

**A7-R4/B2.2-R4 : INTRODUCTION TO DATABASE MANAGEMENT  
SYSTEMS**

अवधि : 03 घंटे  
DURATION : 03 Hours

अधिकतम अंक : 100  
MAXIMUM MARKS : 100

ओएमआर शीट सं. :							
OMR Sheet No. :							

रोल नं. : 

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Roll No. : 

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उत्तर-पुस्तिका सं. : 

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Answer Sheet No. : 

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परीक्षार्थी का नाम : \_\_\_\_\_;Signature of Candidate : \_\_\_\_\_

Name of Candidate : \_\_\_\_\_

**परीक्षार्थियों के लिए निर्देश :**

**Instructions for Candidate :**

<p>कृपया प्रश्न-पुस्तिका, ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यानपूर्वक पढ़ें।</p>	<p>Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.</p>
<p>प्रश्न-पुस्तिका की भाषा अंग्रेजी है। परीक्षार्थी केवल अंग्रेजी भाषा में ही उत्तर दे सकता है।</p>	<p>Question Paper is in English language. Candidate can answer in English language only.</p>
<p>इस मॉड्यूल/पेपर के दो भाग हैं। भाग एक में चार प्रश्न और भाग दो में पाँच प्रश्न हैं।</p>	<p>There are TWO PARTS in this Module/Paper. PART ONE contains FOUR questions and PART TWO contains FIVE questions.</p>
<p>भाग एक "वैकल्पिक" प्रकार का है जिसके कुल अंक 40 हैं तथा भाग दो "व्यक्तिपरक" प्रकार का है और इसके कुल अंक 60 हैं।</p>	<p>PART ONE is Objective type and carries 40 Marks. PART TWO is Subjective type and carries 60 Marks.</p>
<p>भाग एक के उत्तर, ओएमआर उत्तर-पुस्तिका पर ही दिये जाने हैं। भाग दो की उत्तर-पुस्तिका में भाग एक के उत्तर नहीं दिये जाने चाहिए।</p>	<p>PART ONE is to be answered in the OMR ANSWER SHEET only. PART ONE is NOT to be answered in the answer book for PART TWO.</p>
<p>भाग एक के लिए अधिकतम समय सीमा एक घण्टा निर्धारित की गई है। भाग दो की उत्तर-पुस्तिका, भाग एक की उत्तर-पुस्तिका जमा कराने के पश्चात् दी जाएगी। तथापि, निर्धारित एक घंटे से पहले भाग एक पूरा करने वाले परीक्षार्थी भाग एक की उत्तर-पुस्तिका निरीक्षक को सौंपने के तुरंत बाद, भाग दो की उत्तर-पुस्तिका ले सकते हैं।</p>	<p>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.</p>
<p>परीक्षार्थी, उपस्थिति-पत्रिका पर हस्ताक्षर किए बिना और अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हॉल/कमरा नहीं छोड़ सकते हैं। ऐसा नहीं करने पर, परीक्षार्थी को इस मॉड्यूल/पेपर में अयोग्य घोषित कर दिया जाएगा।</p>	<p>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.</p>
<p>प्रश्न-पुस्तिका को खोलने के निर्देश मिलने के पश्चात् एवं उत्तर लिखना आरम्भ करने से पहले उम्मीदवार जाँच कर यह सुनिश्चित कर लें कि प्रश्न-पुस्तिका प्रत्येक दृष्टि से संपूर्ण है।</p>	<p>After receiving the instruction to open the booklet and before starting to answer the questions, the candidate should ensure that the Question Booklet is complete in all respect.</p>

**जब तक आपसे कहा न जाए, तब तक प्रश्न-पुस्तिका न खोलें।  
DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.**

**PART ONE**

**(Answer all the questions)**

**1. Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "OMR" answer sheet attached to the question paper, following instructions therein.**

**(1x10)**

**1.1** The candidate key is that you choose to identify each row uniquely is called \_\_\_\_\_.

- (A) Alternate Key
- (B) Primary Key
- (C) Foreign Key
- (D) None of the above

**1.2** \_\_\_\_\_ is the process of organizing data into related tables.

- (A) Normalization
- (B) Generalization
- (C) Specialization
- (D) None of the above

**1.3** \_\_\_\_\_ is the complex search criteria in the where clause.

- (A) Substring
- (B) Drop Table
- (C) Predict
- (D) Predicate

**1.4** Which of the following are the properties of entities ?

- (A) Groups
- (B) Tables
- (C) Attributes
- (D) Switchboards

**1.5** Which of the following is not a binary operator in relational algebra ?

- (A) Join
- (B) Semi-join
- (C) Assignment
- (D) project

**1.6** Which of the following is/are the DDL statements ?

- (A) Create
- (B) Drop
- (C) Alter
- (D) All of the above

**1.7** Which of the following operation is used to update the structure of the database table ?

- (A) Alter
- (B) Update
- (C) Change
- (D) None of the above

1.8 The RDBMS terminology for a row is :

- (A) Tuple
- (B) Relation
- (C) Attribute
- (D) Degree

1.9 A primary key if combined with a foreign key creates :

- (A) Parent-Child relationship between the tables that connect them
- (B) Many to many relationship between the tables that connect them
- (C) Network model between the tables that connect them
- (D) None of the above

