R-20

Code: 20A531T

II B.Tech. I Semester Regular Examinations March 2022
Database Management Systems
(Common to CSE and AI&DS)

Max. Marks: 70   Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A
(Compulsory question)

1. Answer *all* the following short answer questions (5 X 2 = 10M)

		CO	Blooms Level
a)	Enlist any four features of DBMS.	CO1	L3
b)	What is the use of group by clause in SQL?	CO2	L3
c)	Enlist DDL and DML commands.	CO3	L3
d)	What is 4NF?	CO4	L2
e)	List out the states of a transaction	CO5	L3

PART-B
Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	Blooms Level
	UNIT–I				
2.	a)	What is Data Abstraction? Explain about different Views of data?	6M	CO1	L2
	b)	Compare and Contrast file Systems with database systems?	6M	CO1	L3
	OR				
3.	a)	Define Instance and Schema? List different data models and explain?	6M	CO1	L2
	b)	List and Explain extra privileges of Database Administrators over Database users?	6M	CO1	L2
	UNIT–II				
4.	a)	Distinguish strong entity set with weak entity set? Draw an ER diagram to illustrate week entity set?	7M	CO2	L3
	b)	Explain about different types of integrity constraints?	5M	CO2	L2
	OR				
5.	a)	Explain the steps for relational database design	5M	CO2	L2
	b)	Draw ER Diagram for Internet shopping.	7M	CO2	L5
	UNIT–III				
6.	a)	Write a Syntax for creating a View? Explain Non-Updatable View.	4M	CO3	L3

b) Consider the following tables:

Employee (Emp_no, Name, Emp_city)
Company (Emp_no, Company_name, Salary)

  i. Write a SQL query to display Employee name and company name.

  ii. Write a SQL query to display employee name, employee city, company name and salary of all the employees whose salary >10000

  iii. Write a query to display all the employees working in "XYZ" company   8M   CO3   L5

OR

7. a) Consider the following relational schema

Employee (empno, name, office, age), Books(isbn, title, authors, publisher), Loan(empno, isbn, date)

Write the following SQL queries

  i. Find the names of employees who have borrowed a book Published by McGraw-Hill.

  ii. Find the names of employees who have borrowed all books Published by McGraw-Hill.

  iii. Find the names of employees who have borrowed more than five different books published by McGraw-Hill.   8M   CO3   L5

   b) Differentiate Stored Procedure and Stored Function.   4M   CO3   L3

UNIT–IV

8. a) Differentiate BCNF with 3NF.   6M   CO4   L4

   b) Explain Dependency Preserving Decomposition with a suitable example.   6M   CO4   L4

OR

9. a) If R={ A,B,C,D,E } and FD's F={ A$\rightarrow$C, AC$\rightarrow$D, E$\rightarrow$AD, E$\rightarrow$H} List all the candidate keys.   7M   CO4   L5

   b) What is meant by multivalued dependency? Explain with example.   5M   CO4   L4

UNIT–V

10. a) What is two-phase locking and how does it guarantee serializability?   6M   CO5   L4

   b) Why concurrency control is needed demonstrate with example.   6M   CO5   L4

OR

11. a) What are the ACID properties of a transaction? Explain.   6M   CO5   L3

   b) Discuss about concurrent execution of transactions   6M   CO5   L3

*** End ***

Code: 20AC33T

R-20

II B.Tech. I Semester Regular Examinations March 2022
Discrete Mathematics
(Common to CSE and AI&DS)

Max. Marks: 70   Time: 3 Hours
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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A
(Compulsory question)

		CO	Blooms Level
1.	Answer *all* the following short answer questions (5 X 2 = 10M)		
a)	Write each of the following statements in symbolic form.		
	i) Anil and sunil are rich. ii) It is not true that ravi and raju are both rich.	CO1	L1
b)	Find the coefficient of $x^4 y^7$ in the expansion of $(x-y)^{10}$	CO2	L3
c)	Define POSET .Give suitable example.	CO3	L1
d)	What is Hamiltonian path and Hamiltonian circuit? Give suitable example.	CO4	L2
e)	What is a rooted tree? Give an example.	CO4	L2

PART-B
Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	Blooms Level
	UNIT–I				
2.	a)	Obtain the principle disjunctive normal form of the propositional formula: $(\sim P \quad R) \wedge (Q \quad P)$.	5M	CO1	L3
	b)	Define statement and explain various connectives with example.	5M	CO1	L2
	OR				
3.	a)	Show that the following statements are logically equivalent without using truth table. $(P \quad R) \wedge (Q \quad R) \Leftrightarrow (P \vee Q) \quad R$	5M	CO1	L3
	b)	What is CNF? Explain the procedure to obtain CNF of a given formulae? Find the CNF of $((P \quad Q) \wedge \sim Q) \quad P$.	5M	CO1	L3
	UNIT–II				
4.	a)	Solve the recurrence relation using substitution method. $a_n = a_{n-1} + 1/ n(n+1)$ where $a_0 = 1$.	5M	CO2	L3
	b)	Solve the recurrence relation $a_n - 5a_{n-1} + 6 a_{n-2} = n (n-1)$ for n 2 by generating functions	5M	CO2	L3
	OR				
5.	a)	Solve the recurrence relation using substitution method. $a_n = a_{n-1} + 3n^2 + 3n + 1$ where $a_0 = 1$.	5M	CO2	L3
	b)	Solve the recurrence relation $a_n - 6a_{n-1} + 9 a_{n-2} = 0$ for n 2, given that $a_0 = 0$, $a_1 = 12$ by generating functions method.	5M	CO2	L3

