Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA 01**	Course Title: **Discrete Mathematics**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1.   What is the proposition? Explain different logical connectives used in propositions with the help for example
2.   Draw a Venn diagram to represent followings: (3)
    i)   (A ∩ BU C) ~A
    ii)   (A U B U C) ∩ (B ∩ C)
3. Explain the following types of relations with the help of suitable examples.

    a. Reflexive

    b. Anti symmetric

    c. Transitive
    d. Equivalence

Section - B
Short answer questions   Maximum marks: 12

   Note: Write the answer of four questions in 200 to 300 Words.

4. Express the Boolean expression $xyz' + y'z + xz'$ in a sum of product form.

5. Construct the logic circuit and obtain the logic table for the expression $x1$ v (x'2 A x'3)

6. How many numbers are there between 100   and 1000 such that 7 is in the unit's place ?

7. Verify that the proposition p v (P A Q) is a tautology.

8. How many permutations are there for the word ASSOCIATION ?

9.   Prove De Morgan's laws using truth table.

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA 02**	Course Title: **PROBLEM SOLVING AND PROGRAMMING through C**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What are different basic data types in C ? Explain the need of different numeric data types with example of each.

2. What is an array ? Write a C program using array to find largest and smallest number from a list of 100 given numbers

3. What is union ? How it is different from structure ? Explain. How a union is declared in C ? Also write a program in C to show use of union.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Explain the differences between static and auto variables, with example of each.

5. Differentiate between call by value and call by reference using example program.

6. Explain the syntax of do-while statement.Also differentiate do-while from while Statement

7. What is recursion?

8. What are the logical operators in C ?

9. Differentiate between call by value and call by reference using example program.

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA 03**	Course Title: **COMPUTER ORGANISATION &ASSEMBLY LANGUAGE PROGRAMMING**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Explain the following 8086 microprocessor instruction with the help of an example each.
    - (i)   DAA
    - (ii)   PUSH
    - (iii)   LDS
    - (iv)   STD
    - (v)   XCHG

2. Design and draw a 8 x 1 multiplexer using AND and OR gates and explain its working

3. Explain the DMA. How it has advantage over Interrupt driven and programmed I/O ?

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Explain any five characteristics of RISC Machine

5. What addressing modes are most suitable for handling arrays?

6. Write a program in 8086 assembly language that prints the alphabets from A to Z.

7. Explain the concept of virtual memory.

8. What are the functions of I/O Interface ?

9. What is an error correction code?

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA -E1**	Course Title: **Computer Architecture**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What are the different types of computer registers? Discuss their functions.

2. What is control unit? Explain its functions. Explain how micro Programmed control unit is different from hardwired control unit.

3. How transfer of information between CPU and I/O devices is carried out? Explain..

.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. What is meant by operation code?
   .
5. What are Computer registers? List various types of computer registers.

6. Define Register reference instruction.

7. What is instruction cycle?

8. List the different addressing modes.

9. What is Cache memory? Explain.

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA -E2**	Course Title: **Microprocessor and its Application**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Explain different parts of microprocessor in detail

2. Explain the timing of the instruction cycle of 8085 microprocessor, Discus with example the iterative branching instructions of 8085?

3. What he various flags available in 8085 microprocessor? What are general purpose registers? Name the various general purpose registers. Explain the pin diagram of 8085 microprocessor

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. How do you classify the memory in a computer system.

5. What is ROM? Explain its various types.

6. What are the rules for adding two binary numbers? Illustrate with an example.

7. Explain the timing of the instruction cycle of 8085 microprocessor,

8. Define machine language?

9. Define timing diagram.

Uttar Pradesh Rajarshi Tandon Open University

Course Code: **MCA 05**	Course Title: **OBJECT ORIENTED PROGRAMMING With C++**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Explain, with suitable examples, the advantage of object oriented language over structured programming language.

2. What is Inheritance ? Explain its advantages. Also explain with example how a subclass is derived from a super classin C++

3. What is constructor ? Explain constructor overloading in C++ with an example.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Differentiate between method overloading and method overriding with an example

5. What is Inheritance ?

6. Write a C++ program to find the length of a given string.

7. What is Friend function in C++ ?

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA -06**	Course Title: **Database Management System**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Draw and explain the detailed system architecture of DBMS. What are the advantages of DBMS?

