

DD-764

M. A./M. Sc. (Fourth Semester) EXAMINATION, 2020

MATHEMATICS

(Optional—A)

Paper Third

(Operating System and Database Management System)

Time : Three Hours

Maximum Marks : 70

Note : Attempt any *two* parts from each question. All questions carry equal marks. Assume any missing information.

1. (a) What is database system ? Explain the advantages of database system over traditional paper based method.
- (b) What is Data Administration and Database Administration ? Also explain the functions of Database Administrator.
- (c) Explain *three* levels ANSI/SPARC architecture.

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2. (a) Let r be a relation of degree n . How many different projections of r are there ?
- (b) Explain the following Relational operators with example :
 - (i) Union
 - (ii) Intersection
- (c) Explain the following terms with example :
 - (i) Relational calculus
 - (ii) Tuple calculus
 - (iii) Domain calculus
3. (a) What is Normalization ? Explain 3NF with example.
- (b) What is view ? List major problem with processing update operation expressed in term of view.
- (c) Explain the following SQL statement with example :
 - (i) SELECT
 - (ii) INSERT
 - (iii) UPDATE
4. (a) Define operating system. Explain the functions of operating system.
- (b) What is Deadlock ? Explain the methods to handling deadlocks.
- (c) Explain the following terms :
 - (i) Virtual Memory
 - (ii) Swapping
 - (iii) Paging

5. (a) Explain different communication methods and types of Networks.
- (b) What is security system ? Explain the various techniques of security.
- (c) Explain the objectives of I/O system and structure of I/O system.

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