Hall Ticket Number :										

R-17

Code: 7G132

II B.Tech. I Semester Supplementary Examinations March/April 2023

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. Explain the differences between external, internal and conceptual schemas. How are these different schema layers related to the concepts of logical and physical data independence.

OR

2. a) Describe about the three levels of data abstraction
   b) Explain about types of database languages with syntax and example?

UNIT–II

3. Discuss about the logical database design?

OR

4. a) With examples, explain enforcing integrity constraint.
   b) Name the main steps in database design. What is the goal of each step? In which step is the E-R model mainly used?

UNIT–III

5. a) Briefly discuss about aggregate functions? Explain about ‘group by’ and ‘having’ clauses.
   b) Write about Views? Explain how views are created, updated and deleted with examples.

OR

6. a) Compare the stored procedures with stored functions?
   b) What are Correlated Queries how they are applied in SQL?

UNIT–IV

7. a) Define multivalued dependencies. Describe Fourth Normal form with an example.
   b) List out the problems related to Decomposition?

OR

8. Define Boyce-Codd normal form (BCNF). How does it differ from 3NF? Why is it considered a strong form of 3NF?

UNIT–V

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

OR

10. How does a B+ tree index handle search, insert and delete?

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R-17

Code: 7G134

II B.Tech. I Semester Supplementary Examinations March/April 2023

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) Prove that (P→Q)^(R→Q)←→(PVR)→Q by using substitution method. 7M
   b) Explain Free and Bound variables with examples. 7M

OR

2. a) Define rules of inference. And Show that R→S can be derived from the premises P →(Q → S), ~R V P and R. 8M
   b) Write short notes on Quantifiers 6M

UNIT–II

3. State relation and explain properties of binary relations with examples. 14M

OR

4. a) What is Hass diagram? Let X={2,3,6,12,24,36} and the relation ≤ on set X defined by x divides y then draw the Hass diagram. 10M
   b) What is lattice? Explain lattice properties. 4M

UNIT–III

5. Define Group, monoid, semigroups and subgroups with examples. 14M

OR

6. a) Explain Binomial and multinomial theorems. 9M
   b) Prove by pigeonhole principle that in a group of 61 people, at least 6 people were born in the same month. 5M

UNIT–IV

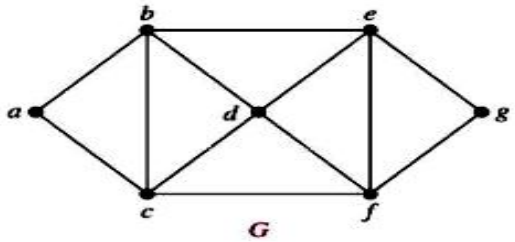
7. a) Find a generating function for the recurrence relation $a_{n+1}-a_n=3^n, n>=0, a_0=1$. Find the general solution 10M
   b) Find the sequence generated by the following function. $(3+x)^3$ 4M

OR

8. Solve the recurrence relation $2a_{n+3}=a_{n+2}+2a_{n+1}-a_n$ for n>=0 with $a_o=0, a_1=1, a_2=2$ 14M

UNIT–V

9. a) What is bipartite graph? Explain with an example. 5M
   b) Define Chromatic number. Find the chromatic number of the following graph.



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9M

OR

10. a) What is Hamiltonian graph? Explain with an example. 8M
    b) Explain the following terms with examples.
       i) Complete graph ii) Dual graph 6M

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Hall Ticket Number :										

R-17

Code: 7G133

II B.Tech. I Semester Supplementary Examinations March/April 2023

Digital Logic Design

(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)	Perform the subtraction of 597-239 in Excess-3 code using the 10's complement method.	7M		
	b)	Reduce the following Boolean expressions to the indicated number of literals using Boolean theorems. i. A'C'+ABC +AC' to THREE literals ii. ABC1D+A1BD+ABCD to TWO literals iii. A'B(D'+CD)+B(A+A'CD) to ONE literal	7M		
		OR			
2.	a)	Perform the following using 2's complement. i) 11010 – 1101 ii) 101011 – 100110	7M		
	b)	Obtain the truth table for the function F = XY + XY' + Y'Z	7M		
		UNIT–II			
3.	a)	Implement Ex-OR gate using NOR gates.	7M		
	b)	Draw the multiple-level NAND circuit for the following expression: F= W (X + Y + Z) + XYZ	7M		
		OR			
4.	a)	Show that the dual of the exclusive-OR is equal to its complement	7M		
	b)	Simplify the Boolean function using three variable map F(X, Y, Z) = $\sum$(0,1,5,7)	7M		
		UNIT–III			
5.	a)	Implement BCD to 7-segment decoder using 4:16 decoder?	7M		
	b)	Explain the design procedure of combinational circuit with a suitable example?	7M		
		OR			
6.	a)	Implement a 2-bit Binary Multiplier using logic gates?	7M		
	b)	Design and draw a Full Subtractor which will use two Half Subtractors?	7M		
		UNIT–IV			
7.	a)	Draw the excitation table of SR, T and D Flip-Flop?	7M		
	b)	Convert a SR flip-flop to D type Flip-Flop?	7M		
		OR			
8.	a)	Define a register. Construct a shift register from S-R Flip-Flops. Explain its working.	7M		
	b)	Explain Universal Shift Register with neat diagram?	7M		
		UNIT–V			
9.	a)	Derive the PLA programming table for the combinational circuit that squares a 3-bit number?	7M		
	b)	Design a mod-8 synchronous counter using D flip-flops. Give all the steps.	7M		
		OR			
10.	a)	What is ROM? List the different types of ROMs?	7M		
	b)	Compare programmable logic devices PROM, PLA and PAL?	7M		