2. Explain in detail about various key constraints used in database system. Explain the importance of Null values in Relational Model

3. Discuss the ACID properties of a database transaction with appropriate examples. Draw transaction state diagram and describe each state that a transaction goes through during its execution.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. What is DBA? Mention the functionalities of DBA

5. How are views created and dropped? Explain, how the views are implemented and updated

6. Discuss 3-tier architecture with necessary diagram and suggest an example application

7. Explain in detail about internal hashing Techniques.

8. Discuss in detail about cluster and Multilevel indexes.

9. State BCNF. How does it differ from 3NF?

Course Code: **MCA-07**	Course Title: Computer Fundamentals and Its Organization	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Convert the following Number System.

 a) $(534)8 = (?)16$

b) $(101011)2 = (?)8$

 c) $(624)8 = (?)2$

 d) $(11101)2 = (?)8$

e) $(3B1)16 = (?)2$

 f) $(AC2)16 = (?)8$

2. Draw a block diagram of a computer. Explain the function of each of the blocks. Explain input and output devices.

3. What are the various objectives and functions of Operating systems? . What are the major activities of an operating systems with regard to process management?

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4.What is Cache Memory? How it reduce the mismatch of processor and main memory speed?

5. Explain the magnetic Disk storage organization.

 6.Explain the storage organization of Compact Disk ROM.

7. What is difference between Magnetic disk & Magnetic Tape?

8.What is the difference between multitasking and multiprogramming operating system?

 9.What is input-output Device? Explain the role of input-output device in computer system.

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA -E3**	Course Title: **Data warehouse and data mining**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What are the different characteristics of a Data Warehouse?

2. Explain Hierachical Clustering methods.

3. Explain Classification Algorithms.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Explain the role of Meta data in a data warehouse.

5. Define multidimensional and multilevel association mining.

6. What do you mean by Web mining.?

7. What is Supervised learning?

8. Define Snowflake Schema

9. Discuss K-Means Clustering.

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA - E4**	Course Title: **SYSTEM ANALYSIS AND DESIGN**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Draw a Data Flow Diagram (DFD) **till** second level depicting various processes, data flow and data repositories for a"Library Management System". Follow the conventions.

2. Define a Structure Chart. Draw a Structure Chart for a Payroll Processing System. Also, explain the symbols used in the chart.

3. Define modularity. Describe the ways and means to achieve modularity. Explain with the help of an example.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Write the importance of quality in software development.

5. Define CASE tools. Explain their role
.
6. With the help of an example, explain a sequence diagram

7. Participatory Design

8. Test Design Document

9. Coupling

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA 09**	Course Title: **Software Engineering**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Write the IEEE definition of software engineering. Demonstrate your understanding of umbrella activities of a Software process. If you have to develop a word processing software product, what process model will you choose? Justify your answer and examine.

2. What do mean by software Testing? Differentiate verification and validation. Give an example.

3. What are SDLC in water fall model? .List two deficiencies in waterfall model. Which process model do you suggest to overcome each deficiency?

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. .List the characteristics of software contrasting it with characteristics of hardware.

5. Explain How do we create a process that can manage unpredictability?

6. . Identify the human factors considered for an agile software development
7. Is it possible to realize Win-Win spiral model for software. Analyse
8. Summarize the pros and cons of iterative software development model.
9. Define agile process .Give any two agile principles.

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA 10**	Course Title: **Data Communication and Computer Network**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Explain the OSI reference model with neat diagram.

2. Explain the various types of multiplexing

3. How does BGP resolve count to infinity problem?. Explain the operation of hierarchical routing though illustration

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

1. Discuss any two benefits of SSL.

2. What is spread spectrum? What are the two types of spread spectrum used in wireless data network? Elaborate.

3. What is silky windows syndrome?

4. Find the net id and host id of the following IP addresses.
   114 . 35 . 2 . 7
   133 . 57 . 6 . 8
   207 . 34 . 54 . 12

5. What is microwave transmission?

6. For n devices in a network, what is the number of cable links, number of full duplex channels for a mesh topology?

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA - 11**	Course Title: **JAVA PROGRAMMING**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What is JDBC ? Explain how JDBC connectivity is established ? Give an example of preparing and executing SQL statements using JDBC.

