E–994

M. A./M. Sc. (Fourth Semester) (Main/ATKT) EXAMINATION, May-June, 2021

MATHEMATICS

(Optional)

Paper Third (A)

(Fundamentals of Computer Science)

(Operating System and Database Management System)

Time : Three Hours]   [*Maximum Marks : 70*

Note : Attempt all Sections as directed.

Section—A   1 each

(Objective/Multiple Choice Questions)

Note : Attempt all questions.

Choose the correct answer :

1. In which state one gathers and list all the necessary fields for the database design project ?

    (a) Data Definition

    (b) Data Refinement

    (c) Establishing Relationship

    (d) None of the above

P. T. O.

2. Administrative supervision of database activities is the responsibility of the :

   (a) DB Manager

   (b) DP Manager

   (c) VP-DP Administration

   (d) Database Administrator

3. Relational Algebra is a .... query language that takes two relations as input and product another relation as an output of the query.

   (a) Relational

   (b) Structural

   (c) Procedural

   (d) Fundamental

4. Which of the following is used to denote the selection operation in relational algebra ?

   (a) Pi (Greek)

   (b) Sigma (Greek)

   (c) Lambda (Greek)

   (d) Omega (Greek)

5. Which of the following is not a valid SQL type ?

   (a) FLOAT

   (b) NUMERIC

   (c) DECIMAL

   (d) CHARACTER

6. Every Boyee-Codd normal form is in :

   (a) First normal form

   (b) Second normal form

   (c) Third normal form

   (d) All of the bove

7. Which of the following is the address generated by CPO ?

   (a) Physical address

   (b) Absolute address

   (c) Logical address

   (d) None of the above

8. Where are placed the list of processes that are prepared to be executed and waiting ?

   (a) Job queue

   (b) Ready queue

   (c) Execution queue

   (d) Process queue

9. From the following which is not a common file permission ?

   (a) Write

   (b) Execute

   (c) Stop

   (d) Read

10. Network operating system runs on :

    (a)   Server

    (b)   Every system in the network

    (c)   Both server and every system in the network

    (d)   None of the above

Section—B 2 each

(Very Short Answer Type Questions)

Note : Attempt all questions in **2-3** sentences.

1. Write any *two* main functions of a database administrator.

2. What is instances of database ?

3. Define the union operation of relational algebra.

4. Define relational calculus.

5. What is database integrity ?

6. Define first normal form.

7. Write any *two* functions of operating system.

8. What is process ?

9. Define memory management unit.

10. What is network system ?

Section—C 3 each

(Short Answer Type Questions)

Note : Attempt all questions in **75** words each.

1. Explain the database and DBMS.

2. What is Key ? Explain primary key and candidate key.

3. What is view ? Explain different operations of view.

4. List out the different services of operating systems and explain any *two* services in detail.

5. Explain fundamental difference between network system and distributed system.

Section—D   5 each

(Long Answer Type Questions)

Note : Attempt any *five* questions. Write answer in **150** words each.

1. Write a short note on database administrator.

2. What is Relational Algebra ? Explain select and project operation with example.

3. Explain structured query language with its DML set with suitable example.

4. Explain Process Central Block (PCB) and process state.

5. Explain I/O management process in multiprocess system.

6. Explain second and third normal form with suitable example.

7. Explain architecture of a Data Management System.

8. Write short notes on the following :

   (i)   Security in operating system
   (ii) BCNF