Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KME-101T **Subject Name:- Fundamentals of Mechanical Engineering & Mechatronics**

YEAR:- 1st yr. (Sec- A) **Branch:- CSE**

1st SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:* 30]**

COURSE OUTCOMES

CO1	Apply of the concept of stress and strain, factor of safety, beams for safe design. (KL-3)
CO2	Understand the basic component and working of internal combustion engines, electric and hybrid vehicles, refrigerator and heat pump, air-conditioning, refrigeration for calculation of COP. (KL-2)
CO3	Understand fluid properties, conservation laws, hydraulic machinery used in real life. (KL-2)
CO4	Understand the working principle of different measuring instrument with the knowledge of accuracy, error and calibration, limit, fit, tolerance and control system and concepts of measurements in production systems (KL-2)
CO5	Understand concept of mechatronics with their advantages, scope and Industrial application, the different types of mechanical actuation system, the different types of hydraulic and pneumatic systems. (KL-2)

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Define Stress and Strain. (CO1)

(b) List and define different types of stress. (CO1)

(c) Write down difference between stress and pressure. (CO1)

(d) What do you understand by Poisson's Ratio? (CO1)

(e) For a component, design stress is given as 85 MPa. Estimate its ultimate load if factor of safety is given as 1.75. (CO1)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Derive relationship between modulus of rigidity and Young's Modulus of Elasticity. (CO1)

Q.3. A bar of 24 m diameter and 400 mm length is acted upon by an axial load of 38 kN. The elongation of bar and the change in diameter are measured as 0.165 mm and 0.0031 mm respectively. Determine : (i) Poisson's ratio (ii) values of three modulli. (CO1)

Q.4. A vertical circular copper bar 20 mm diameter and 3 m long carries a tensile load of 200 kN. Calculate elongation, decrease in diameter and volumetric strain. (CO1)

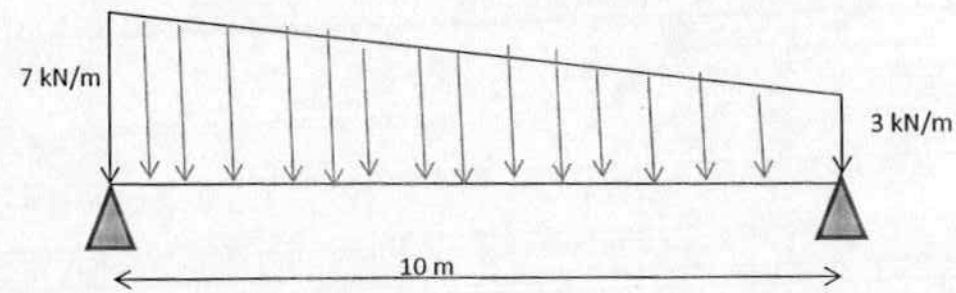
Q.5. Draw and explain stress-strain curve for Mild Steel. (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Is Poisson ratio dependent upon applied stress? Illustrate your answer. (CO1)

Q.7. Determine reaction forces for following loading: (CO1)



Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:KCS-101T **Subject Name:-** Programming for Problem Solving

YEAR:- 2020-21 **Branch:**-CSE

1st SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:*** **30]**

COURSE OUTCOMES

CO1	Develop simple algorithms for arithmetic and logical problems[KL-2]
CO2	Translate the algorithms to programs & execution (in C language).[KL-3]
CO3	Implement behavior of simple programs in imperative languages using concepts such as binding, scope, control structures, subprograms and parameter passing mechanisms.[KL-3]
CO4	Implement behavior of simple programs in imperative languages using concepts such as binding, scope, control structures, subprograms and parameter passing mechanisms.[KL-3]
CO5	Use arrays, pointers and structures to develop algorithms and programs. To use arrays, pointers and structures to develop algorithms and programs[KL-3].

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Distinguish between int main() and void main (CO1)

(b) What do you mean by Algorithm? (CO1)

(c) Explain Compiler and Interpreter. (CO1)

(d) Write a program in C to add two numbers. (CO1)

(e) List different symbols in flow chart. (CO1)

SECTION-B

NOTE: Attempt any three parts (3x5=15)

Q.2. Explain structure of C Program. (CO1)

Q.3. Write a short note on High Level Language and Low Level Language (CO1)

Q.4. Write a program in C to find the greatest number among three numbers using nested if-else. (CO1)

Q.5. Write a program in C to swap two numbers without use of third variable. (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Define data types in C. Discuss primitive data types in terms of memory size, format specifier and range. (CO1)

Q.7. Describe different functionality of operating system. (CO1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:KCS-101T **Subject Name:-** Programming for Problem Solving

YEAR:- 2020-21 **Branch:-**CSE

1st SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:*** **30]**

COURSE OUTCOMES

CO1	Develop simple algorithms for arithmetic and logical problems[KL-2]
CO2	Translate the algorithms to programs & execution (in C language).[KL-3]
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SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Distinguish between int main() and void main (CO1)

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SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Explain structure of C Program. (CO1)

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Q.4. Write a program in C to find the greatest number among three numbers using nested if-else. (CO1)

Q.5. Write a program in C to swap two numbers without use of third variable. (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Define data types in C. Discuss primitive data types in terms of memory size, format specifier and range. (CO1)

Q.7. Describe different functionality of operating system. (CO1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:KCS-101T **Subject Name:-** Programming for Problem Solving

YEAR:- 2020-21 **Branch:-**CSE

1st SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:*** **30]**

COURSE OUTCOMES

CO1	Develop simple algorithms for arithmetic and logical problems[KL-2]
CO2	Translate the algorithms to programs & execution (in C language).[KL-3]
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SECTION-A

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(a) Distinguish between int main() and void main (CO1)

(b) What do you mean by Algorithm? (CO1)

