DMCA101

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

INFORMATION TECHNOLOGY

Maximum : 30 MARKS
Answer ALL Questions

Q1) Discuss opportunities for strategic use of information system.

Q2) Explain various elements of Central Processing Unit with neat architecture.

Q3) What is an operating? What are the different types of operating systems? Explain.

Q4) Explain about logical data models and data warehouses.

Q5) Discuss about evaluation of internet and also give different challenges of internet.

Q6) Describe some of pressures that characterize the modern global business environment.

Q7) What are the components of computer based information system?

Q8) Write about primary storage and secondary storage devices.

Q9) What is software crisis and what it causes?

DMCA101

ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

INFORMATION TECHNOLOGY

Maximum : 30 MARKS
Answer ALL Questions

Q1) Explain the significance of Entity - Relationship in database design.

Q2) Differentiate client/server computing and peer-to-peer computing.

Q3) Describe the features of LAN and WAN.

Q4) Write short notes on World Wide Web.

Q5) What is meant by market pressure?

Q6) Give any two application software's.

Q7) Define network protocol.

Q8) Define cache memory.

Q9) What is intranet?

DMCA102

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

PROGRAMMING with C++

Maximum : 30 MARKS
Answer ALL Questions

Q1)a) What is a class? How does it accomplish data biding?

b) What is a friend function? What are the merits and demerits of using a friend function?

Q2)a) What is a destructor? Illustrate memory allocation to an object using destructor?

b) Write a C++ Program to copy the contents of one object into another using copy constructor?

Q3)a) Write the formatted console I/O operations and unformatted console I/O operations.

b) Explain how Exceptions are catched in C++.

Q4)a) What is a virtual base class ? Why it is important to make a class virtual.

b) How to overload the binary operators. Explain with suitable exmaple.

Q5) What are different types of containers ? Explain in detail.

Q6) Write about bitwise, relational and scope resolution operator in C++.

Q7) What is meant by function prototyping ? Give the syntax.

Q8) Write about the Memory Management Operators.

Q9) Differentiate between static data member and static member functions.

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ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

PROGRAMMING with C++

Maximum : 30 MARKS
Answer ALL Questions

Q1) List out the pre-defined streams in C++ and mention its purpose.

Q2) Write a C++ program to declare object and display their contents.

Q3) What is Binding? Differentiate between static and Dynamic Binding.

Q4) What are the file operations? Explain each one with an example.

Q5) What is multiple inheritance?

Q6) Define operator overloading.

Q7) What is nested class?

Q8) What is manipulator?

Q9) Define function template.

DMCA103

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

COMPUTER ORGANIZATION

Maximum : 30 MARKS
Answer ALL Questions

Q1) Explain Architecture of extended IAS computer and explain each element of it.

Q2) Explain about instruction cycle state diagram with interrupts and without interrupts.

Q3) Write about different RAID levels and their features.

Q4) Multiply each of the following pairs of signed 2's complement numbers using Booth algorithm and bit pairing of the multiplier (Assume A is the Multiplicand and B is the Multiplier).

A = 010111 B = 110110

A = 110011 B = 101100

Q5) Explain pipelining technique. Draw the general structure of four segment pipeline.

Q6) Describe the functional view of digital computer.

Q7) Write the different generations of intel processors.

Q8) What is the benefit of using a multiple-bus architecture compared to a single-bus architecture?

Q9) Describe physical characteristics of magnetic disks.

DMCA103

ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

COMPUTER ORGANIZATION

Maximum : 30 MARKS
Answer ALL Questions

Q1) What is a fixed point representation? Explain how to detect overflow in fixed point representation.

Q2) Explain about integer addition and subtraction with example.

Q3) Explain about address sequencer in Micro programmed CU.

Q4) What are the different modes of ARM processor?

Q5) Define clock speed.

Q6) What differences between a CD and a DVD ?

Q7) What is flash drive ?

Q8) What is sign magnitude representation of integer?

Q9) What is a program status word?

DMCA104

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

DATA STRUCTURES

Maximum : 30 MARKS
Answer ALL Questions

Q1) Explain about linear and nonlinear data structures and also give its operations.

