

Roll No. ....

Question Booklet Number

O. M. R. Serial No.

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406034

## B. C. A. (Fourth Semester) EXAMINATION, 2022-23

### DATABASE MANAGEMENT SYSTEM

Paper Code						
B	C	A	4	0	0	2

Questions Booklet  
Series

B

SE

Time : 1:30 Hours ]

[ Maximum Marks : 75

#### Instructions to the Examinee :

#### परीक्षार्थियों के लिए निर्देश :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. 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 got immediately replaced.

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्तर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्तर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page)

(शेष निर्देश अन्तिम पृष्ठ पर)

***(Only for Rough Work)***

1. Which of the following cardinality ratios represents a mandatory relationship ?  
 (A) 1 : 1  
 (B) 1 : N  
 (C) N : M  
 (D) 0 : N
2. In the ER model, an attribute is represented by :  
 (A) Rectangle  
 (B) Circle  
 (C) Diamond  
 (D) Ellipse
3. Which of the following is not a valid attribute type in the ER model ?  
 (A) Numeric  
 (B) Text  
 (C) Boolean  
 (D) Association
4. A primary key in an ER model uniquely identifies a(n) :  
 (A) Entity  
 (B) Relationship  
 (C) Attribute  
 (D) Table
5. The process of converting an ER model into a relational schema is called :  
 (A) Normalization  
 (B) Indexing  
 (C) Data modeling  
 (D) Mapping
6. Which of the following cardinality ratios represents a one-to-many relationship ?  
 (A) 1 : 1  
 (B) 1 : N  
 (C) N : M  
 (D) 0 : N
7. The maximum number of entities that can be involved in a relationship is known as the :  
 (A) Cardinality  
 (B) Degree  
 (C) Entity set  
 (D) Attribute
8. In the ER model, a weak entity is an entity that :  
 (A) Has a composite primary key  
 (B) Cannot exist without a related entity  
 (C) Has a derived attribute  
 (D) Has a many-to-many relationship
9. Which of the following represents a multivalued attribute in the ER model ?  
 (A) Underline  
 (B) Double ellipse  
 (C) Dotted line  
 (D) Double line

10. In the ER model, an associative entity is used to represent :
- (A) Inheritance between entities
  - (B) Aggregation of entities
  - (C) Relationships between relationships
  - (D) Weak entities
11. The process of removing duplicate data from an ER model is known as :
- (A) Normalization
  - (B) Denormalization
  - (C) Deduplication
  - (D) Factoring
12. Which of the following represents an identifying relationship in the ER model ?
- (A) Dashed line
  - (B) Double line
  - (C) Solid line
  - (D) None of the above
13. In the ER model, a composite attribute is an attribute that :
- (A) Consists of multiple values
  - (B) Cannot be further divided into subparts
  - (C) Depends on other attributes
  - (D) Represents a primary key
14. Which of the following is not a type of relationship in the ER model ?
- (A) One-to-one
  - (B) One-to-many
  - (C) Many-to-one
  - (D) Many-to-many
15. In the ER model, a derived attribute is an attribute that :
- (A) Can be calculated from other attributes
  - (B) Represents a relationship
  - (C) Must have a null value
  - (D) Is derived from a primary key
16. The process of grouping similar entities into higher-level entities is known as :
- (A) Aggregation
  - (B) Composition
  - (C) Normalization
  - (D) Generalization
17. What is normalization in the context of database design ?
- (A) The process of converting data into a different format
  - (B) The process of removing duplicate data from a database
  - (C) The process of organizing data into tables and eliminating redundancy
  - (D) The process of encrypting data to enhance security