(c) Explain Compiler and Interpreter. (CO1)

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(e) List different symbols in flow chart. (CO1)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Explain structure of C Program. (CO1)

Q.3. Write a short note on High Level Language and Low Level Language (CO1)

Q.4. Write a program in C to find the greatest number among three numbers using nested if-else. (CO1)

Q.5. Write a program in C to swap two numbers without use of third variable. (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Define data types in C. Discuss primitive data types in terms of memory size, format specifier and range. (CO1)

Q.7. Describe different functionality of operating system. (CO1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:KCS-101T **Subject Name:-** Programming for Problem Solving

YEAR:- 2020-21 **Branch:-**CSE

1st SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:*** **30]**

COURSE OUTCOMES

CO1	Develop simple algorithms for arithmetic and logical problems[KL-2]
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(a) Distinguish between int main() and void main (CO1)

(b) What do you mean by Algorithm? (CO1)

(c) Explain Compiler and Interpreter. (CO1)

(d) Write a program in C to add two numbers. (CO1)

(e) List different symbols in flow chart. (CO1)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Explain structure of C Program. (CO1)

Q.3. Write a short note on High Level Language and Low Level Language (CO1)

Q.4. Write a program in C to find the greatest number among three numbers using nested if-else. (CO1)

Q.5. Write a program in C to swap two numbers without use of third variable. (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Define data types in C. Discuss primitive data types in terms of memory size, format specifier and range. (CO1)

Q.7. Describe different functionality of operating system. (CO1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:KCS-101T **Subject Name:-** Programming for Problem Solving

YEAR:- 2020-21 **Branch:-**CSE

1st SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:*** **30]**

COURSE OUTCOMES

CO1	Develop simple algorithms for arithmetic and logical problems[KL-2]
CO2	Translate the algorithms to programs & execution (in C language).[KL-3]
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SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Distinguish between int main() and void main (CO1)

(b) What do you mean by Algorithm? (CO1)

(c) Explain Compiler and Interpreter. (CO1)

(d) Write a program in C to add two numbers. (CO1)

(e) List different symbols in flow chart. (CO1)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Explain structure of C Program. (CO1)

Q.3. Write a short note on High Level Language and Low Level Language (CO1)

Q.4. Write a program in C to find the greatest number among three numbers using nested if-else. (CO1)

Q.5. Write a program in C to swap two numbers without use of third variable. (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Define data types in C. Discuss primitive data types in terms of memory size, format specifier and range. (CO1)

Q.7. Describe different functionality of operating system. (CO1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:KCS-101T **Subject Name:-** Programming for Problem Solving

YEAR:- 2020-21 **Branch:**-CSE

1st SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:* 30]**

COURSE OUTCOMES

CO1	Develop simple algorithms for arithmetic and logical problems[KL-2]
CO2	Translate the algorithms to programs & execution (in C language).[KL-3]
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CO5	Use arrays, pointers and structures to develop algorithms and programs. To use arrays, pointers and structures to develop algorithms and programs[KL-3].

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Distinguish between int main() and void main (CO1)

(b) What do you mean by Algorithm? (CO1)

(c) Explain Compiler and Interpreter. (CO1)

(d) Write a program in C to add two numbers. (CO1)

(e) List different symbols in flow chart. (CO1)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Explain structure of C Program. (CO1)

Q.3. Write a short note on High Level Language and Low Level Language (CO1)

Q.4. Write a program in C to find the greatest number among three numbers using nested if-else. (CO1)

Q.5. Write a program in C to swap two numbers without use of third variable. (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Define data types in C. Discuss primitive data types in terms of memory size, format specifier and range. (CO1)

Q.7. Describe different functionality of operating system. (CO1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KEC-101T **Subject Name:- EDEE**

YEAR:- Ist **Branch:- CSE**

1st SESSIONAL EXAMINATION (EVEN SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:*** **30]**

COURSE OUTCOMES

CO1	Understand the concept of PN Junction and devices.(KL-2)
CO2	Understand the concept of BJT, FET and MOFET.(KL-2)
CO3	Understand the concept of Operational amplifier.(KL-2)
CO4	Understand the working principle of different type of sensor and their uses. (KL-2)
CO5	Understand the concept of IoT system & Understand the component of IoT system.(KL-2)

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Draw and explain V-I Characteristic of p-n junction diode. (CO1)

(b) Draw block diagram of AC to DC converter. (CO1)

(c) Define following terms (a)Barrier potential (b)Leakage current (CO1)

(d) Why Si is used in electronic industry? (CO1)

(e) What is extrinsic semiconductor? (CO1)

SECTION-B

NOTE: Attempt any three parts **(3x5=15**

Q.2 Evaluate expression of DC current and AC current in case of half wave rectifier (CO1)

Q.3 Explain clipping circuit. (CO1)

Q.4 Explain working of forward biased diode. (CO1)

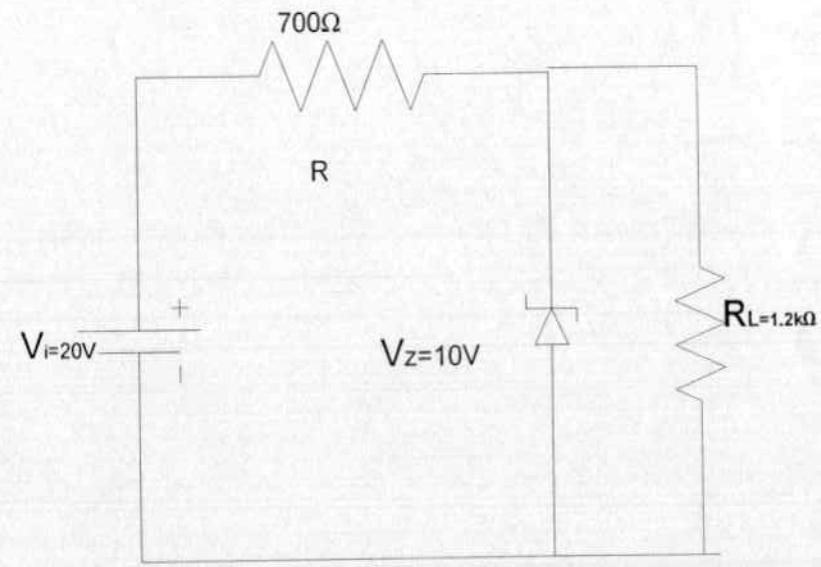
Q.5 Write short notes on zener diode and explain zener diode characteristic (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6 For the given Zener diode Network shown in figure below determine V_L, V_R, I_Z, I_R if $P_Z = 50$ mW (CO1)

