

Roll No:

Hi-Tech Institute of Engineering & Technology
DEPARTMENT OF CSE/IT/AI ML
(SEM-V) Model Test Paper 2023-24
SET-A

Subject Code: KCS 501

Subject Name: DBMS

Faculty Name: Prachi Vashist

Time: 3 hours

Total Marks: 100

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

1. Attempt all parts of the following

(2*10=20)

Q.No	1	Marks	CO
a.	Explain the difference between physical and logical data independence with example.	2	1
b.	Differentiate between simple and composite attributes.	2	1
c.	What are different integrity constraint?	2	2
d.	Write Relational Algebra expression for following: Relation emp (eid, ename, city) Find the name of employes who either lives in Delhi or lives in Mumbai.	2	2
e.	Define multi-valued dependency?	2	3
f.	There is a table CUSTOMER(ID, Name,DOR). Write a SQL query to display all customer details. Note(Early date of registration must be displayed first.)	2	2
g.	What are the advantages of normalization.	2	3
h.	Write difference between BCNF Vs 3 NF.	2	3
i.	What is LOCK?	2	4
j.	Discuss conservative 2PLP and strict 2PLP.	2	5

2. Attempt any four questions: -

10*3=30

Q.No	2	Marks	CO
a.	“Data redundancy leads to data inconsistency” . Justify your answer.	10	1
b.	Explain cursor, sequence and procedure in SQL.	10	2
c.	What are multi-version schemes? Explain in detail	10	5
d.	Discuss the ACID properties of a Transaction. Explain the usefulness of each.	10	4
e.	What is DDBMS? How data is stored in DDBMS? What are the various concurrency control techniques in DDBMS?	10	4
f.	Given the following set of FD on schema R(V,W,X,Y,Z) $Z \rightarrow V, W \rightarrow Y, XY \rightarrow Z, V \rightarrow WX$ State the following decomposition is lossless or lossy (i) $R_1=(V,W,X)$ $R_2=(V,Y,Z)$ (ii) $R_1=(V,W,X)$ $R_2=(X,Y,Z)$	10	3

3. Attempt any ONE part of the following:

10*1 = 10

Q.No	3	Marks	CO
a.	What are advantages of Database over file processing system..	10	1
b.	What is database management system? Explain 3-schema architecture of DBMS.	10	1

4. Attempt any ONE part of the following:

10*1 = 10

Q.No	4	Marks	CO
a.	<p>A university registrar's office maintain the data about following entities</p> <p>a) Course including number,title,credits,syllabus; b) Course offering including course number, year, semester, section no. , instructors, timing &class room c) Students including id_no, name, program d) Instructor including idno, name, dept and title.</p> <p>Further the enrollment of students in course and grades awarded to students in each course they are enrolled. Construct an E-R diagram for the registrar office and reduce ER diagram into tables.</p>	10	1
b.	Explain the concept of referential integrity constraint with suitable example.	10	2

5. Attempt any ONE part of the following:

10*1 = 10

Q.No	5	Marks	CO
a.	Describe the term MVD by giving as example? Explain 4NF to resolve the issue of MVD.	10	3
b.	<p>What do you mean by loss-less decomposition of a relation? Consider a relation $R(A,B,C,D,E,F)$ with FD's $AB \rightarrow C, C \rightarrow A, D \rightarrow E, F \rightarrow A, E \rightarrow d$ IS the decomposition of R into $R1(A,C,D), R2(B,C,D)$ and $R3(E,F,D)$ lossless?</p>	10	3

6. Attempt any ONE part of the following:

10*1 = 10

Q.No	6	Marks	CO
a.	<p>What is Deadlock? Discuss the procedure of deadlock detection algorithm and recovery in database transaction processing.</p> <p style="text-align: center;">OR</p> <p>What is schedule? Define the concept of recoverable, Cascadeless, strict schedule and compare them in terms of recoverability.</p>	10	4
b.	What is log file? What are the kinds of records stored in system log? What are transaction commit points and why they are important?	10	4

7. Attempt any ONE part of the following:

10*1 = 10

Q.No	7	Marks	CO
a.	What do you mean by concurrency control? What is timestamp? Discuss time stamp protocol as concurrency control mechanism.	10	5
b.	<p>How serial schedule is different from non serial schedule? What is seralizable schedule? A schedule is given as: $S : r1(X), r2(X), w1(X), w2(X), w1(Y)$ Check whether schedule S is conflict serializable or not?</p>	10	5