Q2) What is meant by two dimensional array and record? How the memory is created for it?

Q3) a) Explain an algorithm for evaluating postfi expression with suitable example.

b) Explain the how to insert node in the middle of the list.

Q4) Develop a binary search tree resulting after inserting the following integer keys 49, 27, 12, 11, 33, 77, 26, 56, 23, 6. (i) check whether the tree is almost complete or not? (ii) Determine the height of the tree (iii) Write post order and preorder traversals.

Q5) Explain Heap sort algorithm. Create Heap for the following elements and then sort them.
(13, 102, 405, 136, 15, 105, 390, 432, 28, 444)

Q6) Write an algorithm to solve quadratic equation.

Q7) Describe control structure flow diagrams.

Q8) What is circular linked list? What are the disadvantages of circular linked list?

Q9) Describe various queue operations.

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ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

DATA STRUCTURES

Maximum : 30 MARKS
Answer ALL Questions

Q1) Explain about the rotations in AVL tree.

Q2) Explain the procedure for deleting an element from a binary search tree.

Q3) Write short notes on Red-Black trees.

Q4) Write about selection sort algorithm with example.

Q5) Define Big O notation.

Q6) What is recursion?

Q7) Define D-queue.

Q8) Define Depth of the tree.

Q9) What is meant by hashing?

DMCA105

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

OPERATING SYSTEMS

Maximum : 30 MARKS
Answer ALL Questions

Q1) a) Discuss the various functions of operating system.

b) What are the different process states? Explain with a diagram.

Q2) Explain Dining Philosopher problem in process synchronization.

Q3) Compute page fault ratio. The pages referenced are 7, 5, 2, 1, 7, 5, 4, 5, 1, 2, 5 and 7(12 pages). The job is allowed 3 blocks. Compare LRU and FIFO page replacement schemes.

Q4) Write about disk management and swap-space management.

Q5) What is threat? Explain various threats are detecting and prevented by operating system.

Q6) Write about multi programming and distributed systems.

Q7) Briefly explain about user and kernel level threads.

Q8) Explain about Round robin scheduling algorithm with example.

Q9) Write about critical regions and monitors.

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ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

OPERATING SYSTEMS

Maximum : 30 MARKS
Answer ALL Questions

Q1) Write about the techniques for structuring the page table.

Q2) What is Directory? What are the operations that can be performed on a directory?

Q3) Describe the life cycle of I/O request in detail.

Q4) Briefly explain worms and viruses with example.

Q5) Define scheduling.

Q6) Define virtual memory.

Q7) List down causes of deadlock.

Q8) Define race condition.

Q9) Define Authentication.

DMCA106

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

DATABASE MANAGEMENT SYSTEMS

Maximum : 30 MARKS
Answer ALL Questions

Q1) Explain different associations between files with suitable example.

Q2) Write about the following data structures in detail:
i) Ring structure
ii) Inverted list
iii) Tree data structures.

Q3) What are the guideline for mapping conceptual data model into relational and hierarchical data models? Explain?

Q4) What is IMS? Explain about IMS database description and IMS data manipulation.

Q5) What is System recovery? Explain two phase commit protocol.

Q6) Describe the limitations of file structures.

Q7) Write about decision support system.

Q8) What is pointer ? Write about different types of pointers.

Q9) Briefly explain hierarchical data model with example.

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ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

DATABASE MANAGEMENT SYSTEMS

Maximum : 30 MARKS
Answer ALL Questions

Q0) What is normalization ? Write about third normal form.

Q2) Explain terms data volume and usage analysis.

Q3) What is PC-FOCUS ? Explain about PC - FOCUS manipulation?

Q4) Briefly explain about database failures.

Q5) Define field.

Q6) What is conceptual data model?

Q7) Define IDMS?

Q8) Define primary and condidate keys.

Q9) Define concurrency?

DMCA107

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

Accounts & Finance

Maximum : 30 MARKS
Answer ALL Questions

Q1) Define Accounting? Briefly Explain about Accouting Concepts?

Q2) What do you understand by financial decisions? Discuss the major financial decisions?

Q3) Explain in detail the classification costs.

