

B.TECH(CSE/AI), SEMESTER V EXAMINATION, 2024
PAPER- BTCSE/BTCSEAI-502
DATABASE MANAGEMENT SYSTEM

Time: 2.5 Hours

Maximum Marks: 60

Section-A

Answer ALL questions from this section (4 X 5= 20 marks)

Q.No	Questions	Marks	CO	BL
1.	Explain the disadvantages of File system which led to evolution of DBMS.	5	CO1	BL1
2.	Explain the Three levels of Data Abstraction in Database Systems. Which is more difficult to achieve? Justify your answer.	5	CO2	BL2
3.	Discuss the Armstrong's Axioms for Functional Dependency. OR For the given relation R(ABCD) and FD's { ABC -> D, AB -> CD, A -> BCD}. Find all possible keys.	5	CO4	BL3
4.	Develop an ER diagram using aggregation that captures the following information: Teacher teaches different subjects. Teacher teaching a particular subject uses a reference book. State any options you make.	5	CO3	BL4

Section-B

Answer any FOUR questions from this section (4 X 10= 40 marks)

Q.No	Questions	Marks	CO	BL
5.	Explain a mechanism to retrieve records from two or more table based on condition. Discuss the various types of that mechanism with examples.	10	CO3	BL2
6.	Consider Schema: Employee (employee name, Street, city) Worksfor (employee name, company name, salary) Company (company name, city) Manages (employee name, manager name) Answer the following queries in Relational Algebra and SQL : (i) Find names of employees working for Infosys. (ii) Find the names and the cities of employees working for TCS. (iii) Find name, street, and city of employees working for Infosys and earning more than 50000. (iv) Find the names of the employee who are not working for Wipro. (v) Find names of employees working in the same city where they live.	10	CO2	BL4

7.	(a) Explain the concept of Super keys, Candidate keys and Primary keys of an entity set. (b) What is the need of Concurrency Control? Discuss any one Concurrency Protocols : Lock-Based protocols OR Time-Stamp protocols	5+5	CO2, CO4	BL2
8.	(a) What is Conflict Serializability? Explain Conflict instructions and Non Conflict instructions. (b) Consider the schedules T ₁ and T ₂ given below: T ₁ : r ₁ (X); r ₂ (Z); r ₁ (Z); r ₃ (X); r ₃ (Y); w ₃ (Y); r ₂ (Y); w ₂ (Z); w ₂ (Y); T ₂ : r ₁ (X); r ₂ (Z); r ₃ (X); r ₁ (Z); r ₂ (Y); r ₃ (Y); w ₁ (X); w ₂ (Z); w ₃ (Y); w ₂ (Y); Draw the Serializability (Precedence) Graph for T ₁ and T ₂ .	5+5	CO4	BL4
9.	(a) Why do we need normalization? Explain the difference between 3NF & BCNF with example. (b) What do you mean by a transaction? What are the desired properties of transaction? Discuss the transaction state diagram and different states.	5+5	CO3, CO4	BL2
10	Write short notes on any TWO : (a) Data Independence (b) B+ Tree (c) Distributed Database (d) DML & DDL	5+5	CO5	BL2