Assignment for

Master in Computer Application

(5 Year Integrated)

(Through Distance Education)

For session 2015-16

Directorate of Distance Education

Guru Jambeshwar University of

Science & Technology, Hissar

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Important Instructions

Assignments are integral parts of course work of any programme of study in Distance Education of this university. The purpose of preparing and evaluating the assignments is to get the students acquainted with the theoretical and practical dimensions of the topics or area of study or the course work. The questions for the assignments are designed in a way to enhance the analytical skills of the students. The following are some important points to consider while preparing and evaluating the assignments.

1. All assignments should be legible and written in candidate's own handwriting on A4 size paper.
2. Answers should be appropriate, focused, legible and clean.
3. All questions are compulsory & carry equal marks.
4. Study centers are required to get these evaluated by the university approved subject evaluators only.
5. Study centers are also required to maintain a complete and proper record of assignments and will keep the assignments in physical form till the declaration of result of the student concerned.
6. The University has the right to monitor, inspect or check this record any time.
7. The study centers are also required to submit evaluation/award sheets in sealed cover /online in proper format and keep one copy of the same for record as per the schedule already notified.

Programme: Master in Computer Application **Year: 1st**

Course: Computer Fundamentals **Code: MCA-101**

Max Marks: 3*5=15

ASSIGNMENT (PART- I)

1. **Why were first and second generation computers more difficult and costlier to produce commercially, than computers of subsequent generations? What is generation in computer terminology?**
2. **What are five basic functions performed by a computer system? Differentiate between the characteristics of primary and secondary storage of a computer system?**
3. **What is bit in a computer terminology? How many different patterns of bits are possible with 6 bits, 7 bits and 8 bits? What is ASCII, EBCDIC, ISCII and UNICODE?**
4. **Add binary numbers:**
   a) **1010110 and 1011010**
   b) **10111 and 1011**
   c) **100010.10 and 111101.01**
5. **Differentiate between:**
   a) **1 bit, 1 byte and 1 word**
   b) **PROM and EPROM**
   c) **Hardcopy and Softcopy**

ASSIGNMENT (PART- II)

Max Marks: 3*5=15

1. **Define the following terms in context of a disk storage :**
   a) **Access time**
   b) **Seek time**
   c) **Latency**
2. **Assembly language is "one –for-one" but a high level language is "many –for- one". Explains what this means? Discuss features of operating system?**
3. **What is batch processing? How a batch processing system typically executes job?**
4. **What is a wireless computing system? How it is useful? Discuss difference between Internet and the WEB?**
5. **Differentiate between downloading and uploading of information? How hypertext is useful? What is UNIX operating system? Explain its features?**

Programme: Master in Computer Application **Year: 1st**

Course: Computer programming & Problem solving using C **Code: MCA-102**

Max Marks: 3*5=15

ASSIGNMENT (PART- I)

1. **Which of the following operations has right to left associatively:**
   a) && b) % c) Size of d) *
   Which associativety rule is involved in this operator? Explain the concept of left shift and right shift operator with example?
2. **What is use of getchar ( ), getche ( ) and getch ( )? Explain the functions with the help of a program?**
3. **What is major advantage of machine code? Give general syntax of conditional operators?**
4. **What is use of strcmp ( ), strlen ( ) and strcpy ( )? Explain the functions with the help of a program?**
5. **What do you mean by call by value and call by reference? Write a program to swap two numbers without using third variable?**

ASSIGNMENT (PART -II)

Max Marks: 3*5=15

1. **What is output of: -**
   printf ("%u", -1); ?
   What are the rules for declaring string constants? Write down a program to display employee record with the fields NAME, AGE, DOB, ADDRESS, EMPID, DOJ, and DESIGNATION with help of structure?
2. **Differentiate between the following with the help of suitable example:**
   a) **Logical and relational operators**
   b) **Arithmetic and logical operators**
3. **Explain two dimensional and three dimensional arrays with example? Explain the concept of row major order and column major order in two dimension array with the help of example?**
4. **What are static variables? Compare it with standard local variable? What are actual parameters and formal parameters show with the help of example?**
5. **What is file handling in C? How it is useful in C? Explain the terms eof and bof?**

