(DMCA 101)

Assignment-I

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

INFORMATION TECHNOLOGY

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. Discuss business pressures and responses in today's information age.

2. Explain about different generations of computers and components of CPU.

3. (a) Describe the various functions of operating systems.

   (b) Write about various programming languages and give its features.

4. State and explain different network technologies and mention their features.

5. What is internet? Discuss various internet protocols and internet challenges.

6. Describe the emerging computing environments.

7. What are the components of computer based information system?

8. Explain the working of CRT monitor with neat diagram.

9. Classify various memory devices.

(DMCA 101)

Assignment-2

M.C.A. DEGREE EXAMINATION, JUNE 2022.
First Year
INFORMATION TECHNOLOGY
MAXIMUM MARKS :30
ANSWER ALL QUESTIONS

1. What are the advantages and disadvantages of logical data models?
2. Differentiate system software and application software.
3. Write short notes on E-R model.
4. Write short notes on electronic mail.
5. What is communication channel?
6. Define normal form.
7. What is flash drive?
8. What is ring network topology?
9. What is spread sheet?

(DMCA 102)

Assignment-I

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

PROGRAMMING WITH C++

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. Discuss various control structures allowed in C++ with proper syntax.
2. What is constructor? Describe characteristics of constructors and types of constructor.
3. Write a C++ Program to overload + operator to add two matrices using friend Functions,
4. What is an Exception? Explain about try, throw and catch with example?
5. Discuss about standard vector and container classes.
6. Write about new, delete and scope resolution operators in C++.
7. What is inline function? What are the advantages of inline function?
8. What is the difference between pointer and reference variable?
9. Write a C++ program to find reverse of given string without using string function.

(DMCA 102)

Assignment-2

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

PROGRAMMING WITH C++

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. What is Virtual function? What are the rules for Virtual functions'?
2. Illustrate multiple inheritance with suitable example.
3. What is the importance of static keyword? Give examples
4. Describe different unformatted I/O operations?
5. Define class and object.
6. Define operator overloading.
7. Define function proto typing.
8. What is polymorphism?
9. What is virtual base class?

(DMCA 103)

Assignment-I

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

COMPUTER ORGANIZATION

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. Describe the structure of IAS computer and also give expanded structure of IAS computer.

2. Describe the PCI bus structure with neat architecture and PCI commands and data transfer

3. Explain about mechanism of optical memory? Describe various optical memory devices.

4. Discuss about floating point division and multiplication with suitable example.

5. (a) What is an I/O processor? Explain with a neat Diagram.

   (b) Write register organization in CPU with neat sketch.

6. Describe the evaluation of intel x86 architecture

7. Write about different RAID levels.

8. Describe the instruction cycle state diagram with neat diagram.

(DMCA 103)

Assignment-2

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

COMPUTER ORGANIZATION

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. Write about disk layout and disk data layout,
2. Explain how are data read from and written onto a magnetic disk?
3. Explain about characteristics of two's complement representation and arithmetic.
4. Write about the flowchart of Interrupt cycle.
5. Describe Two-Stage Instruction Pipeline.
6. What is use of address bus?
7. Define interrupt.
8. Define addressing mode.
9. How to represent signed integer?
10. What is significance of functional view of computer'?

(DMCA 104)

Assignment-I

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

DATA STRUCTURES

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. (a) Describe the flowchart notations for various control structures.

   (b) Explain the various algorithm notations used to find complexity.

2. Discuss about various string Processing algorithms with suitable example

3. How to create node in the double linked list? Explain about insertion and deletion operations on double linked lists. Write pseudo code for the Same

4. (a) What is a binary tree? Construct a binary tree given the pre-order traversal and in-order traversals as follows:

Pre-Order Traversal :	G B Q A C K F P D E R H
In-Order Traversal :	Q B K C F A G P E D H R

   (b) Explain insertion operation on Binary Search Tree (BST).

5. Explain insertion sort algorithm and trace the steps of insertion sort for sort the list 11, 18, 33, 26, 28, 35, 21, 39. Find the total number of comparisons made

6. Describe the classification of data structures

7. Write short notes on garbage collection.

8. How to represent two dimensional arrays in computer memory?

9. Write an algorithm for Binary search method

(DMCA 104)

Assignment-2

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

DATA STRUCTURES

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. What are the basic operations of Queue? Explain in detail
2. How to calculate the factorial of 'n' using stacks?
3. Explain Threaded binary trees with suitable examples
4. Explain deletion in an AVL, tree with a suitable example
5. Define Big (O) notation.
6. Define Priority queue.
7. What is complete binary tree?
8. Define in-order and post-order of tree.
9. Define Circular linked list.

(DMCA 105)

Assignment-I

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

OPERATING SYSTEMS

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. Discuss various operating system services in detail.

2. What is the critical section? Give a solution for readers-writers problem using conditional critical regions?

3. Consider the following page reference string: 1, 2, 3, 4, 2, 1, 5, 6, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6. How many page faults would occur for the LRU, FIFO. LFU and optimal page replacement algorithms assuming two and five frames?

4. Discuss the different file allocation methods with suitable example.

5. Explain in detail about various ways of accessing disk storage.

6. Write about main frame systems and multi – processor systems.

7. What are the components of process control block?

8. What is scheduler? Explain various types of schedulers

9. Describe the inter process communication in client server systems.

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(DMCA 105)

Assignment-2
M.C.A. DEGREE EXAMINATION, JUNE 2022.
First Year
OPERATING SYSTEMS
MAXIMUM MARKS :30
ANSWER ALL QUESTIONS

1. Explain Shortest — Seek —Time First (SSTF) disk scheduling algorithm.
2. What is demand paging and what is its use?
3. What is meant by Virtual memory? Give some major benefits which make applicable.
4. Write about file system access control mechanism in operating systems.
5. What is Semaphore?
6. Define process synchronization.
7. What are the necessary conditions for deadlock?
8. What is Thrashing?
9. What is paged segmentation?