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Hall Ticket Number :										

R-17

Code: 7GC32

II B.Tech. I Semester Supplementary Examinations March/April 2023

Engineering Mathematics-III

(Common to All Branches)

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. Use Milne's method to find $y(0.3)$ from $y' = x^2 + y^2$ $y(0) = 1$. Find the intial values $y(-0.1)$, $y(0.1)$, $y(0.2)$ from the Taylors series method. 14M

OR

2. Find a real root of the equation $3x = \cos x + 1$ by Newton-Raphson's method correct to four decimal places. 14M

UNIT–II

3. The following table of values of x and y is given.

x	0	1	2	3	4	5	6
y	6.9897	7.4036	7.7815	8.1291	8.4510	8.7506	9.0309

Find $\frac{dy}{dx}$ *and* $\frac{d^2y}{dx^2}$ at x=6 14M

OR

4. Estimate the value of $f(22)$ and $f(42)$ from the following table by Newton's forward and backward interpolation formula. 14M

x	20	25	30	35	40	45
y	354	332	291	260	231	204

UNIT–III

5. Form a partial differential equation by eliminating the arbitrary functions $f(x)$ and $g(y)$ from $z = y\,f(x) + x\,g(y)$. 14M

OR

6. Solve $\frac{\partial^2 u}{\partial x^2} - 2\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} = 0$ 14M

UNIT–IV

7. Find the Fourier series to represent $f(x) = |x|$ when $-® < x < ®$ and deduce that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \ldots = \frac{®^2}{8}$ 14M

OR

8. Find the half range cosine series for the function $f(x) = x$, when $0 < x < ®$ hence show that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \ldots = \frac{®^2}{8}$ 14M

UNIT–V

9. If $F(s)$ is the complex Fourier transform of $f(x)$ then prove that $F\{f(ax)\} = \frac{1}{a}F\left(\frac{s}{a}\right), a \neq 0$ 14M

OR

10. Find the Fourier transform of $e^{-|x|}$. Hence show that $\int_0^\infty \frac{x \sin mx}{1+x^2}\,dx = \frac{®}{2}e^{-m}, m > 0$ 14M

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Hall Ticket Number :										

R-17

Code: 7G135

II B.Tech. I Semester Supplementary Examinations March/April 2023

Web Programming

(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) Write any two Core attributes in HTML. 7M
   b) Explain the inline elements in HTML with example 7M

OR

2. a) Explain the target Attribute with values. 7M
   b) What is the Internationalization Activity 7M

UNIT–II

3. a) What is audio tag? Write any five audio tag attributes. 7M
   b) What is Accessible Tables in html 7M

OR

4. Write a html form to manage personal details of a student like name, class, qualification, photo, address etc., using suitable tags and send Form Data to the Server. 14M

UNIT–III

5. Define an HTML Table. How to set the border spacing for a table, using the CSS border-spacing property. 14M

OR

6. What are Pseudo-classes? Explain with examples. 14M

UNIT–IV

7. What do you mean by looping? What are the types of looping statements available in java script? 14M

OR

8. Write short notes on java script built in objects. 14M

UNIT–V

9. a) Differentiate Ajax with jQuery 7M
   b) Name the jQuery method which is used to perform an asynchronous HTTP request? 7M

OR

10. a) What is jQuery UI? Explain. 7M
    b) What is selector in jQuery? Explain with an example? 7M

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Hall Ticket Number :										

R-17

Code: 7G131

II B.Tech. I Semester Supplementary Examinations March / April 2023

Advanced Data Structures Through C++

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) What are the static class members? Explain each in detail. 8M
   b) Explain about access control in C++. 6M

OR

2. a) Explain about classes with an example. 7M
   b) Explain about fried function and friend class in detail. 7M

UNIT–II

3. a) What is operator overloading and demonstrate operator overloading for Unary +. 7M
   b) Define Polymorphism. Write and explain about virtual functions. 7M

OR

4. a) Compare Time and Space complexity. Explain with suitable examples. 7M
   b) Demonstrate an abstract class with a suitable C++ program. 7M

UNIT–III

5. a) Demonstrate ADT implementation of Stack using C++ program. 8M
   b) Define Hashing. Explain about different hash functions. 6M

OR

6. a) Explain the operations performed on Linear list with suitable examples. 8M
   b) Compare Double Hashing and Extendable Hashing. 6M

UNIT–IV

7. a) Define BST. Demonstrate its operations with suitable examples. 7M
   b) Demonstrate Binary Tree Traversal Techniques with algorithms. 7M

OR

8. a) Demonstrate Priority Queue implementation using Heaps. 7M
   b) Define AVL Tree. Demonstrate its operations with suitable examples 7M

UNIT–V

9. a) Demonstrate insertion and deletion operations in B-Tree with example. 8M
   b) What is a Red-Black Tree? List its properties. 6M

OR

10. a) What is the role of Tries in pattern Matching? What are the different Tries? Explain Applications of Tries. 9M
    b) Create a Red-Black Tree by inserting the following sequence of numbers: 8, 18, 5, 15, 17, 25, 40 and 80. 5M

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