1.10 In an ER diagram, \_\_\_\_\_ is described in the database by storing its data.

- (A) Attribute
- (B) Entity
- (C) Relationship
- (D) Notation

2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and ENTER in the "OMR" answer sheet attached to the question paper, following instructions therein. (1x10)

- 2.1 De-Morgans's law is used to simplify complex constraints.
- 2.2 If table is in 1NF and does not have a composite key, then it is in 2NF.
- 2.3 A primary key does not necessarily have to be unique for a given table.
- 2.4 Multiple constraints can be included in the single query.
- 2.5 Data and metadata are the same.
- 2.6 In a growing phase, a transaction acquires all the required locks.
- 2.7 Rollback is the preferred way to recover a database after a system failure.
- 2.8 It is easy to grant and manage common privileges needed by different groups of database users using the roles.
- 2.9 The SQL is strongly typed.
- 2.10 A key is a group of one or more attributes that uniquely identifies a row.

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

X		Y	
3.1	WFF stands for	A.	Domain
3.2	UML stands for	B.	Network model
3.3	_____ is a meaning of D in ACID properties of transactions.	C.	Dashed ellipse
3.4	A set of possible data values is called	D.	Triangle
3.5	Another name for weak entity	E.	Self join
3.6	Record based logical model	F.	Well-formed formulae
3.7	In ER Diagram derived attributes are represented by	G.	Durability
3.8	The method of access which uses key transformation is known as	H.	Unified modeling language
3.9	A table joined with itself is called	I.	Distance
3.10	Normalization	J.	Child
		K.	Hash
		L.	External model
		M.	Reduces data redundancy in a database

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

A.	Set-difference	B.	Model of relation	C.	Derived
D.	MOD	E.	IN	F.	Single valued
G.	SELECT	H.	Role	I.	Committed
J.	Thing in real world	K.	Alter	L.	Atomicity
M.	Delete				

- 4.1 Querying database tables is done by using the \_\_\_\_\_ statement of SQL.
- 4.2 The \_\_\_\_\_ operator is used to compare a value to a list of literals values that have been specified.
- 4.3 \_\_\_\_\_ function divides one numeric expression by another and returns the Remainder.
- 4.4 \_\_\_\_\_ statement in SQL which allows to change the definition of a table.
- 4.5 The \_\_\_\_\_ operation, denoted by - allows us to find tuples that are in one relation but are not in another.
- 4.6 Entity is a \_\_\_\_\_.
- 4.7 The function that an entity plays in a relationship is called that entity's \_\_\_\_\_.
- 4.8 The attribute AGE is calculated from DATE\_OF\_BIRTH. The attribute AGE is \_\_\_\_\_.
- 4.9 In order to maintain the consistency during transactions, database provides \_\_\_\_\_.
- 4.10 A transaction completes its execution is said to be \_\_\_\_\_.

**PART TWO**

**(Answer any FOUR questions)**

5. (a) Explain database system along with its benefits.
- (b) What is data dependence ? Explain physical data dependence and logical data dependence.
- (c) What is Normalization ? Differentiate between 3NF and BCNF. **(5+5+5)**
6. (a) Why keys are important in relational model ? Write about candidate keys, primary keys, alternate key and foreign key.
- (b) Explain the role of DBA.
- (c) Explain the purpose of the check point mechanism. How often should checkpoints be performed ? **(5+5+5)**
7. (a) Explain in detail about two-phase commit protocol.
- (b) What is Trigger in SQL ? Give an example to define a trigger.
- (c) Briefly explain the various types of joins. **(5+5+5)**
8. (a) What is a referential integrity constraint ? Why do we need it ? Explain with the help of suitable example.
- (b) Differentiate between GRANT and REVOKE command.
- (c) Consider the following tables :  
Employee (Emp\_no, Name, Emp\_city) Company (Emp\_no, Company\_name, Salary)
- (i) Write a SQL query to display Employee name and Company name.
- (ii) Write a SQL query to display employee name, employee city, company name and salary of all the employees whose salary > 10000.
- (iii) Write a query to display all the employees working in "XYZ" company. **(5+4+6)**
9. (a) Explain the concept of Deadlock avoidance and prevention in detail.
- (b) Explain functional dependency concepts.
- (c) Draw ER diagram for Student Management System. **(5+5+5)**

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SPACE FOR ROUGH WORK

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