Q.7 Explain the working of centre tap full wave rectifier. What is the value of peak inverse voltage? (CO1)



Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KEE-101T **Subject Name:-Electrical Engineering**

YEAR:- Ist **Branch:- CSE**

1st SESSIONAL EXAMINATION (EVEN SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:* 30]**

COURSE OUTCOMES

CO1	Apply the concepts of KVL/KCL and network theorems in solving DC circuits.(KL-3)
CO2	Understand the steady state behavior of single phase and three phase AC electrical circuits (KL-2)
CO3	Identify the application areas of a single phase two winding transformer as well as an auto transformer and calculate their efficiency. Also identify the Connections of a three phase transformer(KL-2)
CO4	Explain the working principles of induction motor, synchronous machine and employ them in different area of applications.(KL-2)
CO5	Describe the components of low voltage electrical installations and perform elementary calculation of energy calculations .(KL-2)

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Differentiate linear and nonlinear elements with examples . (CO1)

(b) State Superposition theorem. What is limitation of superposition theorem (CO1)

(c) Write the short notes of inductor . (CO1)

(d) What is unilateral and bilateral elements . (CO1)

(e) What is active and passive elements with example (CO1)

SECTION-B

NOTE: Attempt any three parts **(3x5=15**

Q.2 Determine current through 3Ω resistor by using fig.(1) (CO1)

Q.3 Find voltage V1 across 6Ω résistance in the following circuit using loop analysis Method figure (2). (CO1)

Q.4 Find current flow in to 2Ω resistor by using Thevenin's theorem in fig(3). (CO1)

Q.5 Write short notes about star delta transformation . (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6 Find current i_1 , i_2 and i_3 in given circuit of fig.(4) (CO1)

Q.7 Find current in to 2Ω resistor by using Norton 's theorem in fig(5). (CO1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KAS 103T **Subject Name:- Engineering Mathematics-I**

YEAR:- 1st Year **Branch:CS**

1st SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:* 30]**

COURSE OUTCOMES

CO1	Remember the concept of matrices and apply for solving linear simultaneous equations.
CO2	Understand the concept of limit, continuity and differentiability and apply in the study of Rolle's, Lagrange's and Cauchy mean value theorem and Leibnitz theorems.
CO3	Identify the application of partial differentiation and apply for evaluating maxima, minima, series and Jacobians.
CO4	Illustrate the working methods of multiple integral and apply for finding area, volume, center of mass and center of gravity
CO5	Remember the concept of vector and apply for directional derivatives, tangent and normal planes. Also evaluate line, surface and volume integrals.

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) State the working rule to find the inverse of matrix A by elementary row or column transformation. (CO1)

(b) Define Involuntary matrix with example. (CO1)

(c) Write down Cayley-Hamilton theorem. (CO1)

(d) Define Skew Hermitian Matrices. (CO1)

(e) Find the rank of matrix $\begin{bmatrix} 2 & 2 & 2 \\ 2 & 2 & 2 \\ 2 & 2 & 2 \end{bmatrix}$ (CO1)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Express $A^5 - A^4 + A^2 - 4I$ as linear polynomial in A where $= \begin{bmatrix} 3 & 1 \\ -2 & 2 \end{bmatrix}$. (CO1)

Q.3. Using elementary transformation find the rank of the following matrix $A = \begin{bmatrix} 2 & -1 & 3 \\ 1 & 2 & -3 \\ 1 & 0 & 1 \end{bmatrix}$. (CO1)

Q.4. Verify Cayley-Hamilton theorem for the matrices $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$. (CO1)

Q.5. Find the characteristic equation of matrix; $A = \begin{bmatrix} 2 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 2 \end{bmatrix}$ and hence find the matrix represented by $A^8 + 5A^7 + 7A^6 - 3A^6 + A^4 - 5A^3 + 8A^2 - 2A + I$, where I is identity matrix (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Reduce matrix $P = \begin{bmatrix} 1 & 2 & -2 \\ 1 & 2 & 1 \\ -1 & -1 & 0 \end{bmatrix}$ to diagonal form. (CO1)

Q.7. Investigate for what value of λ, μ the simultaneous equation ; $x + y + z = 6, x + 2y + 3z = 10, x + 2y + \lambda z = \mu$ have (i) no solution (ii) a unique solution (iii) an infinite number of solution. (CO1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KAS-101T **Subject Name : PHYSICS**

YEAR: FIRST **Branch : CSE-B**

1st SESSIONAL EXAMINATION (EVEN SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:* 30]**

COURSE OUTCOMES

CO1	To explain the relative difference between two bodies problems (KL-2)
CO2	To formulate and solve the engineering problem on electromagnetism (KL-3)
CO3	To explain the quantum mechanics study of particle. [KL-2]
CO4	Solve the phenomena of interference and diffraction of light. [KL-3]
CO5	To explain and classification of fibre optics and laser light. [KL-2]

