Roll No. ....

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.

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 claculus

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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