Programme: Master in Computer Application **Year: 1st**

Course: Mathematics -1 **Code: MCA-103**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Find the constants a and b such that the matrix $\begin{bmatrix} a & 4 \\ 1 & b \end{bmatrix}$ has 3 and -2 as its Eigen values.**
2. **The product of two Eigen values of the matrix A = $\begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$ is 16, Find the third Eigen value.**
3. **If sinA + cosA = *m* and secA + cosecA = *n*, prove that *n* (*m*2 – 1) = 2*m*.**
4. **Find θ when**
   a) sin θ = 0.0990 b) cos θ = 0.5536 c) tan θ = 5.2010
5. **Find the angle between the lines of section of the plane *3x +y +5z*=0 and the cone *6y z -2zx +5xy* =0.**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **A and B are two pints (3,4) and (5,-2) .Find a point PA =PB and ∆PAB=10.**
2. **If a normal distribution has mean 200 and standard deviation 20, find K so that the probability that a sample value is less than K is .975.**
3. **Solve using camer's rule:**
   5X+Y+3Z=3
   X-3Y+Z=2
   3X+Y+Z=6
4. **Solve for x:**
   $\sqrt{x+21} + \sqrt{x+5} = \sqrt{6x+14}$
5. **Explain Bayes theorem and prove it?**

Programme: Master in Computer Application **Year: 1st**

Course: Business Flow Systems **Code: MCA-104**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Write a short note on business environment components? Explain the concept of external business environment along with its effect?**
2. **What are various tendencies towards large size of firms? What is partnership firm and company form of organization?**
3. **Explain the term business, industry, trade and commerce? Explain the difference between all the above said terms? List out various activities included in commerce?**
4. **Write a note on**
   a) **Proprietorship**
   b) **Management planning**
5. **Do you think recent company act is relevant in changing business environment? Justify your answer?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **What are various stakeholders in business and explain their roles? Explain the concept of cooperative society?**
2. **Is there any difference between ownership and top level management? Justify your answer?**
3. **What are role of manager at different level of management? Write down three major functions of management?**
4. **Write a short note on:**
   a) Public Utilities
   b) Scientific Management
5. **Mention the rights and duties of board of Director of Joint Stock Company?**

Programme: Master in Computer Application **Year: 1st**

Course: Operating System -1 **Code: MCA-105**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **What is operating system? Give the view of operating system as resource manager? What are the characteristics of modern operating system?**
2. **What are time sharing systems? Explain the features of time sharing systems?**
3. **What is system calls? Explain their types? What is System Boot Process?**
4. **Five batch jobs A to E arrive at same time they have estimated running times 10, 06,02, 04 and 08 mins their priorities are 3, 5, 2 ,1 and 4 respectively with 5 being highest priority .For each of the following algorithms determine mean process turnaround time , ignore process swapping overhead?**
5. **Explain Round Robin, Shortest Job and Priority scheduling algorithm with illustration?**

ASSIGNMENT (PART II)

Max Marks: 3*5=15

1. **How to avoid deadlock in a resource – allocation system with one instance of each resources, show using resource allocation graph?**
2. **Define mutual exclusion with help of an example? By avoiding mutual exclusion can a deadlock be avoided? Justify your answer?**
3. **What do you mean by memory management and explain various memory management techniques? Explain swapping in memory management?**
4. **Write a short note on:**
   a) **Waiting time**
   b) **Response Time**
   c) **Turnaround Time**
5. **What do you mean by process? Explain various states of process? What is the use of PCB? Why threads are called as light weight process?**

Programme: Master in Computer Application **Year: 1st**

Course: Communication & Presentation Skills **Code: MCA-106**

Max Marks: 5*3=15

ASSIGNMENT (PART-I)

1. **Write down a report on "Future of IT in India"?**
2. **Prepare your resume accordingly for selection in any software company?**
3. **Elaborate different types of body movements?**

ASSIGNMENT (PART-II)

Max Marks: 5*3=15

1. **Make a power point presentation on any current issue related to education system?**
2. **Write a report on "role of social media in political system"?**
3. **Differentiate between Verbal and Non-verbal communication?**

Note: please submit the hardcopy of your power point presentation.