18. Which normal form requires that the database is in first normal form (1NF) and all non-key attributes are fully functionally dependent on the primary key?  
 (A) First normal form (1NF)  
 (B) Second normal form (2NF)  
 (C) Third normal form (3NF)  
 (D) Boyce-Codd normal form (BCNF)
19. Which normal form eliminates transitive dependencies between non-key attributes?  
 (A) First normal form (1NF)  
 (B) Second normal form (2NF)  
 (C) Third normal form (3NF)  
 (D) Boyce Codd normal form (BCNF)
20. Which normal form is also known as the highest normal form and eliminates all possible anomalies?  
 (A) First normal form (1NF)  
 (B) Second normal form (2NF)  
 (C) Third normal form (3NF)  
 (D) Boyce-Codd normal form (BCNE)
21. Which normal form allows partial dependencies between non-key attributes?  
 (A) First normal form (1NF)  
 (B) Second normal form (2NF)  
 (C) Third normal form (3NF)  
 (D) Boyce-Codd normal form (BCNF)
22. Which normal form is based on the concept of a functional dependency?  
 (A) First normal form (1NF)  
 (B) Second normal form (2NF)  
 (C) Third normal form (3NF)  
 (D) Boyce-Codd normal form (BCNF)
23. Which normal form is violated if a non-key attribute depends on a subset of the primary key?  
 (A) First normal form (1NF)  
 (B) Second normal form (2NF)  
 (C) Third normal form (3NF)  
 (D) Boyce-Codd normal form (BCNF)
24. Which normal form allows repeating groups and is considered to be the lowest level of normalization?  
 (A) First normal form (1NF)  
 (B) Second normal form (2NF)  
 (C) Third normal form (3NF)  
 (D) Boyce-Codd normal form (BCNF)
25. Which normal form allows only atomic values and eliminates multi-valued dependencies?  
 (A) First normal form (1NF)  
 (B) Second normal form (2NF)  
 (C) Third normal form (3NF)  
 (D) Boyce-Codd normal form (BCNF)

26. Which normal form is an extension of the third normal form (3NF) and further addresses dependencies involving candidate keys ?
- (A) First normal form (1NF)
  - (B) Second normal form (2NF)
  - (C) Third normal form (3NF)
  - (D) Boyce-Codd normal form (BCNF)
27. What is functional dependency in the context of database design ?
- (A) A relationship between two tables in a database
  - (B) A constraint that defines a unique identifier for a table
  - (C) A relationship between attributes within a table
  - (D) A constraint that enforces referential integrity
28. In functional dependency  $A \rightarrow B$ , what does A represent ?
- (A) The primary key of the table
  - (B) The foreign key of the table
  - (C) The dependent attribute
  - (D) The determinant attribute
29. In functional dependency  $A \rightarrow B$ , what does B represent ?
- (A) The primary key of the table
  - (B) The foreign key of the table
  - (C) The dependent attribute
  - (D) The determinant attribute
30. Which of the following is true about functional dependency ?
- (A) A single attribute can determine multiple attributes.
  - (B) A single attribute can be determined by multiple attributes.
  - (C) A functional dependency can exist between two tables.
  - (D) A functional dependency is always symmetric.
31. Which of the following statements is true about a candidate key in functional dependency ?
- (A) It is a determinant attribute.
  - (B) It is a dependent attribute.
  - (C) It is a unique identifier for a table.
  - (D) It is always composite.

32. Which of the following functional dependencies violates the second normal form (2NF) ?
- (A) Partial dependency
  - (B) Transitive dependency
  - (C) Multi-valued dependency
  - (D) Trivial dependency
33. In functional dependency  $A \rightarrow B$ , what does the arrow symbol ( $\rightarrow$ ) represent ?
- (A) Assignment operator
  - (B) Logical AND operator
  - (C) Logical OR operator
  - (D) Implies or implies not operator
34. Which of the following dependencies indicates that two attributes are functionally independent of each other ?
- (A) Trivial dependency
  - (B) Partial dependency
  - (C) Multi-valued dependency
  - (D) Full dependency
35. Which normal form is based on the concept of functional dependency ?
- (A) First normal form (1NF)
  - (B) Second normal form (2NF)
  - (C) Third normal form (3NF)
  - (D) Boyce-Codd normal form (BCNF)
36. Which of the following dependencies indicates that changing one attribute can affect another attribute in the same table ?
- (A) Trivial dependency
  - (B) Partial dependency
  - (C) Multi-valued dependency
  - (D) Full dependency
37. SQL stands for :
- (A) Structured Query Language
  - (B) Simple Query Language
  - (C) Standard Query Language
  - (D) Sequential Query Language
38. Which SQL command is used to retrieve data from a database ?
- (A) SELECT
  - (B) UPDATE
  - (C) DELETE
  - (D) INSERT
39. Which SQL command is used to insert new data into a table ?
- (A) SELECT
  - (B) UPDATE
  - (C) DELETE
  - (D) INSERT

