

Hall Ticket Number :

R-20

Code: 20AC35T

II B.Tech. I Semester Regular & Supplementary Examinations February 2023

Management Science

(Common to CSE, AI&DS and AI&ML)

Max. Marks: 70

Time: 3 Hours

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 | BL |
| a) Define Organisation. | | 1 | L1 |
| b) Define Human Resource Management. | | 2 | L1 |
| c) What is Batch production? | | 3 | L1 |
| d) Define Financial Management. | | 4 | L1 |
| e) Explain about Marketing Mix. | | 5 | L2 |

PART-B

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

Marks CO BL

UNIT-I

2. Explain about Fayol's Administrative management. 12M 1 L3

OR

3. Explain about staff organization structure with its merits and demerits. 12M 1 L3

UNIT-II

4. Explain the significance and functions of Human Resource Management. 12M 2 L3

OR

5. Explain the importance and process of Recruitment. 12M 2 L4

UNIT-III

6. Explain the factors influencing the selection of a Plant Location. 12M 3 L4

OR

7. Explain about PERT and CPM techniques in project evaluation. 12M 3 L4

UNIT-IV

8. What is working capital? Explain the importance of working capital. 12M 4 L3

OR

9. Explain various sources of finance. 12M 4 L3

UNIT-V

10. Comment on different pricing methods used in Marketing. 12M 5 L5

OR

11. Explain the role of marketing channels in case of FMCG products. 12M 5 L5

*** End ***

Hall Ticket Number :

R-20

Code: 20A532T

II B.Tech. I Semester Regular & Supplementary Examinations February 2023

Object Oriented Programming using Java

(Common to CSE, AI&DS and AI&ML)

Max. Marks: 70

Time: 3 Hours

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 | BL |
|--|----|----|
| a) What are the primitive data types in java? List them. | 1 | L1 |
| b) How to declare an array 'p' to store 50 float elements? | 2 | L2 |
| c) What is an exception in java? Give an example. | 3 | L1 |
| d) List any four methods from Thread class. | 4 | L2 |
| e) What is difference between Array and ArrayList? | 5 | L3 |

PART-B

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

Marks CO BL

UNIT-I

2. a) Explain all OOPS concepts 5M 1 L1
- b) Explain constructor overloading and method overloading with an example program 7M 1 L2
- OR**
3. Define classes and objects? Explain its operation with an example program 12M 1 L2

UNIT-II

4. a) Write a program to find the sum two given matrices using arrays.

$$A = \begin{bmatrix} 4 & 5 \\ 6 & 7 \end{bmatrix} \quad B = \begin{bmatrix} 12 & 13 \\ 14 & 15 \end{bmatrix}$$

8M 2 L3

- b) What is a String in Java? Name a few String methods. 4M 2 L1

OR

5. Define inheritance? And explain its type with example programs. 12M 2 L3

UNIT-III

- | | | | |
|---|----|---|----|
| 6. a) Define package. How to create a user defined package? Explain with example. | 8M | 3 | L2 |
| b) Explain method overriding with suitable example. | 4M | 3 | L2 |

OR

- | | | | |
|---|-----|---|----|
| 7. What is an exception and explain its handling concepts with an example program | 12M | 3 | L3 |
|---|-----|---|----|

UNIT-IV

- | | | | |
|---|----|---|----|
| 8. a) Explain the Life cycle of a Thread. | 6M | 4 | L1 |
| b) Explain the two different ways to create thread with suitable code segment | 6M | 4 | L2 |

OR

- | | | | |
|---|-----|---|-----------|
| 9. What are Generics? Explain bounded generics, generic interfaces with suitable example program. | 12M | 4 | L1,
L2 |
|---|-----|---|-----------|

UNIT-V

- | | | | |
|--|----|---|----|
| 10. a) Define Lambda expression and functional interface? Explain its functions. | 6M | 5 | L1 |
| b) Write a program to demonstrate the use of for-each loop using collection example. | 6M | 5 | L3 |

OR

- | | | | |
|--|----|---|----|
| 11. A) How can you pass Lambda Expressions as Arguments? Briefly explain. | 6M | 5 | L2 |
| b) Write a program to read the given input using LinkedList and sort the List. | 6M | 5 | L3 |

*** End ***

Hall Ticket Number :									
----------------------	--	--	--	--	--	--	--	--	--

R-20

Code: 20A533T

II B.Tech. I Semester Regular & Supplementary Examinations February 2023

Computer System Architecture

(Common to CSE, AI&DS and AI&ML)

Max. Marks: 70

Time: 3 Hours

- 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 | BL |
| a) What is gray code? | CO1 | L2 |
| b) Simplify the Boolean function with minimum literals $F = (X+Y)(X+Y')$ | CO2 | L2 |
| c) Define instruction formats? | CO3 | L2 |
| d) What is a multiprocessor? | CO4 | L2 |
| e) How interrupts are enables and disabled? | CO5 | L2 |

