Reg. No.:

Name :

VIT

Vellore Institute of Technology

Continuous Assessment Test-II – March 2023

Programme	: B.Tech CSE	Semester	:	Win Sem(2022-23)	
		Code	:	BCSE302L	
Course Title	: Database Systems	Class Nbr(s)	:	CH2022235000588 CH2022235000589 CH2022235000590 CH2022235000591 CH2022235000592 CH2022235000593	
Faculty (s)	: Dr. Janani T, Dr. Leninisha Shanmugam, Dr. Rishikeshan CA Dr. Tamilarasi K, Dr. Brindha Dr. Jaisakthi S M	Slot	:	**B2+TB2**	
Time	: 90 Mins	Max. Marks	:	50 marks	

Answer all the Questions

1. Assume that you are creating a relation to store details related to a novel AT&T project. You have received the details from your client and still figuring out a way to understand various attributes involved. Your Client describes the characteristic of those attributes and you are defining the following functional dependencies of the relation ATT(A,B,C,D,E,H) as **10**

FD_ATT= {{A→BC},{CD→E},{E→C}, {D→AEH}, {ABH→BD}, {DH→BC}}.

(i) Identify closure of each attribute and then identify Key attribute(s). (3 marks)
(ii) List out prime and non-prime attributes. (2 marks)
(iii) Find minimal cover. (5 marks)

2. **10**

PET ID	PET NAME	PET TYPE	PET AGE	OWNER	VISIT DATE	PROCEDURE
246	Rover	Dog	12	Sam	Jan 13/2002 Mar 27/2002 Apr 02/2002	01 – Rabies Vaccination 10 – Examine & treatment 05 – Worm test
298	Morris	Dog	2	Kim	Jan 21/2003 Mar 10/2003	08 – Tetanus Vaccination 05 – Heart worm test
341	Tweedy	Cat	4	Terry	Jan 23/2003 Jan 13/2003	01 – Rabies Vaccination 01 – Rabies Vaccination
519	Jack	Bird	2	James	Apr 30/2003 May 25/2003	20 – Annual check up 12 – Eye wash

Normalize the following HEALTH HISTORY REPORT of a pet clinic up to 4 the normal form considering the following functional dependencies.

PET_ID → PET_NAME, PET TYPE, PET AGE

PET NAME → VISIT DATE, PROCEDURE

VISIT DATE → PET NAME, OWNER

OWNER → PET NAME, VISIT DATE, PROCEDURE

3. Consider the following Relation:

F_id	F_name	Designation	Salary
1005	Ravi	prof.	100000
1001	Usha	prof.	30000
1002	Pritto	prof.	300000
1003	Ramya	Asst. prof.	10000
1004	Raji	Asst. prof.	10000
1006	Smitha	Asso. prof.	80000

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Construct the B+tree by inserting the above records in the same sequence. Delete the records which is having the values of as '1003' & '1005', and then, insert the record: (1007,'Bala',Prof,150000)

4. Consider the following MOVIE database schema:

ACTOR (Act_id, Act_Name, Act_Gender)
DIRECTOR (Dir_id, Dir_Name, Dir_Phone)
MOVIES (Mov_id, Mov_Title, Mov_Year, Mov_Lang, Dir_id)
MOVIE_CAST (Act_id, Mov_id, Role)
RATING (Mov_id, Rev_Stars)

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Write Relational Algebra queries to the following: [4 × 2.5 =10 Marks]

a) Find the actor name who has maximum number of movies.
b) List all actors who acted in movies released before 2005.
c) Find the title of movies acted by 'Surya' released after 2018 with rating above four.
d) Update the rating of all 2022 movies of director 'S. S. Rajamouli' to rating value 5.

5. The hash key field and corresponding binary hash value is given in the below table. Use Extendible hashing scheme to store the given key field in a table. Each bucket can hold up to 2 records. The hash value is used in the order least significant bit to most significant bit while performing hashing. Present the hashing results stepwise after inserting each key and explain the same in detail.

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Key	Hash Value
122a	0001
122b	0010
122c	0011
171	0100
222	0101
223	0110
241	0111
274	1000
290	1001
299	1010