Programme: Master in Computer Application **Year: 2nd**

Course: Data structure & Algorithms **Code: MCA-201**

Max Marks: 5*3=15

ASSIGNMENT (PART- I)

1. **How do you push and pop elements in a linked list?**
2. **What is recursion? Which data structure is being used for the implementation of recursion? Find the factorial of a number with an help of example?**
3. **Write an algorithm for binary search? Explain the same with the help of example and its complexity?**
4. **What do you mean by sorting? Mention different types of sorting techniques in array in detail?**
5. **Define ADT? Design an ADT for rational numbers?**

ASSIGNMENT (PART-II)

Max Marks: 5*3=15

1. **Explain the quick sort algorithm? Write any two applications of stack?**
2. **Write a program in 'C' to calculate the total 5 number of words and vowels in a string given as input by the user.**
3. **Give an algorithm or C program to reverse a singly linked circular list?**
4. **Convert the following infix expressions into postfix notation**
   ((A+B) + (C/D))-2
5. **What is difference between Binary tree and Binary search tree?**
   Insert following items in Binary tree and Binary search tree:
   C, O, R, N, F, L, A, K, E, S

Programme: Master in Computer Application **Year: 2nd**

Course: Database Management System **Code: MCA-202**

Max Marks: 3*5=15

ASSIGNMENT (PART- I)

1. **Is Data dictionary essential part of DBMS, why? Justify your answer with the help of example?**
2. **Explain various normal forms used for normalization? Is BCNF stronger than SNF? Justify your answer with the help of an example.**
3. **Define DDL and DML? Write down five commands for each with help of example?**
4. **Explain purpose of checkpoint mechanism? How often should check points performed?**
5. **What is system log? What is the purpose of system log in system recovery?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **What role of a database administrator (DBA)? Discuss the different process of authorization permitted on database items with the help of examples?**
2. **Define foreign key? What is its role in join operations? Explain with the help of example?**
3. **Explain functional dependency? Trivial functional dependency with example?**
4. **Explain triggers and views with example? Write down the syntax for the same?**
5. **Construct on E-R diagram for the following problem definition:**
   Each company operates four departments, and each department belongs to one company. Each department employs one or more employees, and each employee works for one department. Each of the employees may or may not have one or more dependents, and each dependent belongs to one employee.

Programme: Master in Computer Application **Year: 2nd**

Course: Digital Electronics **Code: MCA-203**

Max Marks: 3*5=15

ASSIGNMENT (PART I)

1. **Draw logic diagram of master slave JK flip flop?**
2. **Difference between synchronous and asynchronous sequential circuits? Explain the circuit of a 3-bit asynchronous binary counter?**
3. **What is meant by universal shift register? Explain the working of 4 bit bidirectional register?**
4. **Write down characteristic equation for JK flip flop, T flip flop, D flip flop?**
5. **Minimize and realize the following function using K-Maps**
   f (A,B,C,D) = π_m(4,5,6,7,8,12) . d(1,2,3,9,11,14)

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Write short note with help of truth table:**
   a) **Binary half adder and full adder**
   b) **Binary half subtractor and full subtractor**
2. **Write down truth table of XNOR, NAND and NOR gate? Which gates are known as Universal gates? Show how we connect NAND gate to get an AND gate?**
3. **Explain operations of : a) 4 bit serial –in- serial –out shift register**
   b) 4 bit serial –in parallel- out shift register
4. **Write a short note on**
   a) **TTL**
   b) **CMOS logic**
   c) **Tri-static logic**
5. **Convert the following:**
   a. $(110101)_2$ = $(?)_{10}$
   b. $(528)_{10}$ = $(?)_{16}$
   c. $(4096)_{10}$ = **Gray Code**