SECTION-A

Q.1 **Attempt all parts.** **(2×5=10)**

a. Explain Einstein's postulates of special theory of relativity. (CO1)

b. Define time dilation and length contraction? (CO1)

c. Explain inertial and non-inertial frames. (CO1)

d. Write down the postulates of special theory of relativity. (CO1)

e. What are massless particles? (CO1)

SECTION-B

NOTE: Attempt any three parts. **(3x5=15)**

Q.2. Derive Lorentz transformation equations for space and time coordinates. (CO1)

Q.3. Prove that the relation $E^2 - p^2c^2 = m_0^2c^4$, Where the symbols have their usual meaning. (CO1)

Q.4. The mass of a moving electron is 11 times its rest mass. Calculate the kinetic energy & momentum. (CO1)

Q.5. Discuss the mass variation according to the theory of relativity. Derive an expression for the same. (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. What was the objective of Michelson-Morley experiment? Explain the results of this experiment. (CO1)

Q.7 Derive Einstein's mass energy relation $E=mc^2$ and discuss it. . (CO1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KNC 501 Subject Name:- *Constitution of India law &Engineering*

YEAR:- 3rd Branch:- Common

1st SESSIONAL EXAMINATION (EVEN SEMESTER 2020-21)

[Time: 2 *Hours]* *[Total Marks:* 50]

COURSE OUTCOMES

CO1	Identify and explore the basic features and modalities about Indian constitution
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level.
CO3	Differentiate different aspects of Indian Legal System and its related bodies
CO4	Discover and apply different laws and regulations related to engineering practices.
CO5	Correlate role of engineers with different organizations and governance models

SECTION-A

Q.1. Attempt all parts: (2×5=10)

(a) Define Directive Principle of State Policy. (CO1)

(b) Write a short note on the powers of President of India (CO2)

(c) Define Public Interest Litigation (PIL) (CO2)

(d) Define Tort (CO3)

(e) What do you mean by Common Law? (CO3)

SECTION-B

NOTE: Attempt any three parts (3x5=15)

Q.2. Compare the powers of Indian President with president of USA? (CO2)

Q.3. Briefly explain the fundamental rights provided to all of us through Constitution of India. (CO1)

Q.4. Define the procedure to appoint Judges in the Supreme Court. (CO2)

Q.5. What are the main features of Contract law? (CO3)

SECTION-C

NOTE: Attempt any one parts: (1x5=5)

Q.6. Why India is considered to be the vibrant democracy? (CO1)

Q.7. Are you agreeing with the statement that Arbitration is an alternative to resolve the disputes outside the court? (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code-KAS102T **Subject Name:- Engineering Chemistry**

YEAR:- B.Tech. Ist Year **Branch:- CSE**

1st SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:* 30]**

COURSE OUTCOMES

CO1	Discuss the concept of Atomic & Molecular Structures with examples. [KL-2]
CO2	Describe Spectroscopic Techniques and its applications. [KL-2]
CO3	Explain the concept of Electrochemistry, Corrosion and Phase Rule with numericals.[KL-3]
CO4	Demonstrate the technique of water softening and fuel analysis. [KL-3]
CO5	Discuss the concept & preparation of polymers and organometallic compounds. [KL-2]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Explain why F_2 is diamagnetic while O_2 is paramagnetic? (CO1)

(b) Calculate the bond order of CO^-. Also write its magnetic character. (CO1)

(c) How is bond order related to bond length? (CO1)

(d) Differentiate between BMO and AMO. (CO1)

(e) With the help of M.O.T. arrange the following in order of their increasing bond length. O_2, O_2^-, O_2^{2-}. (CO1)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Write down the electronic configuration, bond order and magnetic behavior of NO, NO^+ and NO^-. Draw molecular orbital diagrams also. (CO1)

Q.3. Discuss structure, preparation, properties and application of Fullerenes. (CO1)

Q.4. Describe the structure of Graphite. How it acts as conductor of electricity? (CO1)

Q.5. Describe what is meant by Liquid Crystal? Discuss in brief the classification and applications of liquid crystal. (CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. What is nanotechnology? Write a note on properties of nano materials mentioning their applications. (CO1)

Q.7. What are defects or imperfections? How many types of defects are there in solids? Explain in detail. (CO1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:-KCS-303 **Subject Name:- Discrete Structures & Theory of Logic**

YEAR:- 2nd Year **Branch:- CS**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Recall the basic concepts of set theory, relations, functions and execution of number theory.
CO2	Discuss the concept of Group theory, Ring and Fields with examples.
CO3	Recognize the concept of Poset , lattices and sketch it to Hass diagram.
CO4	Discuss propositions, algebra of propositions and predicates.
CO5	Describe and explain trees, graphs and generating functions with examples.

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Define: Countable set and Countabily infinite set with example. (CO1)

(b) Explain that: $(A \cap B)' = A' \cup B'$ (CO1)

(c) State Lagrang's theorm (CO2)

(d) Define multiset and cardinality of a set. (CO1)

(e) Define Ring with example (CO2)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. Explain that $3+33+333+\ldots\ldots+3333\ldots.3=(10^{n+1}-9n-10)/27$ (CO1)

Q.3. Consider the following relation on $\{1,2,3,4,5,6\}$ (CO1)

$R=\{(i,j):|i-j|=2\}$

Is 'R' transitive? Is 'R' is reflexive? Is 'R' is symmetric?

