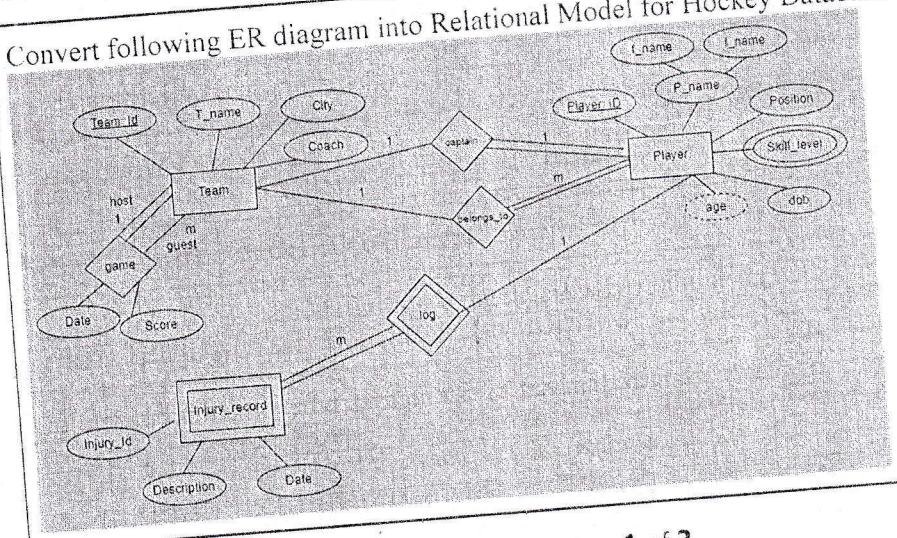
K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

May-June 2025
B. Tech Program: Computer Engineering — Scheme I/II/IIB/III: IIB
Supplementary Examination: SY — Semester: IV
Course Code: CEC403 and — Course Name: Database Management System
Date of Exam: 23/05/25 — Duration: 02.5 Hours — Max. Marks: 60

Instructions:
(1)All questions are compulsory.
(2)Draw neat diagrams wherever applicable.
(3)Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any **two** questions out of three: (05 marks each)	10		
a)	Explain responsibilities of Database administrator		CO1	U
b)	Explain different types of attributes in ER diagram with example		CO2	U
c)	Write syntax and example of following relational algebra operation: i. Select ii. Project iii. Intersect iv. Difference		CO3	U
Q 2	Solve any **two** questions out of three: (05 marks each)	10		
a)	Explain following Data Definition Language(DDL) commands with syntax i.CREATE ii. ALTER iii. DROP iv. RENAME v.TRUNCATE		CO4	U
b)	Define Normalization and explain use of Normal forms?		CO5	U
c)	Explain ACID properties of transaction with example		CO6	U
Q.3	Solve any **two** questions out of three. (10 marks each)	20		
a)	Convert following ER diagram into Relational Model for Hockey Database 		CO3	Ap

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b)	Explain conflict serializability and view serializability with example (05 marks each)		CO6	U
c)	Discuss 1NF and 2NF in detail with example (05 marks each)		CO5	U
Q.4	Solve any **two** questions out of three. (10 marks each)	20		
a)	Design a database for an airline. The database must keep track of customers and their reservations, flights and their status, seat assignments on individual flights, and the schedule and routing of future flights. Construct an **ER model** which should include: 1. Different types of attributes 2. Relations 3. Cardinality Constraint 4. Participation Constraint		CO2	Ap
b)	Consider the following relations for database that keeps track of employee and their salary: a)EmployeeDetails(EmpId, FullName, ManagerId, DateOfJoining, City) b) EmployeeSalary (EmpId, ProjectName,Salary,Incentive) **Apply and construct following SQL queries:** 1. To fetch the EmpId and FullName of all the employees working under the Manager with id – „986". (01 M) 2. To find the employee id whose salary lies in the range of 9000 and 15000. (01 M) 3. To fetch EmpId, FullName, DateofJoining, City of all employees who work on Projects other than P1. (02 M) 4. To fetch the EmpIds that are present in EmployeeDetails but not in EmployeeSalary.(02 M) 5. To fetch employee names and salary records even if the salary record is not present for the employee. (02 M) 6. To fetch the employee"s full names, City whose Incentive amount is greater than 5,000. (02 M)		CO4	Ap
c)	Define Deadlock. Explain Deadlock Detection and Prevention technique		CO6	U

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