2. What is Java beans ? Explain its features. Also, illustrate the difference between a Java bean and an instance of a normal Java class.

3. What is Inheritance ? Explain its advantages. Also explain with example how a subclass is derived from a super class in Java.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. What is the use of class path ? How it helps in the execution of a java program ?

5. What is File class ? Explain its use with an example program

6. Explain advantage of exception

7. Explain two uses of "final" keyword with the help of example

8. Discuss servlet life cycle.

9. What is multithreading ? Explain how does it help Java in its performance ?

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA E5**	Course Title: **Mobile Computing**	Maximum Marks : 30

Section 'A'

Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Describe the GSM system architecture and explain each subsystem in detail.

2. Write short notes on MAC. Define the terms Hidden and Exposed terminal and Near and Far terminal.

3. Discuss in detail about DHCP. Discuss the various operating systems for mobile devices.

Section - B

Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Write note on CDMA.

5. What are the disadvantages of cellular system

6. What is COA?

7. Define and explain Localization?

8. Discuss about WAP architecture

9. Write notes on HLR and VLR.

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA E6**	Course Title: **Parallel Computing**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Explain with block diagram the difference between array processors and vector processors?

2. Write a short note on PRAM various models? What are parallel reduction algorithms? How they are used in PRAM architecture?

3. Discuss different parallel approaches including data parallelism and control nparallelism?

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Differentiate SIMD and MIMD architectures ?

5. Discuss simulation of parallel processors?

6. What are static and dynamic interconnections?

7. What are sorting networks?

8. What is loop scheduling?

9. What are advantages systolic array?

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA 13**	Course Title: **Theory of Computation**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Define regular language and regular expressions.
   a. Find regular expression for the Language of all string that do not end with 01.

2. .Find context free grammar generating following language {aibjck | i = j or i = k} 2. Show that CFG S a|Sa|bSS|SSb|SbS is ambiguous

3. Write short notes on the following:

   a. The Primitive Recursive Functions.

   b. The Sets P, NP, P Space and NP Space

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Write TM to accepting Palindrome

5. Discuss about Top Down Parsing And Bottom Up Parsing

6. Differentiate the NP Hard and NP Complete Problems

7. What is Halting Problem. ?

8. Discuss about Chomsky Normal Form(CNF).

9. Define Pumping Lemma for Regular Languages

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School of Science, Assignment Session 2021-22

Course Code: **MCA 14**	Course Title: **RDBMS**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What do you understand by Relational Database Management System? What is the procedure of computation done on Table Data? Explain the different operators used for this purpose

2. What do you understand by Data constraints in SQL? Explain its various types with the help of examples

3. Name the different keys that are used in RDBMS. Explain all with suitable example.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Define DML (Data Manipulation Language

5. What is Join? What are the different kinds of Joins used in PL/SQL?

6. Define Triggers. Explain the different types of Database Triggers

7. What is a foreign key?

8. What are the advantages of encrypting data stored in the database?

9. Name at least four pre defined exceptions.

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School of Science, Assignment Session 2021-22

Course Code: **MCA 15**	Course Title: **Operating system Concepts**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Define Operating Systems and discuss its role from different perspectives. List out different services of Operating Systems and explain each service

2. What is a process? Draw and explain process state diagram

3. What is paging and swapping? Explain the paging hardware?

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. What is demand paging? Explain

5. What are protection goals and principles

6. What do you mean by a address binding? Explain with the necessary steps, the binding Of instructions and data to memory addresses

7. Explain the resource allocation graph

8. Explain the methods for deadlock prevention

9. What are threads?

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA –E7**	Course Title: **Artificial Inteligence**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. What are the Problem Characteristics of Artificial Intelligence? Describe briefly the applications of AI. Explain the State Space with the use of Water Jug Problem.