Q.4. Use mathematical induction to explain that for all positive integers n: 11^n-4^n is divisible by 7. (CO1)

Q.5. Explain that the multiplicative group $G=\{1,-1,i,-i\}$ is cyclic group. (CO2)

Q.6. Explain that if every element of a group G is its own inverse, then G is an abelian group. (CO2)

Q.7. State and explain the following with suitable example: (CO2)

(i) Cyclic Group (ii) Permutation Group (iii) Coset

iv) Field v) Ring with unity

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. Using mathematical induction explain that (CO1)

$1^2+3^2+5^2+\ldots\ldots\ldots\ldots+(2n-1)^2=(4n^3-n)/3$

Q.9. Show that the set of all permutation on $S=\{1,2,3\}$ forms a group w.r.t permutation multiplication. (CO2)

Q.10. Let R be the set of real no. and $f,g,h: R \to R$ such that (CO1)

$f(x)=x+2$, $g(x)=\frac{1}{x^2+1}$, $h(x)=3$. Compute

(i)$f^{-1}g(x)$; (ii) $hf(gf^{-1})(hf(x))$.

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KEC-503 Subject Name: Digital Signal Processing
YEAR-III[rd] Branch: ECE

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Implement and describe different types of realizations of digital systems (IIR and FIR) and their utilities.(KL-3)
CO2	Select design parameters of analog IIR digital filters (Butterworth and Chebyshev filters) and implement various methods such as impulse invariant transformation and bilinear transformation of conversion of analog to digital filters.(KL-3)
CO3	Implement FIR filter using various types of window functions.(KL-3)
CO4	Define the principle of discrete Fourier transform & its various properties and concept of circular and linear convolution. Also, students will be able to define and implement FFT i.e. a fast computation method of DFT.(KL-3)
CO5	Define the concept of decimation and interpolation. Also, they will be able to implement it in various practical applications.(KL-3)

SECTION-A

Q.1 **Attempt all parts:** **(5×2=10)**

(a) Define DSP and its applications (CO1.)

(b) Distinguish recursive realization and non recursive realization (CO2.)

(c) Discuss the properties of Chebyshev polynomials.(CO2.)

(d) Compare Hamming window with Kaiser Window.(CO3.)

(e) What is the principle of designing of FIR filter using windows?(CO3.)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2 Obtain linear phase realization of $H(Z)=1+\frac{Z^{-1}}{4}+\frac{Z^{-2}}{4}+Z^{-3}$.(CO1.)

Q.3. Obtain the parallel form realization for the following system. (CO1.)

$$y(n)=0.75y(n-1)-0.125y(n-2)+6x(n)+7x(n-1)+x(n-2)$$

Q.4 Implement the second order low pass digital filter of Butterworth type using BLT for the specifications given below. Analog transfer functions of filter. (CO2)

$H(s)=\frac{1}{s^2+\sqrt{2}s+1}$, cut off frequency =1 KHz, Sampling frequency =10 KHz

Q.5. Use bilinear transformation to convert low pass filter $H(s)=\frac{1}{s^2+\sqrt{2}s+1}$ into a high pass filter with pass band edge at 100 Hz and F_S=1 KHz (Sampling frequency). (CO2.)

Q.6 What is the principle of designing FIR filter using Windows? Also explain what is Gibbs phenomenon? (CO3.)

Q.7 Implement a linear phase FIR (low pass) filter of order seven with cut off frequency of $\frac{\pi}{4}$ rad / sec using Henning window. (CO3.)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8 Obtain the parallel form realization. (CO1.)

$$H(z)=\frac{(1+\frac{1}{2}z^{1})}{(1-z^{1}+\frac{1}{2}z^{-2})(1-z^{1}+\frac{1}{4}z^{-2})}$$

Q.9. Implement a Butterworth filter using impulse invariance method for the following specification. (CO2.)

$$0.8\le|H(e^{jw})|\le 1 \qquad \text{For } 0\le w\le 0.2\pi$$

$$\le|H|(e^{jw})\le 0.2 \qquad \text{For } 0.6\pi\le w\le\pi$$

Q.10 Implement a low pass FIR filter from the following specifications. Cut off frequency = 500 Hz, Sampling frequency = 2000 Hz, Order of filter N = 10, filter length, L = N+1 =11. Use Hamming window to get modified impulse responses. (CO3.)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:-KCS-303 **Subject Name:- Discrete Structures & Theory of Logic**

YEAR:- 2nd Year **Branch:- CS**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Recall the basic concepts of set theory, relations, functions and execution of number theory.
CO2	Discuss the concept of Group theory, Ring and Fields with examples.
CO3	Recognize the concept of Poset , lattices and sketch it to Hass diagram.
CO4	Discuss propositions, algebra of propositions and predicates.
CO5	Describe and explain trees, graphs and generating functions with examples.

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Define: Countable set and Countabily infinite set with example. (CO1)

(b) Explain that: $(A \cap B)' = A' \cup B'$ (CO1)

(c) State Lagrang's theorm (CO2)

(d) Define multiset and cardinality of a set. (CO1)

(e) Define Ring with example (CO2)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. Explain that $3+33+333+\ldots\ldots+3333\ldots.3=(10^{n+1}-9n-10)/27$ (CO1)

Q.3. Consider the following relation on $\{1,2,3,4,5,6\}$ (CO1)

$R=\{(i,j):|i-j|=2\}$

Is 'R' transitive? Is 'R' is reflexive? Is 'R' is symmetric?

Q.4. Use mathematical induction to explain that for all positive integers n: 11^n-4^n is divisible by 7. (CO1)

Q.5. Explain that the multiplicative group $G=\{1,-1,i,-i\}$ is cyclic group. (CO2)

Q.6. Explain that if every element of a group G is its own inverse, then G is an abelian group. (CO2)

Q.7. State and explain the following with suitable example: (CO2)

(i) Cyclic Group (ii) Permutation Group (iii) Coset

iv) Field v) Ring with unity

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. Using mathematical induction explain that (CO1)

$1^2+3^2+5^2+\ldots\ldots\ldots\ldots+(2n-1)^2=(4n^3-n)/3$

Q.9. Show that the set of all permutation on $S=\{1,2,3\}$ forms a group w.r.t permutation multiplication. (CO2)

Q.10. Let R be the set of real no. and $f,g,h: R \to R$ such that (CO1)

$f(x)=x+2$, $g(x)=\frac{1}{x^2+1}$, $h(x)=3$. Compute

(i)$f^{-1}g(x)$; (ii) $hf(gf^{-1})(hf(x))$.

