structure.
  - (C) It is known for its flexibility in data modeling.
  - (D) It uses object-oriented principles for data storage.
66. What is the purpose of the SQL "EXISTS" keyword when used with a subquery?
- (A) To check if a table exists in the database.
  - (B) To check if a column exists in a table.
  - ☒ (C) To check if any row exists in the subquery result.
  - (D) None above
67. Which SQL aggregate function calculates the average of a set of values?
- ☒ (A) SUM
  - (B) AVG
  - (C) MAX
  - (D) MIN
68. What is the primary goal of database normalization?
- (A) To make data retrieval slower
  - (B) To increase data redundancy
  - ☒ (C) To eliminate data anomalies and improve data integrity
  - (D) To store data in a single, unstructured table
69. In a relational database, what does "functional dependence" mean?
- (A) It describes the relationship between tables in a database.
  - ☒ (B) It specifies how one attribute (or column) depends on another attribute in terms of values.
  - (C) It refers to the process of indexing columns for faster retrieval.
  - (D) It represents the process of data encryption.

70. What is the purpose of a "deadlock" in the context of locking techniques?
- (A) To speed up data retrieval.
  - (B) To prevent transactions from accessing the database.
  - (C) To ensure data consistency.
  - ☒ (D) To describe a situation where two or more transactions are waiting for each other to release locks, preventing them from progressing.
71. In a database the record set of an entity is stored in?
- ☒ (A) Table
  - (B) File
  - (C) Row
  - (D) Column
72. Meta data of a database is also called?
- (A) Schema
  - ☒ (B) Catalog
  - (C) View
  - (D) None of these
73. The degree of a relation in database is also called?
- (A) Participation Ratio
  - ☒ (B) Cardinality
  - ☒ (C) No of Records
  - (D) No of Columns
74. On which level does query process or works?
- ☒ (A) Conceptual
  - ☒ (B) Physical
  - (C) External
  - (D) None of these
75. What is the mean of 'D' of the feature ACID in a database?
- (A) Dynamic
  - (B) Derivatives
  - ☒ (C) Durability
  - (D) Distance