40. Which SQL command is used to modify existing data in a table ?
- (A) SELECT
  - (B) UPDATE
  - (C) DELETE
  - (D) INSERT
41. Which SQL command is used to remove data from a table ?
- (A) SELECT
  - (B) UPDATE
  - (C) DELETE
  - (D) INSERT
42. Which SQL command is used to create a new table ?
- (A) CREATE TABLE
  - (B) ALTER TABLE
  - (C) DROP TABLE
  - (D) INSERT TABLE
43. Which SQL command is used to add a new column to an existing table ?
- (A) CREATE COLUMN
  - (B) ALTER COLUMN
  - (C) ADD COLUMN
  - (D) UPDATE COLUMN
44. Which SQL command is used to remove a table from a database ?
- (A) CREATE TABLE
  - (B) ALTER TABLE
  - (C) DROP TABLE
  - (D) DELETE TABLE
45. Which SQL command is used to retrieve unique records from a table ?
- (A) SELECT DISTINCT
  - (B) SELECT UNIQUE
  - (C) SELECT UNIQUE RECORDS
  - (D) SELECT UNIQUE VALUES
46. Which SQL command is used to combine rows from two or more tables based on related columns ?
- (A) JOIN
  - (B) UNION
  - (C) INTERSECT
  - (D) MERGE
47. What is a transaction in the context of transaction processing ?
- (A) A unit of work that is executed as a single, indivisible operation
  - (B) A record stored in a database
  - (C) A query executed against a database
  - (D) A user session in a database management system



48. ACID properties of a transaction include :
- (A) Atomicity, Consistency, Isolation, Durability
  - (B) Atomicity, Concurrency, Isolation, Durability
  - (C) Availability, Consistency, Isolation, Durability
  - (D) Availability, Concurrency, Integrity, Durability
49. In transaction processing, consistency refers to :
- (A) Ensuring that the database remains in a valid state before and after a transaction
  - (B) Providing concurrent access to the database by multiple users
  - (C) Recovering the database after a system failure
  - (D) Preserving the order of transactions in a system
50. Which of the following is an example of a transaction processing system ?
- (A) Online banking system
  - (B) Word processing software
  - (C) Video editing software
  - (D) Gaming console
51. Which of the following is an example of a transaction processing system ?
- (A) Online banking system
  - (B) Word processing software
  - (C) Video editing software
  - (D) Gaming console
52. The process of undoing or rolling back a transaction to its original state is called :
- (A) Recovery
  - (B) Commit
  - (C) Abort
  - (D) Consistency check
53. Which of the following concurrency control techniques ensures serializability of transactions ?
- (A) Locking
  - (B) Two-phase commit
  - (C) Timestamp ordering
  - (D) Checkpointing
54. The process of combining multiple transactions into a single logical unit of work is called :
- (A) Transaction commit
  - (B) Transaction rollback
  - (C) Transaction isolation
  - (D) Transaction serialization

55. Which of the following is an example of a distributed transaction processing system ?
- (A) Online shopping website
  - (B) Personal finance management software
  - (C) Inventory management system
  - (D) Social media platform
56. Which of the following is not a component of a transaction processing system ?
- (A) Transaction manager
  - (B) Database server
  - (C) Query optimizer
  - (D) User interface
57. What is a data model ?
- (A) A representation of data relationships in a database
  - (B) A programming language used to manipulate data
  - (C) A storage structure for data in a database
  - (D) A set of rules for accessing data in a database
58. Which of the following data models represents data in a hierarchical structure with parent-child relationships ?
- (A) Relational data model
  - (B) Network data model
  - (C) Hierarchical data model
  - (D) Object-oriented data model
59. Which data model represents data as a collection of objects with properties and methods ?
- (A) Relational data model
  - (B) Network data model
  - (C) Hierarchical data model
  - (D) Object-oriented data model
60. Which data model represents data as a set of tables with rows and columns ?
- (A) Relational data model
  - (B) Network data model
  - (C) Hierarchical data model
  - (D) Object-oriented data model
61. Which data model allows for complex data structures, relationships, and inheritance ?
- (A) Relational data model
  - (B) Network data model
  - (C) Hierarchical data model
  - (D) Object-oriented data model