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KEC 301 **Subject Name:- Electronic Devices**

YEAR:- 2nd Year **Branch:-** ECE

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:*50]**

COURSE OUTCOMES

CO1	***Understand*** the principles of semiconductor Physics. [KL2]
CO2	***Understand*** and utilize the mathematical models of semiconductor junctions. [KL2]
CO3	***Understand*** carrier transport in semiconductors and design resistors. [KL2]
CO4	***Apply*** the mathematical models of MOS transistors for circuits and systems. [KL3]
CO5	***Analyze*** and find application of special purpose diodes. [KL4]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Define wave function. (CO1)

(b) What is Drift current? (CO2)

(c) Define diffusion current. (CO2)

(d) Define direct recombination process. (CO3)

(e) Define contact potential. (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. What is the semiconductor and also its properties? (CO1)

Q.3. Discuss some application of uncertainty principle. (CO1)

Q.4. Discuss extrinsic semiconductor with energy band diagram. (CO2)

Q.5. What do you mean by intrinsic concentration of charge carrier? (CO2)

Q.6. Explain the mechanisms of recombination process. (CO3)

Q.7. Write a short note on Auger recombination. (CO3)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. Classify semiconductor on the basis of energy band gap with the help of suitable diagram. (CO1)

Q.9. Define the expression of resistivity. (CO2)

Q.10. Derive the expression for continuity equation and also write poisson equation. (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KME-503 **Subject Name:- Industrial Engineering**

YEAR:- III **Branch:-** ME

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:*** **50]**

COURSE OUTCOMES

CO1	Understand basics of automation. (KL2)
CO2	Understanding scope of automation in an industry (KL2)
CO3	Understanding basics of robotics and its motion parameters (KL2)
CO4	Understanding transmission systems in robotics(KL2)
CO5	Understanding methods of simulation in robotics. (KL2)

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Define Productivity. (CO1)

(b) What are the factors affecting facility location? (CO2)

(c) What do you understand by Project Crashing?. (CO2)

(d) Define EOQ. (CO3)

(e) Define Cycle time. (CO3)

SECTION-B

NOTE: Attempt any four parts (4x5=20)

Q.2. Describe cellular layout in detail. (CO1)

Q.3. Write down steps in process selection.. (CO1)

Q.4. Weekly demand of a motorcycle by a retailer are shown in Table 1. Find equation of regression line and estimate demand in 14th week (CO2)

Q.5. Differentiate between PERT & CPM. (CO2)

Q.6. A manufacturer deals exclusively with production of brake shoes. Currently, the company is trying to decide on an inventory and reorder policy for brake shoes. A brake shoe costs company Rs 75 each and demand is about is about 5000 brake shoes per year distributed fairly evenly throughout the year. Reordering costs are Rs 800 per order and carrying cost are figured at 20-% of cost of the item. The company is open 300 days a year (6 days a weeks in August). The lead time is 40 working days. Find EOQ, the reorder point, no. of orders per year and total variable costs. (CO3)

Q.7. Arrivals at phone booth are considered to be a Poisson with an average time of 10 minutes between one arrival and the next. The length of phone calls is assumed to be distributed exponentially with a mean of 3 minutes. Compute (CO3)

(i) Probability that a person has to wait at booth.

(ii) The telephone booth will install a seconf booth when convinced that an arrical would expect waiting for atleast 3 minutes for a phone call. By how much should the flow of arrivals increase in order to justify a second booth?

(iii) Find average length of queue

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KEC053 **Subject Name:** VLSI Technology

YEAR-III[rd] **Branch:** ECE

2[nd] SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:*** **50]**

COURSE OUTCOMES

CO1	Interpret the basics of crystal growth, wafer preparation and wafer cleaning.(KL-3)
CO2	Explain the process of Epitaxy and oxidation. (KL-3)
CO3	Differentiate the Lithography, etching and deposition process(KL-2)
CO4	Explain the process of diffusion and ion implantation. (KL-3)
CO5	Explain the basic process of diffusion and ion implantation.(KL-3)

SECTION-A

Q.1 Attempt all parts: **(5×2=10)**

(a) List the basic process for IC fabrication. (CO1.)

(b) Explain purpose of oxidation. (CO2.)

(c) What do you mean by SOI? (CO2.)

(d) What are widely used film deposition.(CO3.)

(e) Explain photo mask and photo resist. (CO3.)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2 Explain wet cleaning and dry cleaning. (CO1.)

Q.3. Explain Electronic Grade Silicon with neat diagram. Explain polishing process of silicon in detail (CO1.)

Q.4 Why oxidation is done. Explain the chemistry and kinetics of growth using Deal Groves Model. (CO2)

Q.5 Explain plasma oxidation technique for growth of oxide layer. Explain of SiO_2 layer in IC fabrication. (CO2.)

Q.6 How is silicon nitrite used? Explain its deposition variables. (CO3.)

Q.7 Explain lithography with neat schematic diagram. (CO3.)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8 Describe CZ processing detail with neat diagram. What is pull rate in CZ technique? How pull rate is controlled during CZ crystal growth process. (CO1.)

Q.9 Describe the silicon on insulator with neat diagram. Discuss about the epitaxial defects. (CO2.)

Q.10 Explain optical beam lithography. (CO3.)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS-056 **Subject Name:** Application of Soft Computing

YEAR: 3rd Year **Branch:** CSE/ 5TH Sem.

