Sub Code: BCST 402 **ROLL NO……..……..**

SEMESTER EXAMINATION, 2022 – 23

(IInd yr B.Tech. –Computer Science & Engg)

Database Management Systems

Duration: 3:00 hrs **Max Marks: 100**

Note: - Attempt all questions. All Questions carry equal marks. In case of any ambiguity or missing data, the same may be assumed and state the assumption made in the answer.

Q 1.	Answer any four parts of the following. a) What are the advantages of database systems over traditional file systems? b) Explain the roles of Database Administrator (DBA). c) Distinguish the terms: super key, candidate key, primary key, and foreign key. d) Explain Referential Integrity Constraint? e) What are the consequences of using ON DELETE CASCADE, ON DELETE SET NULL clauses? f) Illustrate Participation and Cardinality constraints in ER Diagram with examples.	5x4=20
Q 2.	Answer any four parts of the following. a) Explain the concept of CIA in data security. Explain SQL injection. b) Give the difference between Object oriented and object relational databases, c) Explain the difference between two phase commit protocol and three phase commit protocol. d) Explain time-stamp ordering protocol with example e) Name any two commercial DBMS. Explain any two of them. f) Explain difference between data warehousing and data mining.	5x4=20
Q 3.	Answer any two parts of the following. a) Consider the following Relations. Student (RollNo, Name, Branch), Book (Isbn, Title, Author, Publisher), Issue (Rollno, Isbn, date_of_issue). Write the query in Relational algebra of the following: **a)** List the Roll Number and Name of All CSE and IT Branch Students. **b)** Find the name of students who have issued a book of publication 'Prentice Hall'. **c)** List the title and author of all books which are issued by a student name 'Ashoka' **d)** List the title of all books issued on or before 20/09/2020. **e)** List the name of student who issued the books authored by 'Ullman'. b) What are Armstrong's Axioms in functional dependency? Explain with the examples. c) Draw E-R diagram for student registration system. Diagram should show all the entities, attributes, Cardinalities, relationships.	10x2= 20
Q 4.	Answer any two parts of the following. a) (i) Explain Lossless join Decomposition with example. (ii) A relation schema R(A,B,C,D,E) have functional dependencies A → B, B → C, C → D, D → BE is decomposed into R1 (AB), R2(BC), R3(CD) and R4(DE). Check whether the decomposition is dependency preserving or not? b) What do you understand by ACID properties of transaction? Explain in details c) Explain the following: a) Trivial FDs b) MVDs c) Pseudo transitivity rule d)	10x2= 20

	Augmentation e) Inclusion Dependency	
Q 5.	Answer any two parts of the following. a) Which of the following schedules is conflict serializable? For each serializable schedule find the equivalent schedule. S1: r1(x); r3(x); w3(x); w1(x); r2(x); S2: r1(x); r2(x); r3(y); w1(x); r2(z); r2(y); w2(y); S3: r3(x); r2(x); w3(x); r1(x); w1(x); b) Define deadlock. Explain deadlock recovery and prevention techniques in distributed systems. c) What is Intrusion detection system? What are different types of intrusion detection systems? Explain various intrusion detection methods in IDS.	10x2= 20

****