2. Explain the Best-First-Search Procedure with example. Differentiate the DFS and BFS with merits and demerits

.

3. Explain the State Space with the use of 8 Puzzle Problem. What is Hill Climbing? Explain Simple Hill Climbing ?.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Explain the Non-monotonic reasoning.

5. Explain the Bayesian Networks.

6. Describe different Approaches To Knowledge Representation

7. Explain AO* algorithm.

8. Explain semantic net with example.

9. Explain Fuzzy Logic and its application

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School of Science, Assignment Session 2021-22

Course Code: **MCA –E8**	Course Title: **Embedded System**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Define Embedded system.List out the challenges in building in an embedded system.What are the functional requirements of embedded system?

2. Define the terms:

   a. DMA

   b. Watch Dog Timer
   c. Pipelining

   d. Software Timer

3. Develop the flowchart of build process for embedded system.How can an embedded system be illustrated?

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. List the characteristics of an embedded system.

5. List the components of Embedded system.

6. Summarize the difference between Microprocessor and Micro controller

7. Classify the types of processors in Embedded System

8. Distinguish between CISC and RISC

9. Compare embedded system and non embedded system with examples

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA 11**	Course Title: **unix shell programming**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1) Explain be architecture of UNIX operating system with a neat diagram.

2) Explain internal and external commands with example.

3) What are the different modes of vt editor ? Explain with a diagram

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4) Explain the three standard files with respect to UNIX operating system.

5) Explain the mechanism of process creation using system calls in UNIX

6) Explain grep command with all options.

7) Briefly explain the different ways of addressing used in sed with example.

8) What is AWK? Explain any three built-in functions in AWK.

9) Explain with an example 'while' and 'for' loop in shell programming

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA 18**	Course Title: **Numerical and statistical computing**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Find the inverse of the matrix. by Gauss elimination method.

2. Calculate the Arithmetic Mean and Median of the frequency distribution given below :
   Class Limits : 130-134, 135-139 ,140-144, 145-149
   Frequency   5,15 ,28, 24
   Class Limits : 150-154, 155-159, 160-164
   Frequency   17 ,10 ,1

3. Find the coefficient of correlation for the following:
   x: 21 22 23 24 25 26 27 28 29 30
   y: 40 39 39 35 34 34 34 31 28 25

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Form the regression equations:

   x: 60 40 70 50 60 80 50 90 40 60
   y: 3.0 2.5 6.0 4.5 5.0 4.5 2.0 5.5

5. What are three types of Regression?

6. Write down the formula for false position and Newton-Raphson methods.

7. Mention the formula for R.K. IInd order and Trapezoidal rule.

8. Define : Median and Mode.

9. What is coefficient of variation?

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA 19**	Course Title **Design and analysis of Algorithms**	Maximum Marks : 30

Section 'A'
Long answer questions　　　　　Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. What is meant by Divide – and – Conquer approach? Write Divide – And – Conquer recursive Merge sort algorithm and derive the time complexity of this algorithm. Write the General method of Divide – And – Conquer approach.

2. What is a Hamiltonian Cycle? Explain how to find Hamiltonian path and cycle using backtracking algorithm

3. Explain the properties of an algorithm with an example. Give the algorithm for matrix multiplication and find the time complexity of the algorithm using step – count method. Differentiate between Bigoh and omega notation with example

Section - B
Short answer questions　　　　　Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. State the Greedy Knapsack Problem.

5. Distinguish between Prim's and Kruskal's Spanning tree algorithm

6. Draw all possible binary search trees for the identifier set (do, if, stop).

7. Define Chromatic number & Give the state space tree for 4 – coloring problem.

8. Distinguish between Dynamic Programming and Greedy method.

9. What is a Backtracking and give the 4 – Queens's solution.

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA –E09**	Course Title **Computer Graphics**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Explain the following transformation with the matrix representations. Give suitable diagram for illustration.
   Translation
   Scaling.
   Rotation.

