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(Printed Pages 4)

(20221) Roll No. ....

B.Sc.(Com.Sc.)-III Sem.

NP-3608

B.Sc. (Computer Science)

Examination, Dec. - 2020

Data Base Management System

(BCS-501)

Time : Three Hours] *[Maximum Marks : 75*

Note : Attempt **all** the sections as per instructions.

Section - A

(Very Short Answer Questions)

Note : Attempt all **five** Questions. Each question carries 3 marks.

1. Differentiate between primary key and foreign key.
2. Write example to demonstrate the SUM function in SQL.
3. How is the database system better than the file system?
4. How is BCNF different from 3NF?
5. Define granularity.

P.T.O.

Section - B

(Short Answer Questions)

Note : Attempt any **two** questions out of the following 3 questions. Each question carries 7½ marks. 7½×2=15

6. (a) Discuss the three level architecture of database system. 5

   (b) What do you mean by the term schema? 2.5

7. (a) What do you mean by View? Discuss the advantages and disadvantages of View in detail. 5

   (b) What are the characteristics of SQL? 2.5

8. (a) Discuss various anomalies associated with relational database management system. 5

   (b) How share and exclusive locks differ? Explain. 2.5

Section - C

(Detailed Answer Questions)

Note : Attempt any **three** questions out of following 5 questions. Each question carries 15 marks.

9. What is two-phase locking protocol? How does it guarantee serializability?

10. Consider the following schema:

ADealer (did, dname, daddress)

BParts (pid, pname, pcolor)

CCatalog (pid, did, cost)

Write the following queries in relational algebra as well as in SQL:

(i) Find the names of dealers who supply gray parts.

(ii) Find the names of dealers who supply only gray parts.

(iii) Find the names of dealers who supply all the gray parts.

11. (a) What do you mean by deadlock? What are the Various conditions under which deadlock occur? 7½

(b) Compare and contrast the features of log based recovery mechanism versus check pointing based recovery. Suggest applications where you will prefer log based recovery scheme over checkpointing. 7½

P.T.O.

12. (a) Draw an ER diagram for a hospital with a set of patients and a set of medical doctors with each patient a log of the various conducted tests is also associated. 7½

(b) Define the following terms:

(i) Data Redundancy

(ii) 2NF

(iii) Serializable schedule

13. (a) Discuss the concurrency control mechanism in detail using suitable example. 7½

(b) Consider the following schema:

X=(A, B, C, D, E) and FDs E→A, B→D, CD→E, A→BC

State whether the following decompositions are lossless join decompositions:

Justify the answer

(i) x_1=(A, B, C)
x_2=(A, D, E)

(ii) x_1=(A, B, C)
x_2=(C, D, E)