Total No. of Questions: 20

Enrollment No : _____

MEDICAPS UNIVERSITY

Faculty of Engineering

End Semester Examination May 2025

IT3CO05 Database Management Systems

Programme	:	B.Tech.	**Branch/Specialisation**	:	IT
Duration	:	3 hours	**Maximum Marks**	:	60

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

Section 1 (Answer all question(s))

Marks CO BL

Q1. Which of the following is a major advantage of using a database system? **1 1 1**

Rubric	Marks
Improved Data Security	1

- ○ Data redundancy increases
- ◉ Improved data security
- ○ Data consistency decreases
- ○ No need for data recovery

Q2. What is data independence in DBMS? **1 1 1**

Rubric	Marks
(a) The ability to modify database schema without affecting the application program	1

- ◉ The ability to modify database schema without affecting the application program
- ○ The ability to store data manually
- ○ The inability to change data structure
- ○ The dependence of data on hardware configuration

Q3. Which of the following operations can be performed in a relational database? **1 2 2**

Rubric	Marks
(a) Create, Read, Update, Delete (CRUD)	1

- ◉ Create, Read, Update, Delete (CRUD)
- ○ Only create and read
- ○ Only read and update
- ○ Only delete

Q4. If you are asked to delete the entire data of a table without disturbing the table definition then in such case which statement you will use? **1 2 2**

Rubric	Marks
(b) TRUNCATE	1

- ○ DELETE
- ◉ TRUNCATE
- ○ DROP
- ○ CLEAR

Q5. The primary key of a relational table must be: 1 2 2

Rubric	Marks
(a) Unique and Not Null	1

- (●) Unique and not null
- ( ) Only unique
- ( ) Only not null
- ( ) Can be null

Q6. A table is in Second Normal Form (2NF) if it is in 1NF and _____. 1 3 2

Rubric	Marks
(c) Has no partial dependencies	1

- ( ) Contains only atomic values
- ( ) Has no transitive dependencies
- (●) Has no partial dependencies
- ( ) Has a primary key

Q7. _____ will undo all statements up to commit. 1 2 2

Rubric	Marks
(c) Rollback	1

- ( ) Transaction
- ( ) Flashback
- (●) Rollback
- ( ) Abort

Q8. Which of the following is not a type of serializability? 1 4 2

Rubric	Marks
(c) Dependency Serializability	1

- ( ) Conflict serializability
- ( ) View serializability
- (●) Dependency serializability
- ( ) Strict serializability

Q9. What is the primary advantage of indexed file organization? 1 4 2

Rubric	Marks
(a) Faster searching and retrieval	1

- (●) Faster searching and retrieval
- ( ) Less storage space required
- ( ) Faster insertions compared to heap files
- ( ) Data is always stored in sorted order

Q10. Which of the following is not a type of file organization? 1 5 2

Rubric	Marks
(d) Transactional File Organization	1

- ( ) Sequential file organization
- ( ) Heap file organization
- ( ) Indexed file organization
- (●) Transactional file organization

Section 2 (Answer all question(s))

Marks CO BL

Q11. What is data independence and why is it important? What is the difference between logical and physical data independence? **4 1 4**

Rubric	Marks
What is data independence? 1mark,why is it important? 1 mark,What is the difference between logical and physical data independence? 2 marks	4

Q12. (a) Explain 1 tier, 2 tier and 3 tier architecture of DBMS. **6 1 2**

Rubric	Marks
1 tier architecture 2 marks,2 tier architecture 2 marks,3 tier architecture 2 marks	6

(OR)

(b) What do you mean by data model? Explain the different type of data model.

Rubric	Marks
What do you mean by Data Model? 1 mark,Explain the different type of data model? 5 marks	6

Section 3 (Answer all question(s))

Marks CO BL

Q13. Explain DDL language. **3 2 2**

Rubric	Marks
Explain DDL language.	3

Q14. (a) Write SQL statements (Query) for following tables: **7 2 3**

Student(rollno, stuname, age, city, branchcode)
Branch(branchcode, branchname)
(i) Retrieve students details whose branchcode is 60.
(ii) Find an average age of all students.
(iii) Find the name of student whose name start with M and end with S.
(iv) Change age of student to 29 whose rollno is 7.
(v) Delete student details whose age is 52.
(vi) Retrieve branch information in ascending order.

Rubric	Marks
(a) Retrieve students details whose branchcode is 60. 1 mark,(b) Find an average age of all students.1 mark,(c) Find the name of student whose name start with M and end with S.2 marks,(d) Change age of student to 29 whose rollno is 7.1 mark, (e) Delete student details whose age is 52. 1 mark,,(f) Retrieve branch information in ascending order. 1 mark	7

(OR)

(b) What do you mean by relation algebra? Explain all the operation of relational algebra.

Rubric	Marks
What do you mean by relation algebra? 2 marks,Explain all the operation of relational algebra? 5 marks	7

Section 4 (Answer all question(s))

Marks CO BL

Q15. Explain functional dependency. **3 3 2**

Rubric	Marks
Explain Functional Dependency.	3

Q16. (a) Consider a relation **7 3 3**
R (A , B , C , D , E , F , G)
with the functional dependencies-
A → BC, BC → DE,
D → F, CF → G
Find the closure of attribute and attribute set.

Rubric	Marks
Consider a relation R (A , B , C , D , E , F , G) with the functional dependencies- A → BC, BC → DE, D → F, CF → G Find the closure of attribute and attribute set.	7

(OR)

(b) What is normalization? Describe second and third normal form with example.

Rubric	Marks
What is Normalization? 1 mark,Describe Second Normal form. 3 marks,Describe Third Normal form.3 marks	7

Section 5 (Answer all question(s))

Marks CO BL

Q17. What are desirable properties of transactions in DBMS? **4 4 2**

Rubric	Marks
What are desirable properties of Transactions in DBMS?	4

Q18. (a) Define lock. Explain two phase locking protocol with suitable examples. **6 4 2**

Rubric	Marks
Define Lock. 2 marks, Explain Two Phase Locking Protocol with suitable examples.4 marks	6

(OR)

(b) Explain view serializability and conflict serializability.

Rubric	Marks
Explain View serializability 3 marks,Explain Conflict serializability.3 marks	6

Section 6 (Answer all question(s))

Marks CO BL

Q19. What is a distributed database? **3 5 2**

Rubric	Marks
What is a Distributed Database?	3

Q20. (a) Explain different types of indexing. **7 5 2**

Rubric	Marks
Explain different types of indexing.	7

(OR)

(b) Explain different types of file organization.

Rubric	Marks
Explain different types of File Organization.	7

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