PART-B

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

Marks CO BL

UNIT-I

2. a) Convert the hexadecimal number F3A7C2 to binary and octal with procedures 6M CO1 L3
b) What is Karnaugh's map? What are the limitations of Karnaugh map-based digital logic circuit simplification? How do you mitigate the same? 6M CO1 L2

OR

3. a) Discuss r's complement and r-1's complement with an example. 6M CO1 L2
b) Convert the decimal number 8620 into (a) BCD (b)excess-3 code (c) 2421 code (d) binary number 6M CO1 L3

UNIT-II

4. a) What is an adder? Draw and explain the full adder using 8 to 1 multiplexer. 6M CO2 L2
b) Simplify the Boolean function $F(w,x,y,z) = (0,1,2,4,5,6,8,9,12,13,14)$ 6M CO2 L2

OR

5. a) What is a decoder? Construct 3 to 8-line decoder 6M CO2 L2
 b) Explain JK and T flip-flops with neat diagrams 6M CO2 L2

UNIT-III

6. a) Discuss various addressing modes with examples 6M CO3 L2
 b) Write the hardware implementation for Booth's multiplication algorithm. 6M CO3 L2

OR

7. Explain with a neat flow chart for the addition and subtraction of floating points with examples 12M CO3 L2

UNIT-IV

8. a) Which term refers to the same instruction applied to multiple data streams? Explain with diagram 6M CO4 L2
 b) What is a bus organization? Illustrate multiple bus organization with a neat diagram. 6M CO4 L3

OR

9. a) What is memory hierarchy? Draw and explain the concept of the memory hierarchy. 6M CO4 L3
 b) Discuss various mapping procedures of cache memory with an example. 6M CO4 L2

UNIT-V

10. a) What are interrupts? Why do we need them? How interrupts are commonly handled? Assuming that currently an instruction is in its decode cycle and an interrupt has arrived. Are we going to stop the current instruction there itself? If not, why? 6M CO5 L2
 b) Difference between a software interrupt and a subroutine call? Give a few examples of external interrupts and internal interrupts. 6M CO5 L4

OR

11. a) What is DMA? Discuss DMA Controller. 6M CO5 L2
 b) Explain Standard I/O Interface. 6M CO5 L2

*** End ***

Hall Ticket Number :									
----------------------	--	--	--	--	--	--	--	--	--

R-20

Code: 20A531T

II B.Tech. I Semester Regular & Supplementary Examinations February 2023

Database Management Systems

(Common to CSE, AI&DS and AI&ML)

Max. Marks: 70

Time: 3 Hours

- 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 | BL |
| a) Define database management system and mention its applications. | CO1 | L2 |
| b) What is an Attribute? Explain different types of Attributes | CO2 | L2 |
| c) What is a Join? Discuss about various joins used in SQL | CO3 | L3 |
| d) How is Functional Dependency used? | CO4 | L4 |
| e) Define Schedule? What is a serial schedule? | CO5 | L2 |

PART-B

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

Marks CO BL

UNIT-I

- | | | | |
|--|----|-----|----|
| 2. a) Define Data Abstraction and discuss levels of Abstraction? | 6M | CO1 | L2 |
| b) Describe the architecture of DBMS? | 6M | CO1 | L2 |

OR

- | | | | |
|--|----|-----|----|
| 3. a) Write about views and updates on views? | 6M | CO1 | L2 |
| b) Explain different types of database users and write the functions of DBA? | 6M | CO1 | L2 |

UNIT-II

- | | | | |
|---|----|-----|----|
| 4. a) Distinguish strong entity set with weak entity set? Draw an ER diagram to illustrate weak entity set? | 6M | CO2 | L3 |
| b) Discuss the correspondence between the ER model construct and the relational model constructs. Show how each ER model construct can be mapped to the relational model. Discuss the option for mapping EER model construct. A | 6M | CO2 | L3 |

OR

- | | | | |
|---|----|-----|----|
| 5. a) What is an integrity constraint? Explain its enforcement by DBMS with illustrative example. | 6M | CO2 | L3 |
|---|----|-----|----|

- b) Discuss in detail the operators SELECT, PROJECT and UNION with suitable examples. 6M CO2 L2

UNIT-III

6. a) Illustrate different types of joins in SQL 6M CO3 L3
 b) Explain Order by, Group by and Having Clauses with example. 6M CO3 L3

OR

7. a) Consider the following schema:
 Suppliers (sid, sname, address)
 Parts (pid, pname, color)
 Catalog (sid, pid, cost)
 Write the relational algebraic queries for the following:
 i) Find the sids of suppliers who supply some red or green part
 ii) Find the sids of suppliers who supply every red or green part
 iii) Find the pids of parts supplied by at least two different suppliers. 6M CO3 L3
 b) List and explain SQL Relational Set Operators. 6M CO3 L3

