Code No: 154AM **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year II Semester Examinations, September/October - 2023
DATABASE MANAGEMENT SYSTEMS
(Computer Science and Engineering (Artificial Intelligence and Machine Learning))

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	Define database and database management systems.	[2]
b)	What is data model? Name three categories of data models.	[3]
c)	What is integrity constraint?	[2]
d)	How to alter tables and views?	[3]
e)	Discuss the basic form of SQL query.	[2]
f)	What are the problems caused by redundancy? Explain.	[3]
g)	Explain the concept of transaction.	[2]
h)	Differentiate between atomicity and durability.	[3]
i)	Explain about organization of records in files.	[2]
j)	Explain about B+ tree index file.	[3]

PART – B

(50 Marks)

2.a) What is data independence? Explain various types of data independence.
b) Distinguish strong entity set with weak entity set? Draw an ER diagram to illustrate weak entity set? [5+5]

OR

3.a) Describe the structure of DBMS and explain the function of each component in it.
b) Explain about the conceptual design with the ER model. [5+5]

4.a) Illustrate different set operations in Relational algebra with examples.
b) Discuss about Domain Relational calculus in detail. [5+5]

OR

5.a) Discuss the importance of entity integrity and referential integrity constraints.
b) How are views used for security? How are queries on views evaluated? [5+5]

6.a) What is normalization? Differentiate between 3NF and 4NF with examples.
b) Distinguish between independent and correlated nested queries. Provide appropriate examples to support your explanation. [5+5]

OR

7.a) What are the differences between functional dependency and multivalued dependency? Explain with examples.
b) What is decomposition? Discuss the problems related to decomposition. [5+5]

8.a) What are the desirable properties of a transaction? Discuss.
b) Explain about transaction recovery techniques. [5+5]

OR

9.a) Explain 2-phase locking protocol.
b) Discuss time-stamp based protocols in brief. [5+5]

10.a) Discuss the intuition for Tree based Indexes.
b) What are the Primary and Secondary indexes? Explain. [5+5]

OR

11.a) Discuss about Overflow pages and Locking considerations of ISAM.
b) Explain about hash based indexing with example. [5+5]

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