Programme: Master in Computer Application **Year: 2nd**

Course: Computer organization and Architecture **Code: MCA-204**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Differentiate between computer architecture and computer organization?**
2. **What do you mean by interrupts? Explain how interrupts are handled when they occur while an instruction is being executed?**
3. **Write a short note on following:**
   a) **ALU**
   b) **Arithmetic**
   c) **Logical**
   d) **Shift**
4. **Differentiate between Synchronous and Asynchronous Data Transfer? Explain the concept of programmed, interrupt and DMA methods of data transfer techniques?**
5. **What do you understand by fetch cycle, instruction cycle and machine cycle?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Explain main memory and cache memory? Explain the concept of stack organization?**
2. **How many memory chips of 128*8 are needed to provide memory capacity of 4096*16?**
3. **Explain the concept of DMA? Write a short note about DMA transfer? Also Explain block diagram of DMA controller?**
4. **Write short note on:**
   a) **Interrupt Cycle**
   b) **Interrupt acknowledgment**
5. **Explain different addressing modes with the help of example?**

Programme: Master in Computer Application **Year: 2nd**

Course: Mathematics II **Code: MCA-205**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Show that the statement forms ~(p ∧ q) and ~p ∧ ~q are not logically equivalent.**
2. **The set Z of integers with the binary operation of subtraction is not a semi group since subtraction is not associative in Z?**
3. **Let A = {1, 2, 3, 4} and R = [(1, 2), (2, 3), (3, 4), (2, 1)] Find the transitive closure of R**
4. **What do you mean by tautology? Show that (p ∧ q) = (p v q) is a tautology**
5. **Differentiate between postfix, prefix and infix with help of example? Explain the concept of conversion Infix notation to postfix notation with help of example?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Explain the terms:**
   - **(a) Directed Graph**
   - **(b) Undirected Graph**
   - **(c) Weighted Graph**
2. **What are groups? What are subgroups? What are semi groups? Explain with the help of example?**
3. **What are Lattices? Explain with help of example?**
4. **What are irreducible polynomials? Prove that A- B = A => A∩B=Q**
5. **What do you mean by Finite sate machine? How it is different from infinite sate machine?**

Programme: Master in Computer Application **Year: 2nd**

Course: Communication Skills **Code: MCA-206**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Write a short note on: Basics of Communication skills?**
2. **Write down history behind Scientific and technical development?**
3. **Explain the concept of flow of information in organization?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Write down a special article on Women Empowerment?**
2. **Write down a press release on subject related to Science and Technology?**
3. **Write down a public speech on any current issue of your locality?**

Programme: Master in Computer Application **Year: 3rd**

Course: Computer Networks **Code: MCA-301**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **What is function of packet header? Which OSI layer /layers is/are responsible for this?**
2. **What is direct and indirect routing? Explain with suitable examples?**
3. **Give two example of computer applications for which connection oriented service is appropriate? And give two examples for which connectionless service is best?**
4. **Discuss the advantages and disadvantages of credit versus sliding window protocol?**
5. **Give advantage and disadvantage of UDP over TCP?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Can a machine with signal DNS name have multiple IP address? What is Token Bus Protocol? How it is different from Token Ring Protocol?**
2. **Illustrate simplex, half duplex, and full duplex modes with the help of example for each. Explain which mode is used for TV communication?**
3. **Why does ATM use small, fixed length cells explain?**
4. **In twisted pair cable why wires are twisted? Briefly explain two categories of twisted pair cables, with their advantages.**
5. **What are the two reasons for using layered protocol architecture in network? What is the role of interface in different layers,**

Programme: Master in Computer Application **Year: 3rd**

Course: Object Oriented Programming Using C++ **Code: MCA-302**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Differentiate the concept between object oriented approach and procedural oriented approach in programming?**
2. **Write down a program to explain the concept of classes and object? How do objects interact with each other and with the external interfaces? Describe with the help of a diagram.**
3. **Is it necessary to pass argument in a friend function? Justify your answer with example?**
4. **What is Dynamism? Describe dynamic binding for object-oriented design with the help of an example.**
5. **Write a program to overload the + operator to concatenate two strings.**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Write short note on:**
   a) **Fstream objects**
   b) **Size of operator**
   c) **Bitwise operators**
2. **What are templates? Create a function template for a stack.**
3. **Why abstract classes needed? Explain with the help of example?**
4. **What are Macros and why are they needed? Design a macro to find the cube of a variable.**
5. **What is Inheritance? What are the different visibility modes observed while deriving a class from a base class?**