(DMCA 106)

Assignment-I

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

DATABASE MANAGEMENT SYSTEMS

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. What is information system? Describe different components of information system and also give various types of information system.

2. Explain about queue, ring, inverted list and tree data structures with example.

3. What is Database Action Diagram? Discuss about various symbols used to represent database action diagrams.

4. What is relational database model? Describe DDL and DML and DCL commands of relational data model with proper syntax.

5. What is locking? Discuss different types of locking mechanisms in DBMS.

6. What are the limitations of file systems?

7. Explain one — to — one association, one — to — one conditional and many — to — one association between files with example.

8. What is pointer? Write about different types of pointers.

(DMCA 106)

Assignment-2

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

DATABASE MANAGEMENT SYSTEMS

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. Write about network data model with suitable example.
2. State and explain database design steps.
3. Write about first and second normal forms with example.
4. Write about PC – FOCUS database description.
5. What is a transaction? Explain the ACID properties.
6. Define weak entity.
7. What is decision support system?
8. What is need of normalization?
9. Define database recovery.
10. Define Concurrency.

(DMCA 107)

Assignment-I

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

ACCOUNTS AND FINANCE

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. Define 'Accounting'. What are the advantages of double entry system of accounting?
2. What is a trial balance? Prepare a model of trial balance.
3. Define 'cost' write about cost classifications.
4. What are the functions of finance?
5. Define 'Working capital'. What factors are influencing working capital management?
6. Subsidiary books
7. Single entry system of book keeping
8. Trading account
9. R.B.D

(DMCA 107)

Assignment-2
M.C.A. DEGREE EXAMINATION, JUNE 2022.
First Year
ACCOUNTS AND FINANCE
MAXIMUM MARKS :30
ANSWER ALL QUESTIONS

1. Flexible budget
2. Need for financial analysis
3. Debt-equity ratio
4. Fixed capital
5. Journal
6. Net profit
7. Cash budget
8. Finance manager
9. Current ratio

(DMCA 108)

Assignment-I

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

DISCRETE MATHEMATICS

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. (a) Show that $\{[p \vee q) \to r)] \wedge (\neg\, p)\} \to (q \to r)$ is a tautology.

   (b) Using the principle of mathematical induction prove that

$$1.3 + 2.4 + 3.5 + \ldots + n(n+2) = \frac{n(n+1)\ (2n+7)}{6}.$$

2. Let $A = \{0, 1, 2, 3, 4\}$. Find the equivalence classes of equivalence relation R = {(0, 0), (0, 4), (1, 1), (1, 3), (2, 2), (3, 1), (3, 3), (4, 0), (4, 4)} defined in A. Draw digraph on R and write down the partition of A induction by R.

3. (a) Find the co-efficient of x^{18} in $(x + x^2 + x^3 + x^4 + x^5)\ (x^2 + x^3 + x^4 + \ldots)^5$.

   (b) Solve the recurrence relation $a_n = 4a_{n-1} + 5a_{n-2}$ with $a_1 = 2, a_2 = 6$.

4. (a) On the set Q of all rational numbers, the operation $*$ is defined by $a * b = a + b - ab$.

   Show that, under this operation Q forms commutative monoid.

(b) The generator matrix for an encoding function $E : Z_2^3 \to Z_2^6$ is given by

$G = \begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 0 & 1 \end{bmatrix}$. Find the code words assigned to 110 to 010. Also obtain the associated parity check.

5. In the following problem, consider the partial order of divisibility on set A. Draw the Hasse diagram of the Posets and determine whether the poset id linear ordered or not :

(a) $A = \{1, 2, 3, 5, 6, 10, 15, 30\}$

(b) $B = \{2, 4, 8, 16, 32\}$.

6. Prove the logical equivalence of the following expression without using truth tables : $[(\neg p \vee \neg q) \to (p \wedge q \wedge r)] \equiv p \wedge q$

7. Find the disjunctive normal of the following logical expression : $\neg(P \vee Q) \leftrightarrow (P \wedge Q)$

8. Given the relation $R = \{(1,1) (1, 2), (2, 1), (2,2), (3, 3), (4, 4)\}$. Check whether it is reflexive or symmetric?

9. Let $A = R - \{3\}$ and $B = R - \{1\}$, $f : A \to B$ defined by $f(x) = \dfrac{(x-2)}{(x-3)}$ find f^{-1}.

(DMCA 108)

Assignment-2

M.C.A. DEGREE EXAMINATION, JUNE 2022.

First Year

DISCRETE MATHEMATICS

MAXIMUM MARKS :30

ANSWER ALL QUESTIONS

1. Find the co-efficient of x^{10} in $\frac{(x^3 - 5x)}{(1-x)^3}$.

2. Each user on a computer system has a password, which is six to eight characters long, where each character is an uppercase letter or a digit. Each password must contain at least one digit. How many possible passwords are there?

3. Prove the laws of idempotent, commutative, associative and absorption in a lattice.

4. Let '$\circ$' be the binary operation on Z is given by $x \circ y = x + y + 1$. Verify that $(Z, \circ)$ is an Abelian group.
5. Define rule of interference.
6. Define inverse function.
7. Define Abelian group.
8. What is Poset?
9. What are the properties of relations?