Q4) What is the Bank Reconciliation Statements? Explain the various reasons for preparation of it.

Q5) How does cash flow statement differ from funds flow statement.

Q6) Rules of Double Entry System.

Q7) Trade Discount and Cash Discount.

Q8) Objectives of Promoting Final accounts.

Q9) Types of Subsidiary Books.

DMCA107

ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

Accounts & Finance

Maximum : 30 MARKS

Answer ALL Questions

Q1) Functions of Finance.

Q2) Concept of Cost Analysis.

Q3) Profitability Ratios.

Q4) Funds from Operations.

Q5) Master Budget.

Q6) Bank Overdraft.

Q7) Current Ratio.

Q8) Fund.

Q9) Purchases book.

DMCA108

ASSIGNMENT 1

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

DISCRETE MATHEMATICS

Maximum : 30 MARKS
Answer ALL Questions

Q1) a) Prove that any propositions p, q, r, the compound proposition.
$\{p \to (q \to r)\} \to \{(p \to q) \to (p \to r)\}$ is tautology.

b) Prove by principle of mathematical induction
P(n) = $\frac{1}{1.2}+\frac{1}{2.3}+\frac{1}{3.4}+\ldots+\frac{1}{n(n+1)}=\frac{1}{n+1}$

Q2) a) Let A = {a, b, c} be a set and relation R on A is as = {(a, a), (a, b), (b, c), (c, c)}. Is R

i) Reflexive

ii) Symmetric

iii) Transitive

b) 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 on A. Draw digraph of R and write down the partition of A induced by R.

Q3) a) Solve the recurrence relations: $a_n - 5a_{n-1} + 6a_{n-2} = 7^n$ for $n \geq 2$.

b) Determine the coefficient of x^{15} in $\frac{(1+x)^4}{(1-x)^4}$

Q4) a) Define group code. Let E : , $m < n$ be the encoding function given by a generator matrix G or the associated parity - check matrix H. Prove that C = E() is a group code.

b) State and prove Legrange's theorem in groups.

Q5) a) Draw the K-maps of these sum-of-products expansions in three variables :
$xyz + xyz' + x'yz' + x'y'z$

b) Draw the logic circuit for the expression $x = ABC + A'C' + B'C'$

Q6) In a survey of 60 people it is found that 25 like to drink milk, 26 Coffee and 26 Tea. Also 9 like both milk and tea, 11 like milk and coffee, 8 like Coffee and Tea and 8 like none of three. Using Venn diagram.

a) Find the number of people who like all the three kinds.
b) Find the number of people who like exactly one of the three drinks.

Q7) Prove that the following argument is valid :

$$\frac{\forall x[p(x) \rightarrow q(x)] \quad \forall x[q(x) \rightarrow r(x)]}{\therefore \forall x[p(x) \rightarrow r(x)]}$$

Q8) Let A = R – {3} And B = R – {1}. f : AB defined by $f(x) = \frac{(x-2)}{(x-3)}$ *find* f^{-1}

Q9) Let A = {1, 2, 3, 4} and the relation defined by "a divides b". Write R as set of ordered pair, draw directed graph.

DMCA108

ASSIGNMENT 2

M.C.A. DEGREE EXAMINATION, JUNE/JULY - 2020

(First Year)

DISCRETE MATHEMATICS

Maximum : 30 MARKS
Answer ALL Questions

Q1) Solve the recurrence relation : $a_n = a_{n-1} + n^3$,, $a_0 = 5$.

Q2) A bowl contains 10 red balls and 10 blue balls. A woman selects balls at random without looking at them. i) How many balls must she select to be sure of having at least three balls of the same color? ii) How many balls must she select to be sure of having at least three blue balls?

Q3) Let 'o' be the binary operation on Z is given by x o $y = x + y + 1$. Verify that (Z,o) is an Abelian group.

Q4) Show that $a \cdot b + a' \cdot b' = (a' + b) \cdot (a + b')$ in Boolean algebra.

Q5) Define equivalence relation.

Q6) Define conjunctive normal form.

Q7) Define Lattice.

Q8) Define Abelian group.

Q9) Define Generating function.