

Professional Course Examination, 2020

(4th Semester)

BACHELOR OF COMPUTER APPLICATIONS

(Database Management Systems)

Full Marks : 75

Time : 3 hours

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

SECTION—A

(Marks : 15)

Tick (✓) the correct answer in the brackets provided :

1×10=10

1. A characteristic of an entity is

- (a) relation ()
- (b) attribute ()
- (c) parameter ()
- (d) constraint ()

2. Which of the following is not involved in DBMS?

- (a) Data ()
- (b) Application Request ()
- (c) End Users ()
- (d) HTML ()

3. Object = _____ + Relationships.

(a) Entity ()

(b) Data ()

(c) Constraint ()

(d) Attributes ()

4. An entity set that does not have sufficient attributes to form a primary key is a

(a) strong entity set ()

(b) simple entity set ()

(c) weak entity set ()

(d) composite entity set ()

5. In case of entity integrity, the primary key may be

(a) not null ()

(b) null ()

(c) both null and not null ()

(d) Any of the above ()

6. Which of the following operations needs the participating relations to be union compatible?

(a) UNION ()

(b) INTERSECTION ()

(c) DIFFERENCE ()

(d) All of the above ()

7. DML is provided for

(a) description of the logical structure of a database

(b) manipulation and processing of the database

(c) the addition of new structures in the database system

(d) definition of a physical structure of the database system

8. The natural join is equal to

(a) Cartesian product ()

(b) combination of union and Cartesian products ()

(c) combination of projection and Cartesian products ()

(d) combination of selection and Cartesian products ()

9. The ____ scheme uses a page table containing pointers to all pages, the page table itself and all updated pages are copied to a new location.

- (a) shadow copy ()
- (b) shadow paging ()
- (c) log records ()
- (d) COMMIT ()

10. Which kind of failure loses its data in head crash or failure during a transfer operation?

- (a) Disk failure ()
- (b) System crash ()
- (c) Transaction failure ()
- (d) User failure ()

State whether the following statements are *True (T)* or *False (F)* by putting a Tick (✓) mark in the brackets provided : 1×5=5

1. DBMS is software.

(T / F)

2. The level of data abstraction which describes how the data is actually stored is logical level.

(T / F)

3. A file manipulation command that extracts some of the records from a file is called PROJECT.

(T / F)

4. The statement in SQL which allows changing the definition of a table is ALTER.

(T / F)

5. In order to reduce the overhead in retrieving the records from the storage space, we use log buffer.

(T / F)

SECTION—B

(Marks : 10)

Answer the following questions :

2×5=10

1. Mention any two advantages of DBMS.
2. What are the different types of attributes?
3. Define One-to-One and One-to-Many relationships.
4. What is VIEW? Give the syntax for VIEW creation.
5. How are storage devices classified?

(PART : B—DESCRIPTIVE)

(Marks : 50)

The figures in the margin indicate full marks for the questions

1. (a) What is data independence? Explain the two types of data independence. 1+4=5
- (b) Explain the functions of DBMS. 5

OR

- (c) Describe the relational database model with the advantages and disadvantages. 10
2. (a) Construct an ER diagram for STUDENT DATABASE SYSTEM. 10

OR

- (b) Explain the following terms with an example each : 6
 - (i) Primary key
 - (ii) Strong entry
 - (iii) Alternate key
- (c) Write a short note on specialization. 4

3. (a) Describe SELECTION and PROJECTION operations in relational algebra with an example. 5+5=10

OR

- (b) Which normal form is based on the concept of functional dependencies? Explain the same with a neat diagram. 6
- (c) Write short note on tuple relational calculus. 4
4. (a) Discuss the different types of SQL operator. 5
- (b) What is join operation? Explain the different types of joins with syntax and example. 5

OR

- (c) Write the syntax of aggregate functions in SQL and explain with an example. 5
- (d) Create an EMPLOYEE database using the following fields : 5

Field Name	Data Type
ENO	Number
ENAME	Char
ADDRESS	Varchar
DEPARTMENT	Char
SALARY	Number

- (i) Create the table.
- (ii) Enter the 4 tuples.
- (iii) Find sum of all employees' salary.
- (iv) Find highest and least salary of the employee.
- (v) Add one more field called AGE.

5. (a) Explain about Immediate update and Deferred update recovery techniques. 6
- (b) What are the causes of failure in DBMS? 4

OR

- (c) Discuss two-phase locking and commit protocols. 6
- (d) Explain the concept of serializability. 4