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21

[Time: 2 *Hours]* ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Understand the neural network architecture and various learning techniques [KL-2]
CO2	Discuss about back propagation networks architecture and various learning methods.[[KL-2]
CO3	Understand basic concepts of fuzzy logic. [KL-3]
CO4	Summarize membership function and rules. [KL-3]
CO5	Understand basics concepts and working principles of Genetic Algorithm. [KL-3]

SECTION-A

Q.1 Attempt all parts: **(2×5=10)**

a. Why use Neural Networks? (CO-1)

b. What is simple neuron? (CO-1)

c. .Construct a fully connected single layer recurrent network with 3 neurons. (CO2)

d. Differentiate single layer perceptron and multilayer perceptron method. (CO-2)

e. Explain crisp set operations. (CO-3)

SECTION-B

NOTE: Attempt any four parts: **(5x4=20)**

Q.2 Define an artificial neural networks. State the properties of the processing element of an artificial neural network? (CO-1)

Q.3 Write the algorithm for back propagation for back propagation training and explain about the updation of weight. (CO-2)

Q.4 Write a short notes on: (CO-2)

(i) Application areas of back propagation networks

(ii) Various operations used in fuzzy sets with example

Q.5 Define fuzzy sets. Explain why the law of contradiction and law of exclusive middle are violated in fuzzy set theory under the standard fuzzy sets operations. What is the significance of this: (CO-3)

Q.6 Define Classical set and fuzzy sets. State the importance of Fuzzy sets (CO-3)

Q.7 What is hetero-associative memory? Describe in context of neural networks. (CO-1)

SECTION-C

NOTE: Attempt any two parts: **(10x2=20)**

Q.8 Explain McCulloch-Pitts Neuron model and write disadvantages of it. (CO-2)

Q.9 Explains the following terms (i) Fuzzy arithmetic (ii) Fuzzy to crisp conversion (iii) Fuzzy relations. (CO-3)

Q.10 Describe briefly the architecture of Hopfield networks. (CO-1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KCE-055 **Subject Name:- Engineering Hydrology**

YEAR:-2020-2021 **Branch:- Civil Engineering**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:*** **50]**

COURSE OUTCOMES

CO1	Understand the basic concept of hydrological cycle and its various phases.
CO2	Understand the concept of runoff and apply the knowledge to construct the hydrograph.
CO3	Apply the various methods to assess the flood.
CO4	Assess the quality of various forms of water and their aquifer properties.
CO5	Understand the well hydraulics and apply ground water modeling techniques.

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) What do you understand by Precipitation? (CO1)

(b) Describe the Hydrologic Cycle. (CO1)

(c) Distinguish Between. Depression Storage & interception. (CO2)

(d) Explain the terms risk, reliability and safety factor. (CO3)

(e) Explain the Synthetic and instantaneous unit hydrographs. (CO2)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. What is meant by Probable Maximum Precipitation (PMP) over a basin? Explain how PMP is estimated. (CO1)

Q.3. Describe the different methods of recording of rainfall. (CO1)

Q.4. A bridge has an expected life of 25 years and is designed for a flood magnitude of return period 100 year(a) What is the risk of this hydrologic design?(b) If a 10% risk is acceptable, what return period will have to be adopted? (CO3)

Q.5. What is a unit hydrograph? List the assumptions involved in the unit hydrograph theory. (CO2)

Q.6. Distinguish between: Hydraulic & hydrologic method of flood routing. (CO3)

Q.7. List the factor affecting a flood hydrograph? Discuss the role of these factor. (CO2)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. Describe the various structural methods adopted for management of floods. (CO1)

Q.9. Analysis of annual flood series of a river yielded a sample mean of 1000m3/s & standard deviation of 500m3/s. Estimate the design flood of a structure on this river to provide 90% assurance that the structure will not failin the next 50 year. Use Gumbel's method. (CO3)

Q.10. The catchment area has six rain gauge stations having recorded rainfall as follows:- (CO3)

Station	A	B	C	D	E	F
Rainfall(cm)	82.6	102.9	180.3	110.3	98.8	136.7

For 10% permissible error, calculate the No. of station required.

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KCS-301 **Subject Name:- Data Structure Using C**

YEAR:- II **Branch:-** CSE

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:*** **50]**

COURSE OUTCOMES

CO1	Discuss algorithm and various data structures. [KL-2]
CO2	Implement linear data structure, [KL-3]
CO3	Implement various searching and sorting techniques. [KL-3]
CO4	Explain non linear data structure (Graph). [KL-2]
CO5	Explain tree concepts. [KL-2]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) How can you represent sparse matrix in memory? (CO1)

(b) Explain recursion with example. (CO2)

(c) Convert the following expression into postfix notation (CO2)
A + (B * C – (D / E ↑ F) * G) * H

(d) Explain collision resolution with example. (CO3)

(e) Which sorting method is best? Justify your answer. (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. What are the merits and demerits of array. Given two arrays of integers in ascending order, write a function to merge these array to form a third array sorted in ascending order. (CO1)

Q.3. In a doubly linked list, five nodes are created at location 100, 50, 65, 80 and 72 respectively. Insert a node at third place in the list, the location of newly created node is 41. (CO1)

Q.4. Write a program to implement Tower of Hanoi (CO2)

Q.5. Define queue. Write a function to insert an element in the queue. (CO2)

Q.6. How does Bubble Sort work? Explain. (CO3)

Q.7. How binary search is different from linear search? Apply binary search to find item 40 in the sorted array: 11, 22, 30, 33, 40, 44, 55, 60, 66, 77, 80, 88, 99. Also discuss the complexity of binary search. (CO3)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. Write a menu driven program to implement insertion, deletion and display operations in the linked list. (CO1)

Q.9. Write an algorithm to convert infix to postfix notation. Transform the following expression into postfix notation using stack. (CO2)
A + (B * C – (D / E ↑ F) * G) * H

Q.10. What is Hashing? Discuss various types of Hashing techniques. (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS-502 **Subject Name:** Compiler Design

YEAR: 3rd Year **Branch:** CSE/ 5TH Sem.

