

Hall Ticket Number:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Code No. : 16118 (B)

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD

B.E. (CBCS) VI-Semester Main Examinations, January-2021

Introduction to Databases

(Open Elective-V)

Time: 2 hours

Max. Marks: 60

Note: Answer any NINE questions from Part-A and any THREE from Part-B

Part-A (9 × 2 = 18 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	What are various data abstraction levels?	2	1	1	1,2
2.	Explain about derived attributes using a suitable example.	2	2	1	1,2
3.	In SQL union operation, what is the use of "Union all"?	2	2	2	1,2,4
4.	Explain about project operation in Relational Algebra.	2	2	2	1,2,4
5.	Define "super key".	2	1	3	1,2,4
6.	Explain about "Transitivity rule" in functional dependencies.	2	2	3	1,2,4
7.	What is meant by Sparse indexing?	2	1	4	1,2,5
8.	What are the factors to evaluate indexing/ hashing techniques?	2	2	4	1,2,5
9.	Draw state diagram of a transaction.	2	3	5	1,2,5
10.	What are the advantages in having concurrent executions of transactions?	2	3	5	1,2,5
11.	Write about different types of database users.	2	1	1	1,2
12.	What is meant by Null values?	2	1	2	1,2,4
Part-B (3 × 14 = 42 Marks)					
13. a)	Explain about Database administrator and his functions.	7	1	1	1,2
b)	In ER Enterprise schema, what are the two most important types of constraints? Write about them	7	1	1	1,2
14. a)	Interpret the outcome of the following operation 1) $\sigma_{e='abc'}(t1 \times t2)$ 2) $\sigma_{e='abc' \text{ and } S > 10,000}(t1 \times t2)$ 3) $\sigma_{S > 10,000}(t1 \times t2)$	7	4	2	1,2,4
b)	Employee(Employee_name, Street, City) Works(Employee_name, Company_name, Salary) Company(Company_name, City) Manages(Employee_name, Manager_name) Write the following queries in SQL: 1. Find the names and cities of residence of all employees who work for "First Bank Corporation". 2. Find the names, street address and cities of residence of all employees who work for "First Bank Corporation" and earn more than \$10,000. 3. Find all employees in database who do not work for "First Bank Corporation". 4. Modify the database so that "jones" now lives in "Newtown".	7	4	2	1,2,4

Contd... 2

15. a)	Write about closure of set of Functional dependency and explain with an example.	7	2	3	1,2,4
b)	What is First Normal Form? Explain with an appropriate example.	7	2	3	1,2,4
16. a)	Compare static and dynamic hashing.	7	2	4	1,2,5
b)	Explain about how Bucket overflows are handled in hashing.	7	2	4	1,2,5
17. a)	List the ACID properties. Explain the usefulness of each.	7	1	5	1,2,5
b)	What is a recoverable schedule? Why is recoverability of schedules desirable?	7	3	5	1,2,5
18. a)	Draw an ER diagram to represent bank customer and the accounts of various types in bank.	7	3	1	1,2
b)	Write about various aggregate functions in SQL.	7	2	2	1,2,4
19.	Answer any <i>two</i> of the following:				
a)	Suppose that we decompose the schema $R=(A,B,C,D,E)$ into (A,B,C) (A,D,E) Show that this decomposition is a lossless-join decomposition if the following set F of functional dependencies holds: $A \rightarrow BC$ $CD \rightarrow E$ $B \rightarrow D$ $E \rightarrow A$	7	4	3	1,2,4
b)	Construct a B+ tree for the following set of key values: $(2,3,5,9, 12, 16, 18,20, 28,30)$ Assume that the tree is initially empty and values are added in given order where the number of pointers that will fit in one node is 4.	7	4	4	1,2,5
c)	Consider the following two transactions: $T1: read(A);$ $read(B);$ $if A=0 then B:=B+1;$ $write (B).$ $T2: read(B);$ $read(A);$ $if B=0 then A = A+!;$ $write (A).$ Let the consistency requirement be $A=0 \vee B=0$, with $A=B=0$ the initial values. Show a concurrent execution of $T1$ and $T2$ that produces a non-serializable schedule?	7	4	5	1,2,5

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	62
2	Knowledge on application and analysis (Level-3 & 4)	38
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	
