

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

**CLASS: BTECH  
BRANCH: ARTIFICIAL INTELLIGENCE**

**SEMESTER: V  
SESSION: MO/2025**

**SUBJECT: CS237 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)	What are the five main functions of Database Administrator? Discuss in detail the advantages and disadvantages of using a database system.	[5] 1	1,2
Q.1(b)	What is multi-valued and composite attribute? Draw an E-R diagram for newly admitted student's course enrolment system in the University.	[5] 1	1,2
Q.2(a)	What is Codd's rule? Briefly discuss about the fundamental operations of relational algebra.	[5] 3	2
Q.2(b)	Why do we use 'Null Values'? What do you mean by the term 'Integrity Constraints'? Explain each type of Integrity Constraints with suitable examples.	[5] 3	2
Q.3(a)	Why are certain functional dependencies called trivial functional dependencies? Explain Boyce Code Normal Form (BCNF) with suitable examples.	[5] 4	2,3
Q.3(b)	What is multi-valued dependency? Give two examples to illustrate MVD. Explain 5NF to have a control on redundancy at this level.	[5] 4	2,3
Q.4(a)	What is B+ and B- index files? Explain the difference between indexing and hashing.	[5] 5	1,2
Q.4(b)	Write short note on the 'Measurement of Query cost by the DBMS.	[5] 5	1,2
Q.5(a)	What is Transaction? Explain different transaction processing states.	[5] 5	2
Q.5(b)	What is a schedule? Briefly discuss about various lock-based protocols to achieve concurrency control over multiple transactions.	[5] 5	2

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