

Reg. No.:

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Vellore Institute of Technology
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Continuous Assessment Test-II – June '23

Programme	: B.Tech Electronics and Computer Engineering	Semester	: Fall Inter Sem (2023-24)
Course Title	: Database Systems	Code	: BCSE302L
		Class Nbr(s)	: CH2022232501053 CH2022232501054 CH2022232501055 CH2022232501056 CH2022232501064
Faculty (s)	: Dr. R.Reena Roy Dr. K. P. Vijayakumar Dr. K. Parkavi Dr. A.Sherly Alphonse Dr. A.Sudha	Slot	: F2+TF2
Time	: 90 Mins	Max. Marks	: 50 marks

Answer all the Questions

1. Consider the following relations concerning cricket players.

Player (PlayerId, PlayerName, Country, Age, Runs, Wickets)

IPL (PlayerId, TeamId, TeamName, MatchesPlayed)

TestMatch (PlayerId, Year)

Write SQL and Relational algebra expressions for the following queries:

- Display the details of players who scored runs greater than or equal to 50. (2 Marks)
- List all the id's of the player & team and matches played from IPL relation to those who played more significantly than 10 matches. (3 Marks)
- List the players' details who have not played for IPL. (3 Marks)
- Count the number of players who have played for both IPL and Test Match. (2 Marks)
- List the player names and age, who have played for the IPL team 'CSK'. (3 Marks)
- Rename the relation IPL to IPLCricket (2 Marks).

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2. (i) Apply Linear, Quadratic, and double hashing techniques to implement the open hashing concept for the set of key values (3, 2, 13, 18, 11, 6, 73). Assume that size of the bucket is 10, where $h_1(\text{Key}) = \text{Key} \% 10$ and $h_2(\text{Key}) = 1 + (\text{Key} \% 8)$. (10 Marks)

(ii) The online Proctor-Proctee system contains the details of proctees such as Register No., Page 1 of 2

Name, Year, Department, ContactNo, Email, Address. Proctor has to search the details of proctee using RegisterNo.

a. Illustrate the dense and sparse index associated with the above specification. (4 Marks)

b. Mention and justify the suitable indexing from a) for the given specification. (1 Mark)

3. Imagine you are building a restaurant management application which needs to store the data about the company's employees detail as given in the table. Normalize the given table, up to

EMP_ID	NAME	JOB_CODE	JOB	STATE_CODE	HOME_STATE	MAIL-ID
E001	Kevin	J01	Chef	26	Michigan	kevink@gmail.com
E005	Melvin	J02	Waiter	26	Michigan	melvin@gmail.com, mwaiter@gmail.com
E002	Morish	J02	Waiter	56	Wyoming	morish@gmail.com
E006	Shyam	J03	Bartender	56	Wyoming	Shyam@gmail.com
E003	Steve	J01	Chef	53	Washington	stevemurphy@hotmail.com
E004	Jackson	J04	Manager	59	Washington	mjack@yyahoo.com

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the 3-NF with proper justifications for violations in each form.

4. Let $R = (B, C, D, E, F, G)$ be a relation schema with the following dependencies:

(i) $D \rightarrow G$

$F \rightarrow B$

$FD \rightarrow E$

$B \rightarrow C$

Find all the possible super keys and then identify the minimal super keys using the closure property. (6 Marks)

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(ii) $D \rightarrow G$

$F \rightarrow B$

$BD \rightarrow E$

$B \rightarrow C$

Find the implied functional dependencies by applying the axiom rules. (4 Marks)

