

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: BCA
BRANCH: BCA**

**SEMESTER : III/ADD
SESSION : MO/2025**

SUBJECT: CN203 DATABASE MANAGEMENT SYSTEM

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Explain the differences between external, conceptual, and internal schema. How are these different schema layers related to the concept of physical and logical data independence?	[5] 1	1
Q.1(b)	What is a data model? Describe the different types of data models used.	[5] 2	2
Q.2(a)	Define the concept of aggregation. Give example of it and explain.	[5] 1	1
Q.2(b)	What is relational algebra? What is its use? Explain three relational operators.	[5] 2	2
Q.3(a)	What is the importance of functional dependencies in database design? Describe Armstrong's Axioms.	[5] 1	1
Q.3(b)	Define Boyce-Codd normal form (BCNF). How does it differ from 3NF?	[5] 2	2
Q.4(a)	What are the typical phases of query processing? Draw a neat diagram and these phases in high level query processing.	[5] 1	1
Q.4(b)	What are query transformation rules? Discuss any five.	[5] 2	2
Q.5(a)	Draw a state diagram and discuss the typical states that a transaction goes through during execution.	[5] 1	1
Q.5(b)	What is Locking? Discuss the problems of deadlock and the different approaches to dealing with these problems.	[5] 2	2

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