Programme: Master in Computer Application **Year: 3rd**

Course: Software Engineering **Code: MCA-303**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Maintainability can be viewed as two separate qualities (i) repairability and (ii) evolvability. Explain both of these qualities**
2. **Draw a diagram for pure waterfall life cycle model, and also explain it?**
3. **What is difference between SRS document and Design document? What are the contents we should contain in SRS documents and Design document?**
4. **List and explain different type of testing done during testing phase?**
5. **What is difference between "know risks" and "predictable risk"?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **What is purpose of DFD, ER diagrams? Explain the concept with the help of diagram?**
2. **What is user acceptance testing? Explain different testing in user acceptance testing, why is it necessary?**
3. **Write about software strategies? What is the difference between process and product? Describe any four important qualities of a s/w product?**
4. **Who are various stakeholders in software development? Explain their role?**
5. **Write a short note on:**
   a) **Reverse engineering**
   b) **Fault report**

Programme: Master in Computer Application **Year: 3rd**

Course: Internet Fundamentals **Code: MCA-304**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Why OSI model is developed? Explain the concept of computer networking in detail?**
2. **What is basic difference in Ethernet and IP address? Differentiate between Port and Socket with the help of example?**
3. **What is advantage of using mail GATEWAY? Do all hosts on the subnet have to be identified by same name server? Explain?**
4. **Write short note on:**
   a) **World Wide Web**
   b) **Future of IP**
5. **Differentiate between TCP\IP and OSI model?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Write a short note on CGI technology?**
2. **Explain various error detection techniques or algorithms?**
3. **What are limitations of using secret key encryption?**
4. **Why do you think IPv6 abounded fragmentation entirely? Explain?**
5. **Write a short note with help of diagram and example:**
   a) **LAN**
   b) **MAN**
   c) **WAN**

Programme: Master in Computer Application **Year: 3rd**

Course: Mathematics III **Code: MCA-305**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Explain Newton-Raphsons Method? Find the real positive root of 3x -cos x-1= 0 by Newton - Raphsons method correct to 6 decimal places?**
2. **Describe the following:**
   a) **Normalized floating point representation**
   b) **Mantissa and Exponent point**
3. **Solve the equation x^3- 9x + 1=0 by using false position method?**
4. **Apply Gauss Elimination method to solve following equations:**
   x+4y-z= - 5;
   x+y-6z= -12;
   3x-y-z= 4;
5. **Fit a liner law conecting X and Y to the following data:**

X:	**50**	**70**	**100**	**120**
Y:	**12**	**15**	**21**	**35**

   Hence compute Y when X is 150?

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Explain Runga-Kutta Method? Use Runga-kutta method to approximate y, when x = 0.1 and x = 0.2, given that x = 0, when y =1 and $\frac{dy}{dx}$ = x + y.**
2. **Using Bisection method, compute one root of e^x -3x = 0, correct to two decimal places, in the interval [1.5, 1.6]?**
3. **Use Lagrange's interpolation formula to find the value of y when x=10 from the following**

X:	**5**	**6**	**9**	**11**
Y:	**12**	**13**	**14**	**16**

4. **Using trapezoidal rule to evaluate $\int_0^1 x^3 dx$, considering five sub intervals?**
5. **Find the cubic polynomial which takes the following values:**

x:	**0**	**1**	**2**	**3**
f(x):	**1**	**2**	**1**	**10**

   Hence or otherwise evaluate f(4).

