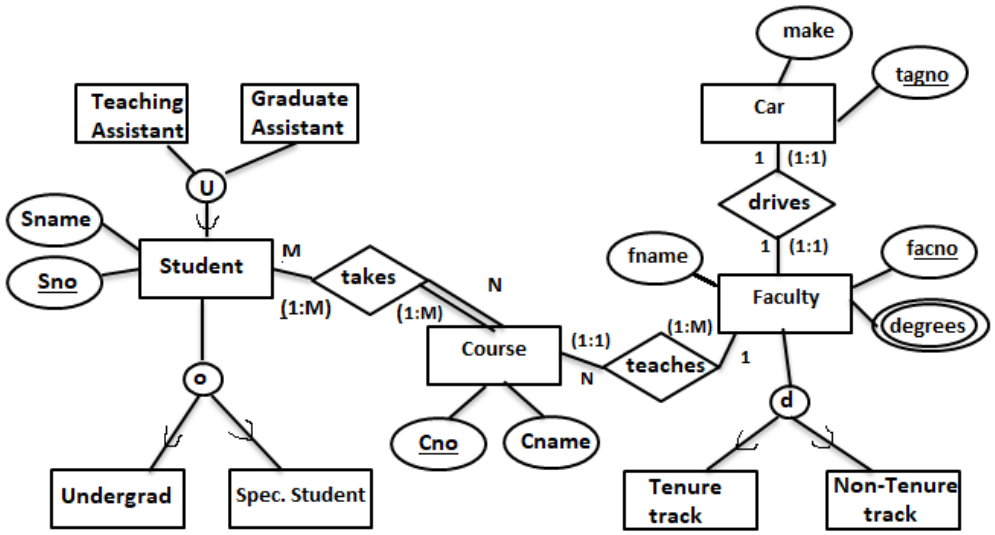
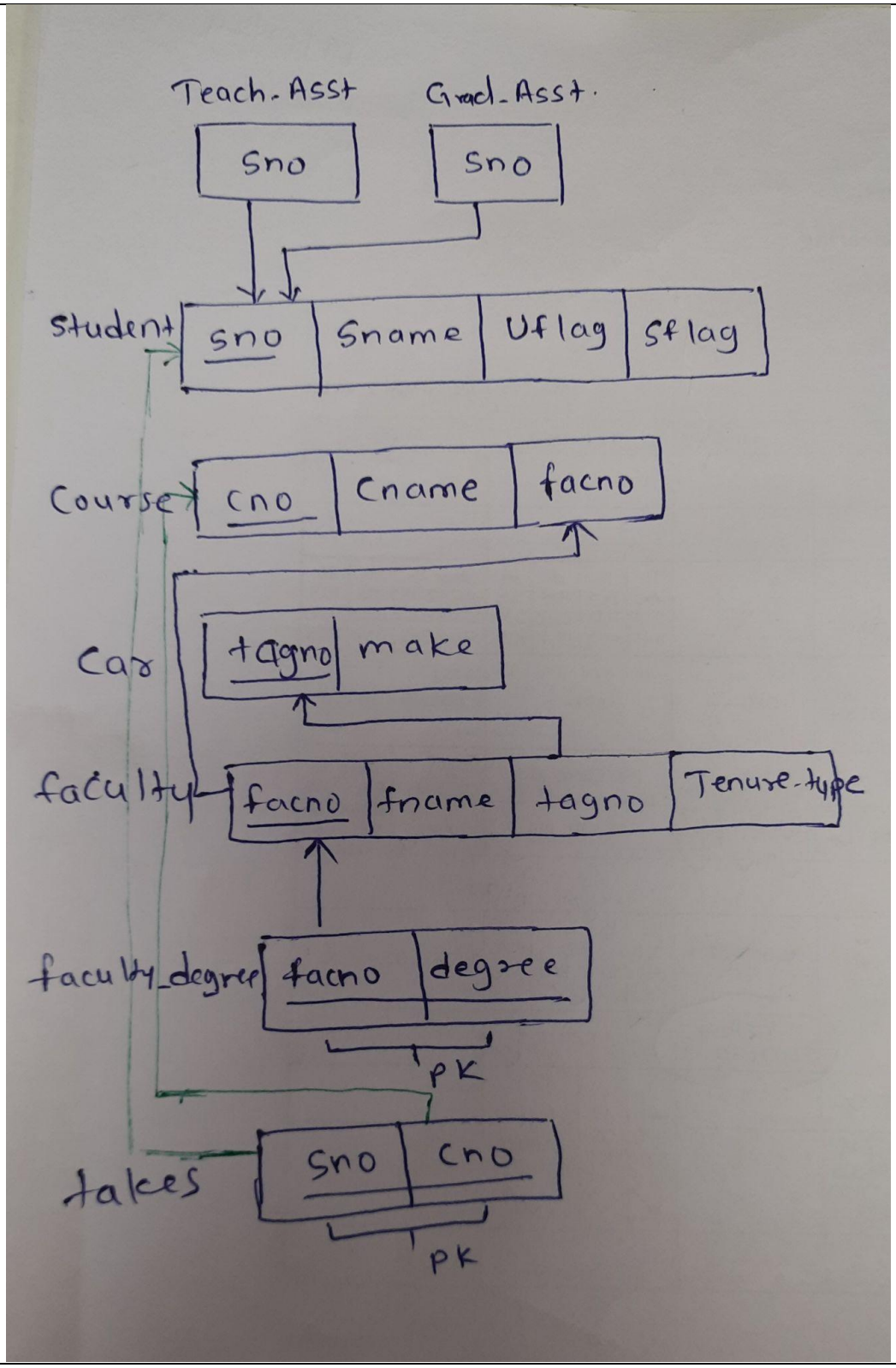
SOMAIYA VIDYAVIHAR UNIVERSITY