62. Which data model is based on a mathematical concept called set theory ?  
 (A) Relational data model  
 (B) Network data model  
 (C) Hierarchical data model  
 (D) Object-oriented data model
63. Which data model represents data as a collection of records connected through pointers ?  
 (A) Relational data model  
 (B) Network data model  
 (C) Hierarchical data model  
 (D) Object-oriented data model
64. Which data model is the most widely used for commercial databases ?  
 (A) Relational data model  
 (B) Network data model  
 (C) Hierarchical data model  
 (D) Object-oriented data model
65. Which data model is used to describe the structure and behavior of a database system ?  
 (A) Conceptual data model  
 (B) Logical data model  
 (C) Physical data model  
 (D) External data model
66. Which data model represents the overall structure of a database without implementation details ?  
 (A) Conceptual data model  
 (B) Logical data model  
 (C) Physical data model  
 (D) External data model
67. Relation algebra is a formalism for manipulating and querying relational databases. Which of the following is true about relation algebra ?  
 (A) It is a procedural language for database programming.  
 (B) It is a declarative language for expressing queries on databases.  
 (C) It is a physical storage format for databases.  
 (D) It is a network model for organizing data in databases.
68. Which of the following operations in relation algebra is used to select rows from a relation that satisfy a given condition ?  
 (A) Union  
 (B) Join  
 (C) Projection  
 (D) Selection
69. Which of the following operations in relation algebra combines tuples from two relations based on a common attribute ?  
 (A) Union  
 (B) Join  
 (C) Projection  
 (D) Difference

70. The difference operation in relation algebra is used to :
- (A) Combine tuples from two relations.
  - (B) Remove duplicates from a relation.
  - (C) Select rows from a relation that satisfy a given condition.
  - (D) Remove tuples from one relation that appear in another relation.
71. Which of the following operations in relation algebra is used to combine tuples from two relations into a single relation without duplicates ?
- (A) Union
  - (B) Join
  - (C) Projection
  - (D) Intersection
72. What is data recovery in the context of databases ?
- (A) The process of restoring a database to a previous state after a system failure
  - (B) The process of securing data from unauthorized access
  - (C) The process of converting data into a readable format
  - (D) The process of optimizing database performance
73. Which of the following is a common technique used for data recovery in databases ?
- (A) Replication
  - (B) Encryption
  - (C) Redundancy
  - (D) Indexing
74. What is data security in the context of databases ?
- (A) The process of ensuring data consistency in a database
  - (B) The process of maintaining data integrity in a database
  - (C) The process of protecting data from unauthorized access, use, disclosure, disruption, modification, or destruction
  - (D) The process of backing up data in a database
75. Which of the following is a common method for enhancing data security in databases ?
- (A) Database normalization
  - (B) Database replication
  - (C) Database encryption
  - (D) Database indexing
76. Which of the following is an example of a database security threat ?
- (A) Data redundancy
  - (B) Data corruption
  - (C) SQL injection
  - (D) Data normalization

77. What does DBMS stand for ?
- (A) Database Management System
  - (B) Data Business Management System
  - (C) Digital Backup Management System
  - (D) Data Buffering and Monitoring System
78. Which of the following is not a component of a DBMS ?
- (A) Data dictionary
  - (B) Query optimizer
  - (C) User interface
  - (D) Spreadsheet application
79. Which of the following is not a characteristic of a DBMS ?
- (A) Data redundancy
  - (B) Data consistency
  - (C) Data independence
  - (D) Data security
80. What is the primary purpose of a DBMS ?
- (A) To create tables and columns
  - (B) To manage and organize data
  - (C) To generate reports and charts
  - (D) To develop web applications
81. Which of the following is an example of a popular open-source DBMS ?
- (A) Oracle Database
  - (B) Microsoft SQL Server
  - (C) IBM DB2
  - (D) MySQL
82. Which of the following is not a type of DBMS ?
- (A) Hierarchical DBMS
  - (B) Relational DBMS
  - (C) Object-Oriented DBMS
  - (D) Distributed DBMS
83. Which language is commonly used to interact with a DBMS ?
- (A) SQL (Structured Query Language)
  - (B) HTML (Hypertext Markup Language)
  - (C) Java
  - (D) C++
84. What does SQL stand for ?
- (A) Standard Query Language
  - (B) Structured Query Language
  - (C) System Query Language
  - (D) Simple Query Language
85. Which of the following is an example of a database model used in DBMS ?
- (A) Entity-Relationship model
  - (B) Object-Oriented model
  - (C) Relational model
  - (D) All of the above

