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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.B.A.

SEM: IV - THEORY EXAMINATION (2021 - 2022)

Subject: Data Base Technology

Time: 3 Hours

Max. Marks: 100

General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 marker & Question No- 2 carries 2 mark each.
3. Section B - Question No-3 is based on external choice carrying 6 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 10 marks each.
5. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION A

20

1. Attempt all parts:-

- 1-a. Which type of data can be stored in the database? (CO1) 1
- (a) Image oriented data
 - (b) Text, files containing data
 - (c) Data in the form of audio or video
 - (d) All of the above
- 1-b. The view of total database content is (CO1) 1
- (a) Conceptual view
 - (b) Internal view
 - (c) External view
 - (d) Physical View
- 1-c. Functional Dependencies are the types of constraints that are based on_____ (CO2) 1
- (a) Key
 - (b) Key revisited
 - (c) Superset key
 - (d) None of the mentioned
- 1-d. Which of the following is not an integrity constraint? (CO2) 1
- (a) Not null
 - (b) Positive
 - (c) Unique
 - (d) Check 'predicate'
- 1-e. Which command is used to create a new table in SQL? (CO3) 1
- (a) CREATE TABLE
 - (b) BUILD TABLE
 - (c) GENERATE TABLE
 - (d) None of the above
- 1-f. Which of the following is the full form of DDL? (CO3) 1
- (a) Data Definition Language
 - (b) Data Derivation Language
 - (c) Dynamic Data Language
 - (d) Detailed Data Language
- 1-g. The data is stored, retrieved & updated in _____. (CO4) 1

	(a) OLAP	
	(b) OLTP	
	(c) SMTP	
	(d) FTP	
1-h.	Detail data in single fact table is otherwise known as_____. (CO4)	1
	(a) monoatomic data	
	(b) diatomic data	
	(c) atomic data	
	(d) multiatomic data	
1-i.	If a transaction does not modify the database until it has committed, it is said to use the _____ technique. (CO5)	1
	(a) Deferred-modification	
	(b) Late-modification	
	(c) Immediate-modification	
	(d) Undo	
1-j.	Which of the following is a NoSQL Database Type? (CO5)	1
	(a) SQL	
	(b) Document databases	
	(c) JSON	
	(d) All of the mentioned	
2. Attempt all parts:-		
2.a.	What is Data Independence? (CO1)	2
2.b.	Differentiate between primary key and foreign key. (CO2)	2
2.c.	Which commands are used to control which users have which privilege over which objects ? (CO3)	2
2.d.	Why do we need Data Mart? (CO4)	2
2.e.	Why MongoDB is known as best NoSQL database? (CO5)	2
SECTION B		30
3. Answer any <u>five</u> of the following:-		
3-a.	Mention the issues with traditional file-based systems that make DBMS a better choice? (CO1)	6
3-b.	Discuss the two tier and three tier architecture of Database Applications. (CO1)	6
3-c.	Let us consider the following relation schema: (CO2) EMP_DEPT {Ename,SSN,Bdate,address,Dnumber,Dname,Dmgr_ssn} with following FD Set: FD1= SSN -> {Ename,Bdate,Address,Dnumber} FD2= Dnumber -> {Dname, Dmgr_ssn} Check for 3NF,if it is not in 3NF then convert it into 3NF. (primary key = SSN)	6
3-d.	Explain the following with a suitable example: (CO2) (i) Lossless decomposition (ii) Prime Attributes	6
3.e.	Explain Deadlock Prevention Schemes. (CO3)	6
3.f.	Distinguish between a Data Warehouse and an OLAP System. (CO4)	6
3.g.	Enlist differences between SQL databases and NoSQL databases. (CO5)	6
SECTION C		50
4. Answer any <u>one</u> of the following:-		
4-a.	Discuss the role of database administrator. (CO1)	10

- 4-b. Why is the relational data model successful over the hierarchical and network model? (CO1) 10
5. Answer any one of the following:-
- 5-a. Draw an ER diagram of Hospital or Bank showing the Specialization, Aggregation, and Generalization. Also convert it in to relational schemas and SQL DDL (CO2) 10
- 5-b. Consider the universal relational schema R(A,B,C,D,E,F,G,H,I,J) and a set of following functional dependencies:
 $F = \{ AB \rightarrow C, A \rightarrow DE, B \rightarrow F, F \rightarrow GH, D \rightarrow IJ \}$
 Determine the keys for R? Decompose R into 2nd Normal Form. (CO2) 10
6. Answer any one of the following:-
- 6-a. Write the following queries using the below tables: (CO3) 10
- Select the detail of the employee whose name starts with P.
 - Select the detail of the employee whose emailId is in gmail.
 - What is the department name for DeptID 'E-102'?
 - List the name of all employees whose name ends with 'a'.
 - Select the name of the employee who is the department head of 'HR'.

Employee Table

Empid	EmpName	Department	ContactNo	EmailId	EmpHeadId
101	Isha	E-101	1234567890	isha@gmail.com	105
102	Priya	E-104	1234567890	priya@yahoo.com	103
103	Neha	E-101	1234567890	neha@gmail.com	101
104	Rahul	E-102	1234567890	rahul@yahoo.com	105
105	Abhishek	E-101	1234567890	abhishek@gmail.com	102

Department Table

DeptId	DeptName	Dept_off	DeptHead
E-101	HR	Monday	105
E-102	Development	Tuesday	101
E-103	Hous Keeping	Saturday	103
E-104	Sales	Sunday	104
E-105	Purchase	Tuesday	104

- 6-b. What is the purpose of concurrency control? Why do we use the Rollback operation? Discuss with example. (CO3) 10
7. Answer any one of the following:-
- 7-a. Explain some of the most important issues in data warehouse implementation. (CO4) 10
- 7-b. Design a Snowflake schema of NIET College with all the dimensions and keys mentioned in 10

it. (CO4)

8. Answer any one of the following:-

- | | | |
|------|---|----|
| 8-a. | Explain Backup and Recovery System. (CO5) | 10 |
| 8-b. | Explain the concept of normalization and denormalization with suitable example. (CO5) | 10 |