Hall Ticket Number :										

R-19

Code: 19AC33T

II B.Tech. I Semester Supplementary Examinations June 2024

Discrete Mathematics

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks
		UNIT–I	
1.	a)	Define Statement and Explain various Connectives with Example.	7M
	b)	Explain Free and Bound variables with examples.	7M
		OR	
2.	a)	What is Tautology? Prove that the following statement is tautology or not. ((P->R)^(Q->R))->((PVQ)->R)	7M
	b)	Find Principle Conjunctive Normal form for the following formula. P->((P->Q)^ ~(~QV~P))	7M
		UNIT–II	
3.	a)	Explain types of functions with examples.	6M
	b)	Draw the Hasse diagram for the positive divisors for 36.	8M
		OR	
4.		State relation and explain properties of binary relations with examples.	14M
		UNIT–III	
5.	a)	Explain pigeonhole principle with example.	7M
	b)	How many different license plates are there that involve 1, 2 or 3 letters followed by 4 digits?	7M
		OR	
6.		Define Group, monoid, semigroups and subgroups with examples.	14M
		UNIT–IV	
7.		Solve the recurrence relation $a_n = a_{n-1} + f(n)$, $n \geq 1$ by substitution.	14M
		OR	
8.	a)	Determine the coefficient x^5 in $(1-2x)^{-7}$	7M
	b)	Find the sequence generated by the following function. $(3+x)^3$	7M
		UNIT–V	
9.	a)	What is Hamiltonian graph? Explain with an example.	7M
	b)	Explain DFS with example.	7M
		OR	
10.	a)	Define a graph and explain various representations of graph with examples.	10M
	b)	Define Planner graph with examples.	4M

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Hall Ticket Number :										

R-19

Code: 19A531T

II B.Tech. I Semester Supplementary Examinations June 2024

Database Management Systems

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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UNIT–I

1. a) What are five main functions of a database management administrator? 7M
   b) What are the advantages of DBMS? Explain. 7M

OR

2. a) Write about instances and schemas. 4M
   b) Explain about types of database languages with syntax and example? 10M

UNIT–II

3. a) Explain the distinctions among the terms primary key, candidate key, and super key. 7M
   b) What is an E-R model? Explain with suitable examples, entity, entity sets, and attributes. 7M

OR

4. a) With examples, explain enforcing integrity constraint. 7M
   b) What are integrity constraints? Define the terms primary key constraint and foreign key constraint. How are these constraints expressed in SQL? 7M

UNIT–III

5. a) Briefly discuss about SQL join operators with examples. 7M
   b) Briefly discuss about data manipulation commands in SQL 7M

OR

6. a) What are views? Discuss the problems encountered in modifying database through views. 7M
   b) What are Sub Queries how they are implemented in SQL? 7M

UNIT–IV

7. a) Define normalization. Explain second normal form with a suitable example. 7M
   b) List out the problems related to Decomposition? 7M

OR

8. a) Suppose you are given a relation R=(A,B,C,D,E) with the following functional dependencies: $BD \rightarrow E$, $A \rightarrow C$
   Show that the decomposition into R1=(A,B,C) and R2=(D,E) is lossy. 7M
   b) Define functional dependencies. How are primary keys related to FDs? 7M

UNIT–V

9. a) Explain how data organized in Indexed Sequential Access Method? 7M
   b) Explain Transaction Support in SQL. 7M

OR

10. a) Discuss briefly about the dynamic index structure with one example? 7M
    b) Discuss about lock-based concurrency control. 7M

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Hall Ticket Number :										

R-19

Code: 19A533T

II B.Tech. I Semester Supplementary Examinations June 2024

Digital Logic Design and Computer Organization

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	BL
		UNIT–I			
1.	a)	What is the possible range of integers which we can store in a 16-bit register in both sign-magnitude and 2s complement representations?	7M	CO1	L2
	b)	While doing computer addition and subtraction how overflow or underflow is detected. Represent all the possible situations in both addition and subtraction with an appropriate truth table?	7M	CO1	L2
		OR			
2.	a)	Convert the hex decimal number F3A7C to binary and octal number system?	7M	CO1	L2
	b)	Elaborate on the basic functional units of a computer system?	7M	CO1	L2
		UNIT–II			
3.	a)	Draw circuit for parallel register transfer using Flip-flops?	7M	CO2	L6
	b)	What are universal gates? Why they are called universal gates? Prove that they are universal along with supporting diagrams and Boolean theorems?	7M	CO2	L2
		OR			
4.	a)	Explain about digital logic gates with truth tables and graphics symbols?	7M	CO2	L2
	b)	Implement a full adder circuit using NOR gates; implement a full adder using 8x1 multiplexers. Explain both the circuits and compare their efficiency?	7M	CO2	L2
		UNIT–III			
5.	a)	Explain Register Addressing Mode with an example?	7M	CO3	L2
	b)	What is the binary code of the number 6.25 and how it is stored as a single-precision float number in current-day computers?	7M	CO3	L2
		OR			
6.	a)	Elaborate the instruction cycle with a neat flow chart?	9M	CO3	L2
	b)	Differentiate between big-endian and little-endian assignments?	5M	CO3	L2
		UNIT–IV			
7.	a)	Explain the mechanism of data transfer between main memory and secondary memory?	7M	CO4	L2
	b)	How does a processor execute a register transfer instruction? Consider a single bus organization of the data path inside a processor?	7M	CO4	L3
		OR			
8.	a)	Define Memory? A neat diagram explaining memory hierarchy and the need for cache memory?	7M	CO4	L2
	b)	Elaborate about the micro instruction-sequencing organization?	7M	CO4	L2
		UNIT–V			
9.		Compare three different nodes of I/O transfer: Programmed I/O, Interrupt initiated I/O, and DMA?	14M	CO5	L4
		OR			
10.	a)	What is Interrupt? How interrupts are commonly handled? Explain?	7M	CO5	L1
	b)	How program-controlled I/O is performed using polling? Explain?	7M	CO5	L3

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