UNIT-IV

8. a) What are the problems caused by Redundancy? Explain the need of normalization. 6M CO4 L4
 b) Explain about Third NF and BCNF with relevant table structure. 6M CO4 L4

OR

9. a) Discuss about schema refinement in database design. 6M CO4 L2
 b) What is multi valued dependency? State and explain fourth normal form based on this concept. 6M CO4 L4

UNIT-V

10. a) Discuss about conflict Serializability with an example. 6M CO5 L3
 b) What is 2-phase locking (2PL) protocol? Compare 2PL with Strict 2PL protocol. 6M CO5 L3

OR

11. a) What is transaction? Explain the ACID Properties. 6M CO5 L3
 b) Write short notes on Performance of Locking 6M CO5 L3

*** End ***

Hall Ticket Number :

R-20

Code: 20AC33T

II B.Tech. I Semester Regular & Supplementary Examinations February 2023

Discrete Mathematics

(Common to CSE, AI&DS and AI&ML)

Max. Marks: 70

Time: 3 Hours

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

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

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 | BL |
| a) Define Conjunctive Normal Form? | | 1 | L1 |
| b) List out methods for solving recurrence relations? | | 2 | L1 |
| c) Define Hassae diagram? How this is differenet from relation diagrams? | | 3 | L2 |
| d) Diferentiate walk and path with examples? | | 4 | L2 |
| e) List out applications of Trees? | | 5 | L2 |

PART-B

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

Marks CO BL

UNIT-I

- | | | | |
|---|----|-----|---|
| 2. a) Show that $((P \rightarrow Q) \wedge (Q \rightarrow R)) \leftrightarrow ((P \vee Q) \rightarrow R)$? | 6M | CO1 | 1 |
| b) Find the Principle Disjunctive Normal Form (PDFN) for $(P \wedge \sim Q) \vee (P \wedge \sim R) \wedge (Q \wedge R)$ | 6M | CO1 | 2 |

OR

- | | | | |
|---|----|-----|---|
| 3. a) Define proposition and connectives? Prove that $(P \vee Q) \rightarrow (P \wedge Q)$ is logically equivalent to $P \leftrightarrow Q$? | 6M | CO1 | 1 |
| b) Explain automatic theorem proving with example? | 6M | CO1 | 1 |

UNIT-II

- | | | | |
|---|----|-----|---|
| 4. a) Define generating functions? How a recurrence relation is solved with generating function method? | 4M | CO2 | 1 |
| b) Solve the recurrence relation by the method of generating function $a_n - 9a_{n-1} + 20a_{n-2} = 0$, $a_0 = -3$, $a_1 = 1$ | 8M | CO2 | 2 |

OR

- | | | | |
|--|----|-----|---|
| 5. a) What are non-homogeneous recurrence relations? How these are solved? | 4M | CO2 | 1 |
| b) Find all solutions of the Recurrence relation $a_n = 5a_{n-1} - 6a_{n-2} + 7^n$ | 8M | CO2 | 2 |

UNIT-III

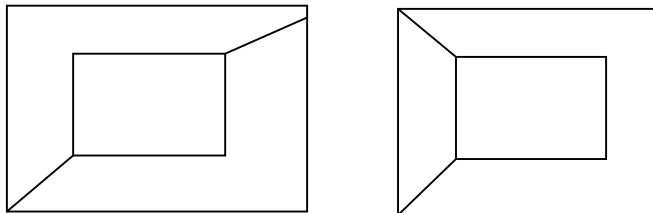
6. a) Let $A = \{1,2,3,4,5,6\}$ and let R be the relation x divides y .
- (i) Write R as a set of ordered pairs
- (ii) Draw its directed graph 6M CO3 2
- b) Draw the Hasse diagram representing the Partial ordering $\{(a,b) \mid a \text{ divides } b\}$ on a set of $\{1,2,3,4,6,8,12\}$ 6M CO3 2

OR

7. a) List out the properties of groups with an example? 6M CO3 1
- b) What is group? Show that set of rational numbers Q forms a group under the binary operation $*$ defined by $a*b = a + b - a*b$, $\forall a, b \in Q$. 6M CO3 2

UNIT-IV

8. The following graphs are isomorphic or not?



12M CO4 2

OR

9. a) Draw the complete graph K_5 with vertices **A, B, C, D, E**. Draw all complete sub graph of K_5 with 4 vertices? 6M CO4 2
- b) Give short notes on i) Connected graphs ii) Sub graphs iii) disconnected graphs 6M CO4 1

UNIT-V

10. a) A tree has two vertices of degree 2, one vertex of degree 3 and three vertices of degree 4. How many vertices of degree 1 does it have? 6M CO5 2
- b) Define tree and its properties? Illustrate the Kruskal's algorithm? 6M CO5 1

OR

11. a) Prove that a binary tree with n nodes has exactly $(n - 1)$ edges? 6M CO5 2
- b) Give short notes on spanning trees? 6M CO5 1

*** End ***