F - 994

M.A./M.Sc. (Fourth Semester)
EXAMINATION, May - June, 2022
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)

(Objective/Multiple Choice Questions)

(1 mark each)

Note: Attempt all questions.

Choose the correct answer.

[2]

1. Which of the following is not a function of database-

   (A)   Managing stored data

   (B)   Manipulating data

   (C)   Security for stored data

   (D)   Analysing code

2. Database Manager performs following query related operation?

   (A)   Creating scheme

   (B)   Retrieving record

   (C)   Drop table

   (D)   Creating view

3. Which of the following is not valid unary operation in the relational algebra?

   (A)   Select

   (B)   Min

   (C)   Project

   (D)   rename

4. The expression (R U S) - ((R - S) U (S - R)) is equivalent to :

   (A)   R/S

   (B) $R \cap S$

   (C) σ (Condition) (R x S)

   (D) π (R x S)

5. SQL contains which component in its process?

   (A) Optimization Engines

   (B) SQL Query Engines

   (C) Query Dispatchers

   (D) All of the above

6. If one attribute is determinant of second, which in turn is determinant of third then the relation cannot be-

   (A) Well structured

   (B) 1 NF

   (C) 2 NF

   (D) 3 NF

7. What is the ready state of a process?

   (A) When process is scheduled on run after some execution.

   (B) When process is unable to run until some task has been completed.

   (C) When process is using the CPU

   (D) None of the mentioned

8. Runtime mapping from virtual to physical address is done by:

   (A) Memory management unit

   (B) CPU

   (C) PCI

   (D) None of the above

9. Which of the following is/are the technique(s) for performing I/O management function?

   (A) Programmed I/O

   (B) Interrupt driven I/O

   (C) Direct Memory Access

   (D) All of the above

10. In distributed system each processor has its own

   (A) Local Memory

   (B) Clock

   (C) Both local memory and clock

   (D) None of the mentioned

Section - B

(Very Short Answer Type Questions)

(2 marks each)

Note: Attempt all questions in 2 - 3 sentences.

1. What is Data Abstraction?

2. What are the various types of DBMS users?

3. What is join?

4. What is Triple Relational Calculus (TRC)?

5. What is normalization?

6. What is a constraint?

7. Define program and process

8. What is user interface? Define text user interface and graphical user interface.

9. Define I/O management.

10. What is concurrency in OS?

Section - C

(Short Answer Type Questions)

(3 marks each)

Note: Attempt all questions in 75 words each.

1. Describe the functions of a database administrator.

2. Explain Union Operation with example.

3. Explain Data Manipulation language (DML).

4. What is operating system? Explain function of operating system.

5. Explain operating system security.

Section - D

(Long Answer Type Questions)

(5 marks each)

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

1. Explain the concept of data models and describe the various types of model

2. Explain the fundamental operation of relational algebra with example.

3. What is Normalization? Discuss 3NF and BCNF with example.

4. Explain memory management in detail.

5. What is distributed operating system? Explain types of distributed operating system.

6. Explain database system architecture.

[7]

7. Write short note no:

    (i)   Relational calculus

    (ii)   Various states of process