DSE

Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (W), Mumbai : 400058, India

(Autonomous College of Affiliated to University of Mumbai)

End Semester Examination

December 2022

Max Marks : 100 Duration : 3 hours

Class :S.Y.BTechBranch : COMP/DS/AIML

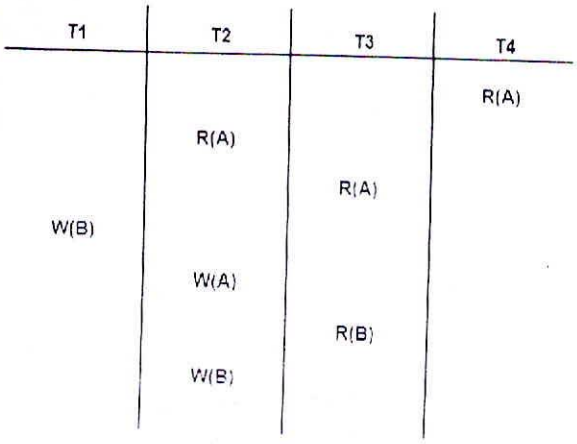
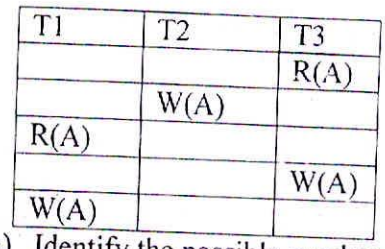
Course code: CE204/DS204/AI204Semester :III

Name of the course :Data Base Management System

Instruction:
(1) All questions are compulsory
(2) Draw neat diagrams
(3) Assume suitable data if necessary
(4) Mention the question number clearly while writing the answer

Q No		Max Marks	CO	BL
1a	Consider a MOVIE database in which data is recorded about the movie industry. The data requirements are summarized as follows: Each movie is identified by title and year of release. Eachmovie has a length in minutes. Each has a production company,and each is classified under one or more genres (such as horror,action, drama, and so forth). Each movie has one or more directors, and one or more actorsappear in it. Each movie also has a plot outline. Finally, eachmovie has zero or more quotable quotes, each of which is spokenby a particular actor appearing in the movie. Actors are identified by name and date of birth and appear inone or more movies. Each actor has a role in the movie. Directors are also identified by name and date of birth anddirect one or more movies. It is possible for a director to act in a movie (including one that he or she may also direct). Production companies are identified by name, and each has anaddress. A production company produces one or more movies. a. Draw an E-R diagram for the system. b. Convert ER diagram into Relation Model.	10	1	4
1b	Compare file processing system with database system. Give the disadvantages of database system.	10	1	2
2a	Explain various aggregate functions? also describe the use of group-by and having clause with the help of given schema. student(sid, name, age , marks, phonenumber, city, branch) **OR** Consider the following relational schema. An employee can work in more than one department; the pct time field of the Works relation shows the percentage of time that a given employee works in a given department.	10	2	3

	Emp (eid: integer, ename: string, age: integer, salary: real) Works (eid: integer, did: integer, pct time: integer) Dept (did: integer, dname: string, budget: real, managerid: integer) Write the following queries in SQL: a) Print the names and ages of each employee who works in both the Hardware department and the Software department. b) For each department with more than 20 full-time-equivalent employees (i.e., where the part-time and full-time employees add up to at least that many full-time employees), print the did together with the number of employees that work in that department. c) Print the name of each employee whose salary exceeds the budget of all the departments that he or she works in. d) Find the managerids of managers who manage only departments with budgets greater than $1 million. e) If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the managerids of managers who control more than $5 million.			
2b	Write the following query in relational algebra. Consider the relational database given below: lives (person-name,street,city) works (person-name, company-name,salary) located-in (company-name,city) manages (person-name,manager-name) a) Find the name of persons working at Indian Bank who earn more than 80,000. b) Find the name and city of all persons who work for Indian Bank and earn more than 50,000. c) Find names of all persons who live in the same city as the company they work d) Find names of all persons who live in the same city and on the same street as their manager. e) Find the company name located at city "Mumbai"	10	2	4
3a	What is the need of database Normalization. With the help of example discuss the insertion, deletion and update anomaly in database.	10	3	3
3b	Given R(A,B,C) FDs = { A → BC, B → C, A → B, AB → C } Identify the highest normal form the relation. Is it in a 3NF? If No, then Find the 3NF decomposition of the above relation.	10	3	3

4a	When do we say serializability is maintained? Remove the conflicts present inthe given schedule step by step  **OR** State the rules to convert given schedule in view serializable schedule. Consider the following schedule S  a) Identify the possible number of view serializable schedule of the above schedule S. b) Convert a given schedule to view serializable.	10 03 02 05	4	3
4b	Describe the Deadlock prevention (Wound wait and Wait-die) for database. Comment on starvation and selection of victim.	10	4	3
5a	Draw and explain steps in query processing.	06	5	4
5b	Prove with example Set operation union and intersection are associative with respect to query processing.	06	5	3
5c	Consider the following schema. Project (pid, pname, department, cost) Write a trigger to print the status of the project as "Type 1 " if cost is greater than fifty lakh else "Type 2".	08	2	3