UNIT–III

6. a) Establish the following relation in Boolean algebra:

$$(a + b)(b + c) + b \cdot (a + c) = a \cdot b + a \cdot c + b$$ 5M   CO3   L2

b) Describe semi groups and monoids.   5M   CO3   L4

OR

7. a) Define compatibility relation. Find the maximum compatibility block in the given relation.

X= {(ball, bed, dog, let, egg)} and the relation is given as R={(x, y)/ x, y   X ^ x R y if x and y contains some common letter.   5M   CO3   L3

b) Given the relation matrix M_R of a relation R,

$$MR \begin{bmatrix} 1 & 0 & 1 \\ 1 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix}$$

Find the matrices of $R^2 = R \circ R$, $R^3 = R \circ R \circ R$.   5M   CO3   L3

UNIT–IV

8. a) Explain Euler's theorem with an example.   5M   CO4   L2

b) If G is a non directed graph with 12 edges. Suppose that G has 6 vertices of degree 3 and the rest have degree less than 3. Determine the minimum number of vertices.   5M   CO4   L3

OR

9. a) Prove that the sum of degrees formed by a planar representation of a connected graph G with e edges equals 2e.   5M   CO4   L4
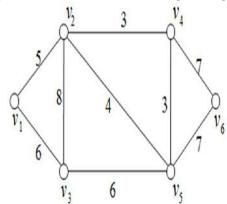
b) What is Isomorphism? Give a suitable example to show the steps in detail that the two graphs are Isomorphic in nature.   5M   CO4   L2

UNIT–V

10. a) Explain kruskal's algorithm and using the same obtain the minimal spanning tree for the following weighted graph.

     7M   CO5   L3

b) What is meant by Pendant Vertices? Explain.   3M   CO5   L2

OR

11. a) Exemplify rooted and binary trees.   5M   CO5   L2

b) Show that in a tree, the number of vertices is one more than the number of edges.   5M   CO5   L4

*** End ***

Hall Ticket Number :

Code: 20AC35T

II B.Tech. I Semester Regular Examinations March 2022
Management Science
(Common to CSE and AI&DS)

Max. Marks: 70   Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
　　　2. In Part-A, each question carries **Two mark.**
　　　3. Answer **ALL** the questions in **Part-A** and **Part-B**
PART-A
(Compulsory question)

		CO	Blooms Level
1. Answer **all** the following short answer questions　(5 X 2 = 10M)			
a) Why is management considered as a science?		CO1	L2
b) What is employee job evaluation?		CO2	L2
c) Just-in-Time Inventory		CO3	L2
d) Profit vs Wealth maximization.		CO4	L2
e) Bases of Market Segmentation		CO5	L2

PART-B
Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	Blooms Level
UNIT–I				
2.	Outline Fayol's 14 principles of management and explain their relevance in managerial theory.	12M	CO1	L3
	OR			
3.	What do you mean by organization structure? Briefly explain different forms of organizational structure.	12M	CO1	L3
UNIT–II				
4.	Discuss in detail the various functions of Human Resource Management in an IT firm.	12M	CO2	L4
	OR			
5.	Briefly discuss various training methods used in organizations, especially in a manufacturing concern.	12M	CO2	L4
UNIT–III				
6.	Write a detailed note on the various factors affecting plant location.	12M	CO3	L3
	OR			

7. a) What is network analysis? 6M CO3 L2

   b) Relate the importance of Project evaluation and review technique. 6M CO3 L3

UNIT–IV

8. Explain how financial management is important in performing organizational tasks. 12M CO4 L3

OR

9. a) What are the advantages of Pay-back period? 6M CO4 L2

   b) Explain in detail about the various sources of finance. 6M CO4 L4

UNIT–V

10. Why is marketing important and describe the various roles and functions of marketing channels? 12M CO5 L3

OR

11. Illustrate the various stages in product life cycle? 12M CO5 L3

*** End ***

R-20

Code: 20A532T

II B.Tech. I Semester Regular Examinations March 2022

Object Oriented Programming using Java

(Common to CSE and AI&DS)

Max. Marks: 70   Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. In Part-A, each question carries **Two mark.**