Programme: Master in Computer Application **Year: 3rd**

Course: Social implication of IT **Code: MCA-306**

Max Marks: 3*5=15

ASSIGNMENT (PART I)

1. **Explain social dimension of science and technology? Discuss its role and importance?**
2. **Write an essay over Social implication of information and communication technology?**
3. **Discuss the social and economic role of IT professionals?**

ASSIGNMENT (PART II)

Max Marks: 3*5=15

1. **Write down an essay on digital divide?**
2. **How do social and technical choices reshape access to people?**
3. **Write a short note on "role of ICT in inaccessible areas"?**

Programme: Master in Computer Application **Year: 4th**

Course: Computer Graphics & Multimedia **Code: MCA-401**

Max Marks: 3*5=15

ASSIGNMENT (PART- I)

1. **What is scan conversion? Differentiate between parallel and perspective projection. Derive the general transformation for parallel projection on to a given view plane, where the direction of projection :**
   d = ai + bj + ck is along the normal N = n_1i + n_2j + n_3k with the reference point $R_0(x_0 , y_0 , z_0)$
2. **What is basic concept point behind midpoint circle algorithms?**
3. **What do you mean by Window and view port? Differentiate between Raster Scan and Random Scan?**
4. **Write down the transformation matrix for shearing in 2 axis using parallel projection method?**
5. **Explain different types of animation? Mention some general purpose languages that support animations?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Describe the procedure for drawing Bezier curves? Define: view up vector and point clipping?**
2. **What is video conferencing? Discuss the challenges related to such facilities? Explain various applications area of multimedia?**
3. **What steps involved for scaling in three dimensional objects with example?**
4. **Draw a line from (5, 6) to (15, 12) on a raster screen using DDA algorithm?**
5. **Explain the following terms :**
   a) **Resolution (Screen)**
   b) **Aspect Ratio**
   c) **Refresh rate**

Programme: Master in Computer Application **Year: 4th**

Course: Artificial intelligence **Code: MCA-402**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Define artificial intelligence? Explain its various techniques?**
2. **Explain informed and uninformed search? What is hill climbing search? What are problems faced by hill climbing?**
3. **Write a short note on:**
   a) **Knowledge base system (KBS)**
   b) **Meta knowledge**
   c) **Mean-End Analysis**
4. **What do you mean by conceptual graphs? Represent the following sentence as a conceptual graph "cow has four legs and eats grass".**
5. **Explain any two of the following logic concepts, using suitable examples :**
   a) **Modus ponens**
   b) **Valid statement**
   c) **Unification principle in proposition logic**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Define constraint satisfaction problems (CSP)? How CSP is formulated as a search problem explain with example?**
2. **Describe following terms:**
   a) **Genetic algorithm**
   b) **Fuzzy system**
   c) **Conflict resolution**
3. **Transform the following into Disjunctive Normal Form (DNF) :**
   (P--> (~ (Q--->R)))
4. **How is inferencing used in deriving conclusions from the facts? Differentiate between forward chaining and backward chaining. On what factors does the decision to choose forward or backward chaining depend?**
5. **What do you mean by data, information and knowledge? Enumerate the Various Knowledge representation schemes. Give brief description of each scheme. Identify advantages of representation scheme over the other?**

Programme: Master in Computer Application **Year: 4th**

Course: Analysis & Design of computer Algorithm **Code: MCA-403**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **What are algorithms? `What are sequential and parallel algorithms?**
2. **Write binary search algorithm and analyze its time complexity is best and worst case Apply Binary search algorithm to find the number of comparisons made by the Algorithm to search a key value (Say Key = 32), in the following list:**
   5, 10, 15, 20, 25, 30, 32, 35.
3. **Find the complexity of any algorithm for the worst case, best case and average case? Apply the Quick sort algorithm to sort the given elements. 5, 8, 2, 7, 9, 15, 4 units its time complexity in worst case?**
4. **How divide and conquer technique can be applied to binary tree, explain it with help of example?**
5. **Explain the following problem:**
   a) **Knapsack problem**
   b) **Travelling salesman problem**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Define three most common asymptotic 3 notations and its meanings? What is dynamic programming; explain its significance with example?**
2. **Write a Recurrence Relation for the following Recursive function :**
   Fib (int n)
   if (n = = 0) return 0
   if (n = =1) return 1
   else
   return (Fib(n —1) + Fib(n —2))
3. **Find the time complexity of the following loop :**
   for (i=1; i<n; i+ +)
   i = i * 3
4. **What is Greedy technique? What type of problems can be solved by using Greedy Techniques? Write a greedy algorithm to generate shortest path?**
5. **Define 0 (Big-'oh') Notation? By using basic definition show that (3x2+ 4x + 1) = O (x^2)?**