86. What is data redundancy in the context of DBMS ?
- (A) Storing multiple copies of the same data
  - (B) Ensuring data consistency across multiple databases
  - (C) Encrypting sensitive data to prevent unauthorized access
  - (D) Splitting data into multiple tables for better performance
87. Which of the following is not a benefit of using a DBMS ?
- (A) Improved data sharing and integration
  - (B) Enhanced data security and privacy
  - (C) Reduced data consistency and integrity
  - (D) Increased data accessibility and availability
88. What is the role of a data dictionary in a DBMS ?
- (A) To store user passwords
  - (B) To provide a graphical user interface
  - (C) To manage database backups and recovery
  - (D) To store metadata about the database structure
89. Which of the following is an example of a primary key in a relational database ?
- (A) Employee name
  - (B) Customer address
  - (C) Product price
  - (D) Student ID
90. What is the purpose of database normalization ?
- (A) To remove duplicate data from the database
  - (B) To organize data into multiple tables and eliminate data redundancy
  - (C) To create indexes for faster data retrieval
  - (D) To generate reports and analytics from the data
91. Which of the following is not a level of data abstraction in a DBMS ?
- (A) Physical level
  - (B) Logical level
  - (C) External level
  - (D) Hierarchical level
92. Which of the following is not a database operation supported by a DBMS ?
- (A) Create
  - (B) Read
  - (C) Update
  - (D) Execute

93. What is the purpose of a transaction in a DBMS ?
- (A) To generate reports and charts
  - (B) To manage database users and permissions
  - (C) To ensure data consistency and integrity
  - (D) To organize data into tables and columns
94. Which of the following is an example of a database management system ?
- (A) Microsoft Word
  - (B) Adobe Photoshop
  - (C) Microsoft Excel
  - (D) Oracle Database
95. Which of the following is not a data model used in DBMS ?
- (A) Hierarchical model
  - (B) Relational model
  - (C) Network model
  - (D) Sequential model
96. What is the purpose of a database schema in a DBMS ?
- (A) To define the structure and organization of a database
  - (B) To create backups and restore data
  - (C) To execute complex queries and calculations
  - (D) To generate graphical reports and visualizations
97. In the ER model, an entity is represented by :
- (A) Rectangle
  - (B) Circle
  - (C) Diamond
  - (D) Triangle
98. Which of the following is not an example of an entity in an ER model ?
- (A) Customer
  - (B) Product
  - (C) Relationship
  - (D) Employee
99. The relationship between two entities is represented by :
- (A) Rectangle
  - (B) Circle
  - (C) Diamond
  - (D) Triangle
100. In the ER model, a relationship is also known as :
- (A) Tuple
  - (B) Attribute
  - (C) Key
  - (D) Association

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the correct answer and mark the same in the OMR Answer-Sheet as per the direction :

**Example :**

**Question :**

Q.1 (A) ● (C) (D)

Q.2 (A) (B) ● (D)

Q.3 (A) ● (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.
8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

**Imppt. :** On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर—A, B, C एवं D हैं। परीक्षार्थी को उन चार विकल्पों में से सही उत्तर छोटना है। उत्तर को OMR आन्तर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

**उदाहरण :**

**प्रश्न :**

प्रश्न 1 (A) ● (C) (D)

प्रश्न 2 (A) (B) ● (D)

प्रश्न 3 (A) ● (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

**महत्वपूर्ण :** प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।