3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

1. Answer *all* the following short answer questions   (5 X 2 = 10M)   CO   Blooms Level

a) What gets printed when the following program is compiled and run.

```
class test {
        public static void main(String args[]) {
                int i, j, k, l=0;
                k = l++;
                j = ++k;
                i = j++;
                System.out.println(i);
        }
}
```
                                                                                          1   L3

b) Explain method overriding.   2   L2

c) Define interface.   3   L1

d) What is the purpose of multithreaded programming?   4   L2

e) List the importance of List interface.   5   L1

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	Blooms Level

UNIT–I

| 2. a) | Explain method overloading with an example. | 6M | 1 | L2 |
| b) | Write a Java program to display Fibonacci series between 1 to n. | 6M | 1 | L1 |

OR

| 3. a) | Explain the constructor with an example. | 6M | 1 | L2 |
| b) | List the different operators in java. Explain | 6M | 1 | L1 |

UNIT–II

4. a) How can you achieve multilevel inheritance? Explain.   6M   2   L3

   b) Explain about inner class.   6M   2   L2

OR

5. a) Write a java program to check whether string is palindrome or not   6M   2   L1

   b) Define inheritance. What is method overriding in inheritance? Explain   6M   2   L2

UNIT–III

6. a) Define package. How can you create user defined package? Explain with an example.   6M   3   L2

   b) How can you create your own exception? Explain.   6M   3   L3

OR

7. a) What is an exception? Explain different types of exception handling keywords in java.   6M   3   L2

   b) How to extend interfaces in java? Explain with an example.   6M   3   L3

UNIT–IV

8. a) Write a Java program for multi-thread implementation.   6M   4   L2

   b) Explain Generic interfaces with example.   6M   4   L2

OR

9. a) Explain synchronization with an example.   6M   4   L2

   b) What are generics? Explain bounded types in generics with example.   6M   4   L2

UNIT–V

10. a) Explain about LinkedList class in java with an example.   6M   5   L2

    b) Explain Generic Functional Interfaces with example.   6M   5   L2

OR

11. a) Define Lambda expression. Explain block lambda expressions with an example.   6M   5   L2

    b) Explain about ArrayList class in java.   6M   5   L2

*** End ***

Hall Ticket Number :

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Code: 20A533T

II B.Tech. I Semester Regular Examinations March 2022
Computer System Architecture
(Common to CSE and AI&DS)

Max. Marks: 70   Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A
(Compulsory question)

		CO	Blooms Level
1.	Answer *all* the following short answer questions (5X2=10M)		
a)	Draw the basic functional units of a computer.	CO1	L1
b)	Define logic gates.	CO2	L1
c)	Define Instruction Format.	CO3	L1
d)	Define Memory Access Time	CO4	L1
e)	What is an I/O Interface?	CO5	L1

PART-B
Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	Blooms Level
		UNIT–I			
2.	a)	Explain the basic operational concepts in a computer	6M	CO1	L2
	b)	Identify the steps involved to calculate r's complement and (r-1)'s complement with an example.	6M	CO1	L1
		OR			
3.	a)	Solve the (+21)+(+16) and (-23)+(-13) arithmetic operations using 2's complement representation for negative numbers	6M	CO1	L3
	b)	Convert these binary system numbers to decimal system numbers a) 100101101 b) 11100.1001	6M	CO1	L3
		UNIT–II			
4.	a)	Reduce AB + (AC)' + AB'C (AB + C).	6M	CO2	L3
	b)	Explain the functionality of a Multiplexer.	6M	CO2	L2
		OR			
5.	a)	Simplify the following expression Y=(A+ B) (A + C') (B' + C').	6M	CO2	L3
	b)	Explain the design of a 4 bit binary counter with parallel load in detail.	6M	CO2	L2
		UNIT–III			
6.	a)	Explain with an example how to multiply two unsigned binary numbers	6M	CO3	L2

b) Describe the algorithm for integer division with suitable examples.   6M   CO3   L2

OR

7. a) Identify the following addressing modes: (i) Relative (ii) Indirect (iii) Auto increment (iv) Direct   6M   CO3   L1

b) With examples explain the Data transfer, Logic and Program Control Instructions.   6M   CO3   L2

UNIT–IV

8. a) Draw the neat sketch of memory hierarchy and explain the need of cache memory.   6M   CO4   L4

b) What do you mean by virtual memory? Discuss how paging helps in implementing virtual memory.   6M   CO4   L1

OR

9. a) Compare and contrast RAM and ROM chips using its structure   6M   CO4   L2

b) Discuss the Memory Hierarchy in computer system with regard to Speed, Size and Cost.   6M   CO4   L2

UNIT–V

10. a) What are interrupts? How are they handled?   6M   CO5   L1

b) What is I/O interface? and explain it with block diagram.   6M   CO5   L1

OR

11. a) Draw the block diagram of DMA controller   6M   CO5   L4

b) Outline programmed I/O in modes of transfer.   6M   CO5   L2

*** End ***