Programme: Master in Computer Application **Year: 4th**

Course: Operating System II **Code: MCA-404**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Explain the structure of UNIX operating system and its components in brief? How an i-node scheme implemented by UNIX operating system?**
2. **Write short note on following:**
   a) **Contiguous allocation**
   b) **Linked list allocation for file system implementation?**
3. **Assume that a system consist of four resources of same type they are shared by three processes each of which needs almost two resources , show that the system is deadlock free? Discuss a deadlock avoidance algorithm with its pros and cons?**
4. **Explain about distributed operating systems? What is main difference between network operating system and distributed operating system?**
5. **Briefly describe the following disk scheduling algorithms :**
   a) **FCFS**
   b) **C-SCAN**
   c) **SSTF**

ASSIGNMENT (PART-1I)

Max Marks: 3*5=15

1. **What are two phases involved in two phase locking protocol? Explain with help of example?**
2. **What are four reasons for building distributed systems? Define mutual exclusion in distributed systems and give an example. Also write and explain the mutual exclusion algorithm in distributed systems.**
3. **With the help of diagrams, explain the concept of demand paging and demand segmentation? Differentiate between external and internal fragmentation?**
4. **Briefly describe the following CPU scheduling algorithms :**
   a) **FCFS**
   b) **RR**
   c) **Priority Based Scheduling**

   Explain the difference in the degree to which the above scheduling algorithms discriminate in favor of short processes?
5. **Write short note on**
   a) **Burst cycle**
   b) **Thrashing**
   c) **File handling system**

Programme: Master in Computer Application **Year: 4th**

Course: Computer Networks II **Code: MCA-405**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Why does UDP exist? Would it not have been enough to have the user processes send raw IP packets? Justify your answer?**
2. **Explain the concept behind Voice over IP? Does voice over IP have the same problems with firewall that streaming audio does? Discuss your answer?**
3. **What is switching? Explain and differentiate between circuit switching, packet switching and message switching ?**
4. **What is MAN? Explain briefly how it is different from LAN and WAN.**
5. **Explain various network attacks that can access your data? List various techniques used for network security?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Is TCP an improvement over UDP? Where is it used there, any other better option than TCP?**
2. **Explain when the routers and bridges are required in network with diagram? Explain two types of bridges.**
3. **What is future of IPv6, discuss in detail? Differentiate between IPv4 and IPv6?**
4. **Explain various modes of communication? Which mode: simplex, half duplex, or full duplex is used by the following and why?**
   a) **A TV broadcast**
   b) **Mobile SMS**
   c) **Teleconferencing**
   d) **Walkie-Talkie communication.**
5. **Explain various multimedia communication networks with there services in detail. Why most networks operate in a packet mode? Hence explain why services involving audio and video are supported?**

Programme: Master in Computer Application **Year: 4th**

Course: Management Information System **Code: MCA-406**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. Define Management information system with its various features. Also explain why MIS is used as a strategic need of management today? Why do managers plan? Explain?

2. Discuss system implementation and its various implementation strategies for implementing MIS.

3. Define following terms:

a) Effective Management and Efficient Management

b) Balance

4. Explain concept of Information and types of information? Explain type of information required at different level of management?

5. Explain the process of business decision making according to Simon's model?

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. List various types of feasibility that are tested in the process of new/revised system?

2. What are various development tools available at each stage of mgmt information system development process?

3. What are myths MIS?

4. What is system maintenance? What are the reasons for maintenance requirement?

5. What are the various tools available for implementation of MIS? List out the pro's and con's of traditional tool and automated tools?

