

Hall Ticket Number :

R-17

Code: 7G132

II B.Tech. I Semester Supplementary Examinations February 2022

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)

UNIT-I

1. a) Explain various storage manager components and its functions. 7M
b) Discuss different Database-System Applications 7M

OR

2. a) Briefly discuss about architecture of database system with diagram. 10M
b) Write about instances and schemas. 4M

UNIT-II

3. a) Explain the following terms: i) Relationship set ii) Composite attribute
iii) Multivalued attribute iv) Derived attribute 8M
b) What is aggregation in E-R model? Explain it with an example. 6M

OR

4. a) Distinguish strong entity set with weak entity set? Draw an ER diagram to
illustrate weak entity set? 8M
b) Explain the distinctions among the terms primary key, candidate key, and
super key. 6M

UNIT-III

5. a) Write about Views? Explain how views are created, updated and deleted with
examples. 8M
b) Write short notes on Cursors. 6M

OR

6. a) Briefly discuss about relational set operators. 7M
b) Why are stored procedures important? How do we declare stored procedures? 7M

UNIT-IV

7. a) Define normalization. Explain 1st normal form (1 NF) with example. 7M
b) Define multivalued dependencies. Describe Fourth Normal form with an example. 7M

OR

8. a) List out the problems related to Decomposition? 7M
b) Show that if a relation schema is in BCNF, then it is also in 3NF. 7M

UNIT-V

9. a) Explain the distinctions between the terms Serial schedule and Serializable
schedule. 7M
b) Explain how data organized in Indexed Sequential Access Method? 7M

OR

10. a) Explain Transaction Support in SQL. 7M
b) How is data organized in a tree-based index? When would you use a tree? 7M

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II B.Tech. I Semester Supplementary Examinations February 2022

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)

UNIT-I

- | | Marks | CO | Blooms Level |
|---|-------|----|--------------|
| 1. a) Explain Free and Bound variables with examples. | 7M | | |
| b) Verify the principle of duality for the following logical equivalence.
$(PVQ) \wedge (\sim P \wedge (\sim P \wedge Q)) \Leftrightarrow (\sim P \wedge Q)$ | 7M | | |

OR

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|--|----|--|--|
| 2. a) What is Tautology? Prove that the following statement is tautology or not.
$((P \rightarrow R) \wedge (Q \rightarrow R)) \rightarrow ((PVQ) \rightarrow R)$ | 7M | | |
| b) Show that $(\sim P \wedge (\sim Q \wedge R)) \vee (Q \wedge R) \vee (P \wedge R) \Leftrightarrow R$ | 7M | | |

UNIT-II

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|---|----|--|--|
| 3. a) Explain partition and covering of a set. | 7M | | |
| b) Let $X = \{1, 2, 3, 4, 5\}$ and $R = \{ \langle x, y \rangle \mid x > y \}$. Draw the graph of R and also its matrix. | 7M | | |

OR

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|---|----|--|--|
| 4. a) Let $X = \{1, 2, 3, 4, 5, 6, 7\}$ and Relation $R = \{ \langle x, y \rangle \mid (x-y) \text{ divisible by } 3 \}$ in X. Check Whether the relation R is Equivalence relation or not. | 8M | | |
| b) Explain types of functions with examples. | 6M | | |

UNIT-III

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|---|----|--|--|
| 5. 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 | | |

OR

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|--|----|--|--|
| 6. a) State Principle of Inclusion-Exclusion with example. | 6M | | |
| b) How many different license plates are there that involve 1,2 or 3 letters followed by 4 digits? | 8M | | |

UNIT-IV

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|--|-----|--|--|
| 7. Solve the recurrence relation $2a_{n+3} = a_{n+2} + 2a_{n+1} - a_n$ for $n \geq 0$ with $a_0 = 0, a_1 = 1, a_2 = 2$ | 14M | | |
|--|-----|--|--|

OR

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|--|----|--|--|
| 8. a) Solve the recurrence relation $a_n = a_{n-1} + f(n), n \geq 1$ by substitution. | 6M | | |
| b) Solve the recurrence relation $a_n + a_{n-1} - 8a_{n-2} - 12a_{n-3} = 0,$ with $a_0 = 1, a_1 = 5, a_2 = 1$ for $n \geq 3$ | 8M | | |

UNIT-V

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|---|----|--|--|
| 9. a) What is BFS? Explain with an example. | 8M | | |
| b) Define the following terms with examples.
i) Euler circuit ii) Hamiltonian cycle | 6M | | |

OR

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|---|----|--|--|
| 10. a) What is Four-coloring problem? Explain with an example | 7M | | |
| b) What is bipartite graph? Explain with an example. | 7M | | |

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Code: 7GC32

II B.Tech. I Semester Supplementary Examinations February 2022

Engineering Mathematics-III
(Common to All Branches)

Max. Marks: 70

Time: 3 Hours

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

UNIT-I

1. a) Apply fourth order Runge-Kutta method to $\frac{dy}{dx} = 3x + \frac{1}{2}y$, $y(0) = 1$ determine $y(0.1)$ correct to four decimal places. 7M

b) Find a real root of the equation $3x = \cos x + 1$ by Newton-Raphson's method correct to four decimal places. 7M