Semester: January 2025-April 2025 **Maximum Marks: 30** **Examination: In-Semester Examination** **Duration : 1:15 min**		
Programme code: 01 **Programme: B. Tech. in Computer Engineering**	**Class:** SY	**Semester:** IV**(SVU 2023)**
Institute/School/ Department: **K. J. Somaiya School of Engineering**		**Name of the Department:** COMP
Course Code: 216U01C403	**Name of the Course: Relational Database Management Systems**	

Question No.		Max. Marks
Q1.A	What are the responsibilities of the DBA ? **Ans**: 5 points (1 mark each) **OR** What is the difference between logical data independence and physical data independence? Which one is harder to achieve? Why? **Ans:** Difference -2M middle question-1M why?-2M	5
Q1.B	How do UNION types with category differ from a regular shared subclass? What is a category used for? Illustrate your answer with examples **Ans:** 2.5 M each question	5
Q2.A	Discuss the entity integrity and referential integrity constraints. Why is each considered important? **Ans:** 2.5 M each	5
Q2.B	Map the given EER diagram to the relational model.  **Ans:** **Marking scheme:**	8

	(diagram with explanation) **mapping strong entities 1M** **mapping 1:1 relationship 1M** **mapping 1:N relationship 1M** **mapping M:N relationship 1M** **mapping multivalued attribute 1M** **mapping overlapping relationship 1M** **mapping disjoint relationship 1M** **mapping union/category relationship 1M**	



Q3	Consider the LIBRARY database given below: *member*(*memb no, name*) *book*(*isbn, title, authors, publisher*) *borrowed*(*memb no, isbn, date*) Write SQL queries for the following: a) Find the author and publisher of the book "Fundamentals of Database System" b) Find the member number and name of each member who has borrowed at least one book published by "McGraw-Hill".	7

	c) Find the member number and name of each member who has borrowed every book published by "McGraw-Hill". **Ans:** **a) SELECT authors, publisher FROM book WHERE title = 'Fundamentals of Database System'; (2M)** **b) SELECT DISTINCT memb_no, m.name FROM member where memb_no in(select memb_no from borrowed where isbn in(select isbn from book where publisher = 'McGraw-Hill')); (2M)** **c) SELECT memb_no, name FROM member WHERE NOT EXISTS (SELECT isbn FROM book WHERE publisher = 'McGraw-Hill'** **AND NOT EXISTS (SELECT isbn FROM borrowed WHERE borrowed.memb_no = member.memb_no** **AND borrowed.isbn = book.isbn** **)); 3M** **OR** Consider the database schema of ODI Cricket : Match(MatchID, Team1, Team2, Ground, Date, Winner) Player(PlayerID, LName, FName, Country, YearBorn, Bplace, Ftest) Batting(MatchID, PID, Order, Hout, FOW, NRuns, Mts,Nballs, Fours, Sixes) Bowling(MatchID, PID, Novers, Maidens, NRuns, NWickets) Write Relational algebra queries for the following: a) Find the names of all players who played their first test after 2000. b) Find the Match ID's of all the matches in the database in which Tendulkar batted. c) Find the player IDs of all Indian players who have not batted in any match **Ans: 2M+2M + 3M**	

a) $\Pi_{fname, lname}\left(\sigma_{ftest>2000}(Player)\right)$

b) $\Pi_{match\text{-}id}\left(\sigma_{lname='Tendulkar'}\left(Player \bowtie_{playerID = pid} Batting\right)\right)$

c) $\Pi_{playerID}\left(\sigma_{Country='India'}(Player)\right) - \sigma_{pid}(Batting)$