

No. of Printed Pages : 8

**A7-R5 : DATABASE TECHNOLOGIES**

**DURATION : 03 Hours**

**MAXIMUM MARKS : 100**

OMR Sheet No. :					
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Roll No. : 

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Answer Sheet No. : 

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Name of Candidate : \_\_\_\_\_ ; Signature of Candidate : \_\_\_\_\_

**INSTRUCTIONS FOR CANDIDATES :**

- Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
- Question Paper is in English language. Candidate has to answer in English language only.
- There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
- **PART ONE** is Objective type and carries **40** Marks. **PART TWO** is Subjective type and carries **60** Marks.
- **PART ONE** is to be answered in the **OMR ANSWER SHEET** only, supplied with the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book for **PART TWO**.
- Maximum time allotted for **PART ONE** is **ONE HOUR**. Answer book for **PART TWO** will be supplied at the table when the Answer Sheet for **PART ONE** is returned. However, Candidates who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the Answer Sheet for **PART ONE** to the Invigilator.
- **Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his/her Answer Sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
- After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question Booklet is complete in all respects.

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**DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.**

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## PART ONE

(Answer all the questions; each question carries ONE mark)

1. Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)
  - 1.1. Which of the following is not a level of data abstraction ?
    - (A) Physical Level
    - (B) Critical Level
    - (C) Logical Level
    - (D) View Level
  - 1.2. Disadvantages of File systems to store data is :
    - (A) Data redundancy and inconsistency
    - (B) Difficulty in accessing data
    - (C) Data isolation
    - (D) All of the above
  - 1.3. Which of the following is Database Language ?
    - (A) Data Definition Language
    - (B) Data Control Language
    - (C) Data Manipulation Language
    - (D) All of the above
  - 1.4. Which of the following is not a function of DBA ?
    - (A) Network Maintenance
    - (B) Routine Maintenance
    - (C) Schema Definition
    - (D) Authorization for data access
  - 1.5. The DBMS utility \_\_\_\_\_ allows reconstructing the correct state of database from the backup and history of transactions.
    - (A) Backup
    - (B) Recovery
    - (C) Monitoring
    - (D) Data loading
  - 1.6. A \_\_\_\_\_ normal form, normalization will be needed where all attributes in a relation tuple are not functionally dependent only on the key attribute.
    - (A) First
    - (B) Second
    - (C) Third
    - (D) Fourth
  - 1.7. To select all columns from the table the syntax is :
    - (A) Select all from table\_name
    - (B) Select \* from table\_name
    - (C) Select from table\_name
    - (D) None of the above
  - 1.8. What extension is used to save a JSON file ?
    - (A) .on
    - (B) .js
    - (C) .javaN
    - (D) .json
  - 1.9. \_\_\_\_\_ is a full form of SQL.
    - (A) Standard query language
    - (B) Sequential query language
    - (C) Server side query language
    - (D) Structured query language
  - 1.10. The candidate key that you choose to identify each row uniquely is called \_\_\_\_\_.
    - (A) Primary Key
    - (B) Foreign Key
    - (C) Alternate Key
    - (D) None of these

2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

2.1. Data Manipulation Language enables users to insert new information into the database.

2.2. Inner join operator preserves unmatched rows of the relations being joined.

2.3. Referential Integrity constraint is related with Foreign key.

2.4. Schema defines the structure of a relation which consists of a fixed set of attribute-domain pairs.

2.5. A candidate key is a minimal super key.

2.6. Internal mapping doesn't exist between the conceptual and internal levels.

2.7. A data dictionary is a repository that manages Database.

2.8. The DROP TABLE statement deletes the table structure along with the table data.

2.9. The CHECK constraint is used to limit column values of a table.

2.10. A relation is in third normal form if it is in BCNF and has no multivalued dependencies.

3. Match words and phrases in column X with the closest related meaning / words(s) /phrase(s) in column Y. Enter your selection in the “OMR” answer sheet supplied with the question paper, following instructions therein. (1x10)

X		Y	
3.1	Select operator	A	Binary operator
3.2	Join operator	B	Unary operator
3.3	Database control system	C	Tuple
3.4	ACID property	D	Key transformation
3.5	Row of a table	E	Alter
3.6	Column of a table	F	Normalization
3.7	Hashing	G	Durability
3.8	DDL	H	Decomposition
3.9	Examining the relationship between attributes	I	Data manager
3.10	Breaking a relation into multiple relations	J	Attribute
		K	Tertiary
		L	Update
		M	Insert

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Choose the most appropriate option, enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

A	Degree	B	Create	C	DBA	D	Project operator
E	GROUP BY	F	HAVING	G	Semi-join	H	Cardinality
I	Constraints	J	Index	K	DML	L	DDL
M	DCL						

- 4.1. \_\_\_\_\_ is preferred method for enforcing data integrity.
- 4.2. The number of attributes in a relation is called it's \_\_\_\_\_.
- 4.3. The number of tuples in a relation is called it's \_\_\_\_\_.
- 4.4. \_\_\_\_\_ chooses subset of attributes or columns of a relation.
- 4.5. \_\_\_\_\_ operator is basically a join followed by a project on the attributes of first relation.
- 4.6. \_\_\_\_\_ is a DDL statement.
- 4.7. \_\_\_\_\_ contains information that defines valid values that are stored in a column or data type.
- 4.8. \_\_\_\_\_ clause specifies a search condition for a group or an aggregate.
- 4.9. \_\_\_\_\_ is a language by which user accesses or manipulates the data model.
- 4.10. \_\_\_\_\_ installs, configures, troubleshoots and maintains a database system.

**PART TWO**

**(Answer any FOUR Questions)**

5. (a) What is a database management system ? Explain different models of DBMS systems
- (b) Differentiate between physical and logical data independence. **(9+6)**
6. (a) Why keys are important in relational model ? Write about candidate keys, primary keys and foreign keys.
- (b) Discuss different levels of normalization. **(6+9)**
7. (a) Describe the syntax for the following SQL commands with examples.
- (i) Create a table
- (ii) Inserting data into the table
- (iii) Update
- (iv) Deleting data from a table
- (b) Explain the responsibilities of a Database Administrator. **(8+7)**

8. (a) What do you understand by Weak entity? How does it differ from Strong entity ?
- (b) What do you understand by NoSQL databases ? What are the advantages and disadvantages of NoSQL databases ? **(8+7)**
9. (a) What do you understand by BCNF ? Find the highest normal form of a relation R(A, B, C, D, E) with FD set as: { BC->D, AC->BE, B->E }.
- (b) Why use MongoDB? Explain the data modelling in MongoDB. **(8+7)**

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SPACE FOR ROUGH WORK



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