

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2014 COURSE)
B.Tech.Sem - V COMPUTER : : SUMMER - 2022
SUBJECT : DATABASE MANAGEMENT SYSTEMS

Day : Thursday
Date : 2/6/2022

S-13651-2022

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
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Q.1 a) How following problems are handled with DBMS **[05]**
i) Data Isolation
ii) Data Redundancy and Inconsistency
iii) Data Integrity

b) Explain in detail, various roles in Database Management System. **[05]**

OR

Q.1 a) Explain in detail, Data Governance Framework. **[05]**

b) Explain in detail, with example the situation where DBMS not necessary. **[05]**

Q.2 Construct an ER model for Car Rental System and convert it into normalized relations. **[10]**

OR

Q.2 Consider a relation R(ABCDE) having following functional dependencies **[10]**
{ $AB \rightarrow C$, $C \rightarrow D$, $B \rightarrow E$ }.

- a) What are some of the nontrivial FD's that can be inferred from the given FDS?
- b) What are all candidate keys of R?
- c) Indicate all BCNF violations for R.
- d) Decompose the relations into lossless decomposition of R that are in BCNF.

Q.3 a) Explain with suitable example, the role of relational algebra in query processing. **[05]**

b) Differentiate between Weak Entity and Strong Entity with suitable example. **[05]**

OR

Q.3 a) Consider the following Relational schema : **[04]**
Sailors (sid, sname, rating, age)
Boats (bid, bname, color)
Reserves (sid, bid, date).

Write down Relational Algebra Expressions for following:

- i) Find all id's of Sailors who have a rating of "8" or reserved boat "103".
- ii) Find the colors of boats reserved by "Albert".

b) Explain the following with suitable examples: **[06]**

- i) Cartesian Product
- ii) Natural Join
- iii) Outer Join

P.T.O.

- Q.4** Consider the following Relational Schema: **[10]**
Emp (empno, ename, jobtype, hiredate, sal, com, deptno.)
Dept (deptno, dname, loc)
Write down SQL queries for following:
a) List the empno, ename, sal, ann_sal of all emp in ascending order of ann_sal.
b) List all clerks of dept no = 20
c) List the emps whose sal less than maximum salary.
d) Find details of highest paid emp.
e) List the emp with dept names.

OR

- Q.4** a) What is view? Give suitable example. **[04]**
b) What is cursor? Explain it's types with example. **[06]**

- Q.5** a) Explain shadow paging recovery and log based recovery scheme. **[06]**
b) Explain query optimization concept. **[04]**

OR

- Q.5** a) Explain query execution plan. **[05]**
b) Explain time stamp based protocol. **[05]**

- Q.6** a) With suitable diagram, explain the components of Data Warehouse. **[05]**
b) Define Data Mining. Explain various data mining techniques. **[05]**

OR

- Q.6** a) Explain in detail OLAP. **[05]**
b) Explain Data Mart. **[05]**

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