Programme: Master in Computer Application **Year: 5th**

Course: Principal of Programming language **Code: MCA-501**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Discuss features of functional languages and application of functional languages with example?**
2. **What do you mean by object oriented language and discuss various design issues for object oriented language?**
3. **What do you mean by data types? What are the various data types used in languages? Discuss any two basic data type with there rules of implementation and operation performed?**
4. **Explain Chomsky hierarchy? Explain Finite automata with its different types?**
5. **Explain type checking and scope giving example with elementary data types?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Explain the concept of Manipulation of relation database using SQL?**
2. **What is Encapsulation? Discuss its various types?**
3. **Explain the term Context free grammar and push down automata? Explain the role of PDA in CFG with example?**
4. **What do you mean by term activation records? What is the need of activation record? Discuss various types of activation records?**
5. **Write a short note on:**
   a) **Data Abstraction**
   b) **Control Abstraction**
   c) **Procedural Abstraction**

Programme: Master in Computer Application **Year: 5th**

Course: Advance Architecture and Parallel Processing **Code: MCA-502**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Major difference between multiprocessor and multi computer? Differentiate between scalar & Vector processing?**
2. **Describe Flynn's classification of computers?**
3. **Explain message passing mechanism in details?**
4. **Explain requested and weak consistency model?**
5. **Discuss the different mapping techniques used in cache memories and their relative merit and demerits?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Explain conditions of parallelism? List the applications of parallel processing?**
2. **Explain PRAM and VLSI model in details?**
3. **Discuss in detail about type of storage devices?**
4. **Explain in details about back plan bus system?**
5. **Specify the compilers used in parallel models in details?**

Programme: Master in Computer Application **Year: 5th**

Course: Object Oriented Design Modeling **Code: MCA-503**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **What is object oriented methodology? What is an object, class methods?**
2. **Write down short on:**
   1. Dynamic modeling
   2. Functional modeling
3. **What do you mean by DFD? Explain its various symbols?**
4. **Explain the concept of system concurrency?**
5. **Describe the task management of data resources?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **Explain the concept of object oriented and procedure oriented approach?**
2. **Write a short note on :**
   a) Metadata
   b) Candidate Key
3. **What do you mean by Events and states? With the help of example explain the concept of event state diagram?**
4. **Explain the concept of inheritance and reusability?**
5. **Elaborate the concept of implementation of programming styles in object oriented design?**

Programme: Master in Computer Application **Year: 5th**

Course: System Simulation and Modeling **Code: MCA-504**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Explain the term system? Explain various types of system?**
2. **Differentiate between Verification and validation modeling procedures?**
3. **What do you mean by simulation process? Explain concept of simulation of a time sharing computer system?**
4. **Discuss the use of database in the area of modeling and simulation?**
5. **What are simulation languages? Explain any language in detail?**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **What are model? What do you mean by modeling process?**
2. **Differentiate between differential and partial differential equation model?**
3. **Discuss the use of AI techniques in the area of modeling and simulation?**
4. **Write a short note on: Combining discrete event.**
5. **Compare model data with real system data?**

Programme: Master in Computer Application **Year: 5th**

Course: Data Mining and Data Warehousing **Code: MCA-505**

Max Marks: 3*5=15

ASSIGNMENT (PART-I)

1. **Define the term data warehouse and data mining with diagram?**
2. **Explain when data mart is appropriate? List out the functionality of Meta data?**
3. **How data mining system can be integrated with data warehouse? Discuss with example?**
4. **Give categorization of major clustering method?**
5. **Write short note on:**
   a) **Data reduction**
   b) **Data Integration**

ASSIGNMENT (PART-II)

Max Marks: 3*5=15

1. **What are major issues related to data mining? What is DBA? Discuss role of DBA?**
2. **What are the types of data pre –processing techniques? Explain in details?**
3. **Explain association rule with mathematical notations?**
4. **Write a short note on Bayslan classification?**
5. **Briefly compare the following concept use an example to explain your points:**
   a) **Snowflake schema , Starnet Query model, fact constellation**
   b) **Data cleaning, Data Transformation, Data Refresh**