PAPER ID-410267

Subject Code: RCS501

Roll No: | | | | | | | | | | | | | |

B. TECH.
(SEM V) THEORY EXAMINATION 2021-22
DATABASE MANAGEMENT SYSTEM

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a. Define the evolution of database.
b. Why Network Data model and Hierarchical Data model are little used now?
c. Define aggregation with example.
d. Name any five database systems?
e. What are different relational algebra operations?
f. What is Boyce-Codd Normal Form in the DBMS?
g. What are serial, non-serial schedules?

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. Differentiate the file system and database Management system by 10 key factors.
b. What is the difference between shared data and integrated data? Where are they used in database?
c. What are the different types of domains used in relational model? Discuss the referential integrity constraint with suitable example.
d. What do you mean by view? Explain it with an example. How are the implemented in DBMS?
e. What is join dependency? How it is different to that of multi-valued and functional dependency?

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) Create an E-R diagram for university registrar office. The office maintains data about each class, each instructor teaching the class, number of students enrolled, number of students for each class, and the time and date of class held. For each student-subject pair, a grade is also recoded. Take suitable assumptions if required.
(b) What do you mean by offset in database structure? Define the role of it in database development process.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) What are the various types of users involved in DBMS operations? Explain each.
(b) What is the relational algebra? Discuss how it differs from relational calculus?

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) List the Armstrong's axioms for functional dependencies. What do you understand by soundness and completeness of these axioms?

(b)

$$X \rightarrow W$$
$$WZ \rightarrow XY$$
$$Y \rightarrow WXZ$$

Find out the canonical cover.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) Given a schedule S for transactions T1 and T2 with set of read and write operations,

S: R1(X) R2(X) R2(Y) W2(Y) R1(Y) W1(X).

Identify, whether given schedule is equivalent to serial schedule or not?

(b) What do you mean by fragmentation? Define all types of fragmentations with the help of examples.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) Define the precedence graph. What is the role of it in transaction processing? Discuss in detail.

(b) What do you understand by interleaving of transaction? How is it differ from the serial execution?