2. Define the following:
   Window
   Viewing transformation
   Point clipping

3. Write a short note on working of raster scan display system and random scan display system

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Explain working of Video controller.
5. Explain Shadow mask and beam penetration method.
6. Explain flat-panel display in detail.
7. Explain DDA line drawing algorithm with its drawbacks. .
8. Explain midpoint Circle algorithm.
9. Explain midpoint ellipse algorithm.

Uttar Pradesh Rajarshi Tandon Open University

Course Code: **MCA –E 10**	Course Title **Operation Research**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Explain the meaning of linear programming problem stating its uses and give its limitations. Write at least five application areas of linear programming.

2. Discuss the origin and development of OR. . How computer has helped in popularizing OR? What are the limitations of OR? Describe the various objectives of OR.

3. Why do some problems have multiple optimal feasible solutions? How such information is useful for decision making?

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Write short notes on phases of operation research.
5. Differentiate between PERT and CPM.
6. State Bellman's Principle of optimality.
7. Explain Transportation Problem.
8. Explain Economic interpretation of duality in LPP.

9. What is the role of decision making in OR. Explain its scope.

Uttar Pradesh Rajarshi Tandon Open University

Course Code: **MCA –22**	Course Title **Probability and Distribution**	Maximum Marks : 30

Section 'A'

Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. How random variables as a measurable function.? What do you mean by Field induced by a sequence of random variables?

2. State and prove the Helly -Bray theorem. Discuss the Different types of convergence of sequence of random variables distribution function of random vectors

3. What is Continuity theorem, ? Discuss the One dimensional central limit problem

Section - B

Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. What do you mean by Minkowski inequality?

5. What are the Sequences of distribution functions?

6. What is Lindeberg-Feller theorems?
7. Discuss the concept of Borel- Cantelli lemmas .

Uttar Pradesh Rajarshi Tandon Open University

Course Code: **MCA –23**	Course Title :**Web Technology**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

MCA 23- Web Technology

Section –A

1. What is HTML file and ASP file? List the advantages and limitation of HTML. State the benefits and drawback of ASP.

2. What is IIS? Explain different features of IIS.

3. Why HTTP is called state less protocol? Enlist various methods for state management and also give advantages and disadvantages of each method

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Explain Architecture of WWW in detail.

5. Write short note on the "Fundamental ASP Objects".

6. What is JavaScript? How to develop JavaScript? Explain with example

7. State the difference between JavaScript and Java.

8. Explain AJAX briefly

9. What is client side scripting? Explain with suitable example

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2021-22

Course Code: **MCA –24**	Course Title **: System Software**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Describe the analytical phases of compiler briefly

2. What is meant by macro calls within macro? Write about the different macro expansion

3. Write notes on:

    a) Linkage editors.

    b) Absolute loader

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. List out the functions of Parser

5. What is relocation?

6. What is an interpreter?

7. What is symbol table?

8. What is boot strap loader?

9. What is an interactive debugger?

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Course Code: **MCA –E 11**	Course Title :**Object oriented Analysis and Design**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. List out the components of Object-Oriented Analysis and Design. Draw the use case diagram for the process sale and specify actor, use case and scenario

2. With an example explain all the use case relationships.

3. Describe the strategies used to identify Conceptual Classes, Describe the steps to create a domain model used for representing conceptual classes.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Define Design Class Diagrams
5. What is the UML? What are the three ways and perspectives to Apply UML?
6. Define the Inception step?
7. What are Actors?
8. What is a scenario?
9. Define Use case.

Uttar Pradesh Rajarshi Tandon Open University

School of Science,   Assignment Session 2021-22

Course Code: **MCA –E 12**	Course Title **Information and Network Security**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. What is cryptanalysis? What is encryption and decryption? Draw block diagram that shows encryption and decryption.

2. Explain one time pad and why it is secure? Describe two types of cryptographic algorithms.

3. What is the difference between authentication, integrity, confidentiality and nonrepudiation? What are the issues in information security and network security? How they can be solved?

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Explain the types of attacks.

5. Describe various security approaches.

6. What is digital certification? How it can be achieved?

7. What are the security aspects attached to Electronic money.

8. Explain the need and types of firewall.

9. What is virtual private network?