BENNETT UNIVERSITY
THE TIMES GROUP

Enrolment No: E22CSEU0827 Name of Student: MADHAV GUPTA

Department/ School: SCSET

END-TERM EXAMINATION, ODD SEMESTER DECEMBER 2023

COURSE CODE	CSET201	**MAX. DURATION**	2 HRS
COURSE NAME	Information Management System		
PROGRAM	B. Tech.	**TOTAL MARKS**	35

Mapping of Questions to Course and Program Outcomes							
Q.No.	1	2	3	4	5	6	7
CO	1	2	1	3	2	1	3
PO	1	3	1	4	2	1	4
BTL*[1]	2	2,5	2	5	4	2	4

GENERAL INSTRUCTIONS: -

1. Do not write anything on the question paper except **name, enrolment number** and **department/school.**
2. Carrying mobile phones, smartwatches and any other non-permissible materials in the examination hall is an act of UFM.

COURSE INSTRUCTIONS:

a) **Attempt all the questions. All are compulsory.**

SECTION A

Max Marks: 20

A1) (a) Explain the importance of data independence in the context of DBMS with suitable examples. **(2.5 Marks)**

(b) Consider a scenario in which you are appointed as a database administrator in an organization. Explain the roles and responsibilities you are supposed to perform. **(2.5 Marks)**

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A2) (a) Construct an ER diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted. Also decompose the relational schema into tables. **(2.5 Marks)**

(b) Compare NoSQL & RDBMS to identify the better one. Explain why one should be using a NoSQL database instead of a relational database or vice versa? **(1.5+1 Marks)**

A3) Explain the operators in SQL with examples. **(a)** ANY **(b)** IN **(c)** EXISTS **(d)** EXCEPT **(e)** SOME **(5 Marks)**

A4) Consider a relation R={A, B, C, D, E, F, G, H} and the set of functional dependencies FD={A→B,C,D ; E→F ; C→D ; A,E,G→H}

(a) Find out the key(s) for relation R. Show all steps. **(2.5 Marks)**

(b) Normalize the relation R up to BCNF. Mention the key to each decomposed relation. **(2.5 Marks)**

SECTION B

Max Marks: 15

B1) Consider the following schedules involving two Schedule S1 and S2

S1: r1(A), w1(A), r2(D), w4(A), r1(B), r4(C), w3(B), w2(E), w3(C);

S2: r1(A), r2(A), r1(B), r2(B), r3(A), r4(B), w1(A), w2(B);

Solve whether S1 and S2 are conflict serializable schedule or not using precedence graph? For each serializable schedule determine the equivalent serial schedule. **(5 Marks)**

B2) During its execution, a transaction passes through several states, until it finally commits or aborts. List all possible sequences of states through which a transaction may pass. Explain why each state transition may occur. **(5 Marks)**

B3) Consider the following relational database schema consisting of the four relation schemas:

PASSENGER (PID, PNAME, PGENDER, PCITY)

AGENCY (AID, ANAME, ACITY)

FLIGHT (FID, FDATE, TIME, SRC, DEST)

BOOKING (PID, AID, FID, FDATE)

Answer the following questions using relational algebra queries;

(a) Get the complete details of all flights to New Delhi.

(b) Get the details about all flights from Chennai to New Delhi.

(c) Find only the flight numbers for passenger with pid 123 for flights to Chennai before 06/11/2020.

(d) Find the passenger names for passengers who have bookings on at least one flight.

(e) Find the passenger names for those who do not have any bookings in any flights.

(5 Marks)

-ALL THE BEST-