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. a) Using Newton's forward interpolation formula and the given table of values

x	1.1	1.3	1.5	1.7	1.9
F(x)	0.21	0.69	1.25	1.89	2.61

Obtain the value of f(x) when $x = 1.2$ 7M

b) Find the first and second derivatives of the function tabulated below at the point $x = 1.5$

x	1.5	2.0	2.5	3.0	3.5	4.0
y	3.375	7.0	13.625	24.0	38.875	59.0

7M

OR

4. 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

UNIT-III

5. Form the partial differential equation by eliminating the arbitrary constants $x^2 + y^2 + (z - c)^2 = a^2$ 14M

OR

6. a) Form a partial differential equation by eliminating the arbitrary functions from $z = f(x + at) + g(x - at)$. 7M
- b) Solve $(x^2 - yz)p + (y^2 - zx)q = (z^2 - xy)$ 7M

UNIT-IV

7. a) Find the Fourier series to represent $f(x) = f x$ in $0 \leq x \leq 2$ 7M
- b) Find the half range cosine series for the function $f(t) = t - t^2$, in $0 < t < 1$ 7M

OR

8. a) Find the Fourier series to represent $f(x) = |x|$ when $-f < x < f$ and deduce that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \dots = \frac{f^2}{8}$ 7M
- b) Find the half range cosine series for the function $f(x) = x$, when $0 < x < f$ hence show that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \dots = \frac{f^2}{8}$ 7M

UNIT-V

9. a) Find the Fourier cosine transform of $f(x) = e^{-ax}$ ($x > 0, a > 0$). 7M
- b) Find the Fourier transform of $f(x)$ given by $f(x) = \begin{cases} 1, \text{ for } |x| < 1 \\ 0, \text{ for } |x| > 1 \end{cases}$ hence evaluate $\int_0^{\infty} \frac{\sin x}{x} dx$ 7M

OR

10. Find the finite Fourier sine and cosine transforms of $f(x)$ defined by

$$f(x) = \begin{cases} 1, 0 < x < \frac{f}{2} \\ -1, \frac{f}{2} < x < f \end{cases}$$

14M

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II B.Tech. I Semester Supplementary Examinations February 2022

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)

	Marks	CO	Blooms Level
UNIT-I			
1. a) Write any Five Text Formatting elements in HTML.	7M		
b) Explain the HTML Directory Structure with examples.	7M		
OR			
2. a) What is HTML Attribute? Explain any 5 HTML Attributes with examples	7M		
b) Write a HTML code to navigate between two web pages using <a href> tag.	7M		
UNIT-II			
3. a) Describe basic table element and attributes with example	7M		
b) What is video tag? Write any five video tag attributes.	7M		
OR			
4. a) What is a nested table in HTML explain giving an example?	7M		
b) How do I make my HTML control read only?	7M		
UNIT-III			
5. With an example, describe CSS style properties associated with text formatting.	14M		
OR			
6. a) How to set Multiple Backgrounds using CSS	7M		
b) How internal DTD works? Explain with example program	7M		
UNIT-IV			
7. a) Write a java script code to handle onsubmit and onload events.	7M		
b) Discuss the advantages of Java Script.	7M		
OR			
8. What are operators? Explain operators in java script	14M		
UNIT-V			
9. a) What is the use of load() method in jQuery. Give an example.	7M		
b) Write the basic syntax for jQuery.	7M		
OR			
10. a) Write a jQuery code to apply the two different colors on alternate rows in a table.	7M		
b) What is jQuery UI? Explain.	7M		

Hall Ticket Number :

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II B.Tech. I Semester Supplementary Examinations February 2022

Advanced Data Structures Through C++

(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)

Marks

UNIT-I

- 1. a) Explain the basic principles of object oriented programming 7M
- b) Define class? How the member functions can be defined with examples 7M

OR

- 2. a) Illustrate the significance of access specifiers in a class of C++? 7M
- b) How do you create a static member function? Explain with example 7M

UNIT-II

- 3. a) Differentiate between Constructor Overloading and Function Overloading 10M
- b) Discuss in detail about Polymorphism 4M

OR

- 4. What is template? Explain about function templates and class templates with suitable examples. 14M

UNIT-III

- 5. a) What are the uses of hash functions? 6M
- b) Distinguish between separate chaining and linear probing. 8M

OR

- 6. a) Define a Queue. List out any four applications of Queue. 4M
- b) Discuss about linked implementation of queue ADT. 10M

UNIT-IV

- 7. a) Define BST. Demonstrate its operations with suitable examples 7M
- b) Demonstrate Priority Queue using Heaps with examples 7M

OR

- 8. a) Explain external sorting on disk with example. 7M
- b) What is ascending priority queue? What are the applications of priority queue? 7M

UNIT-V

- 9. Write short notes on the following 14M
 - i. Standard Tries ii. Compressed Tries and iii. Suffix Tries

OR

- 10. a) Draw a B-Tree of degree 3 and explain. 4M
- b) Describe Boyer-Moore algorithm with an example. 10M