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21

[Time: 2 *Hours]* ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Define various phases of Compiler and its application. [KL-2]
CO2	Demonstrate basic Parsing Technique. [KL-3]
CO3	Determining Syntax-directed Translation Scheme[KL-3]
CO4	Implement data structure for symbol table.[KL-3]
CO5	Implement Code generation and optimization of basic blocks [KL-3]

SECTION-A

Q.1 Attempt all parts: **(2×5=10)**

a. What are various compiler construction tools? (CO-1)

b. Define following with functioning& Importance (i) Assembler (ii) Loader (CO-1)

c. What do you meant by CFG? (CO-1)

d. Draw syntax tree for following arithmetic expression a*(b+c)-d/2 (CO-2)

e. What is SDT? (CO-3)

SECTION-B

NOTE: Attempt any four parts **(5x4=20)**

Q.2 What do you mean by Parsing? Explain it& also discuss basic issues in it. (CO-2)

Q.3 Construct NFA for following Regular Expression.

(a+b)*ba*a (CO-1)

Q.4 .Discuss design of Lexical Analyzer & also explains its functioning. (CO-1)

Q.5 Construct the LALR parsing table for following Grammar:

S→AA, A ⟶ aA, A ⟶ b (CO-3)

Q.6 Write a short notes on (i) Left and Right Most derivations (CO-2)

(ii) YACC Parser Generator

Q.7 Remove left Recursion from following Grammar S→Aa I b, A→Ac, I Sd I e (CO-2)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8 Explain Translation scheme for Boolean Expression (CO-3)

Q.9 Consider one grammar S→ (L) I a , L→L, S I S

Find parse tree for following (i) (a, a) (ii) (a, (a, a)) (CO-1)

Q.10 Find FIRST & FOLLOW for following Grammar. S→A a A I B b B

A→bB, B→ε (CO-2)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KEC 501 **Subject Name:- IC**

YEAR:- 3rd year **Branch:- ECE**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Students will be able to gain in-depth knowledge of analog IC design and a complete analysis of 741 IC op -amp. (KL-2)
CO2	Students will acquire knowledge about op- amp based circuits and basic components of ICs such as various types of filters.(KL-3)
CO3	Students will learn about CMOS digital integrated circuits and digital memory circuits. (KL-3)
CO4	Students will be able to understand the concept of op-amp based non linear and wave shaping circuits. (KL-2)
CO5	Students will gain knowledge about the working principle of data converters along with application specific ICs such as 555 timer and PLL. (KL-2)

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) What is meant by the term matched transistors. (CO1)

(b) Define and give significance of Slew Rate. (CO2)

(c) Differentiate between input bias current and input offset current. (CO2)

(d) Define an Integrated circuit. (CO3)

(e) List out the ideal characteristics of OPAMP? (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. What are the different kinds of packages of IC741? (CO1)

Q.3. Why IC 741 is not used for high frequency applications? (CO1)

Q.4. Explain about DC characteristics of OP-AMP. (CO2)

Q.5. Give two application of analog multiplier. (CO2)

Q.6. Explain the working of monostable multivibrator? (CO3)

Q.7. How square wave can be obtained using this triangle wave. (CO3)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. Explain the working of precision full wave rectifier with circuit diagram. (CO1)

Q.9. Describe the circuit of KHN filter. (CO2)

Q.10. Draw & explain the circuit of triangular wave generator. (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:-KME501 **Subject Name:- HMT**

YEAR:- 3rd **Branch:- M.E**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Understand the fundamentals of heat and mass transfer. KL2
CO2	Apply the concept of forced and free convection. KL3
CO3	Apply the concept of heat exchange in the heat exchangers. KL3
CO4	Apply the concept of steady and transient heat conduction. KL3
CO5	Apply the concept of thermal behavior of fins. KL3

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) **Define thermal conductivity.** (CO1)

(b) **Recall coefficient of volume expansion.** (CO2)

(c) **Recall Reynold and Grashof Number.** (CO2)

(d) **Define pool boiling.** (CO3)

(e) **Recall the expression of LMTD for parallel flow heat exchanger.** (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. **A thin-walled copper tube of outside metal radius r=0.01 m carries steam at 400k. It is inside a room where the surrounding air temperature is 300k . The tube is insulated with magnesia insulation of an approximate thermal conductivity 0.07w/mk.**
What is the critical thickness of insulation for an external convective coefficient h=4.0 w/m^{2}k (CO1)

Q.3. **A hollow sphere is made up of two materials, first with k= 70w/mk having an I.D of 10 cm and O.D of 30 cm and the second with k= 15w/mk forms the outer layer with O.D of 40 cm . The inside and outside temperature are 300 °C and 30 °C respectively . Estimate the rate of heat flow through this sphere assuming perfect contact two materials.** (CO1)

Q.4. **A fluid flowing over a flat plate has the following properties : dynamic viscosity =25x10^-6 kg/ms , specific heat = 2.0 kj/kgk, thermal conductivity 0.05 w/mk . The hydrodynamic boundary layer thickness is measured to be 0.5 mm. The thickness of the thermal boundary layer would be.** (CO2)

Q.5. **A steam pipe 60 mm diameter and 3 m long has been placed horizontally and exposed to still air at 25 °C. if the pipe wall temperature is 295 °C .determine the rate of heat loss. At the mean temperature 160 °C, The thermophysical properties of air are:**
k = 3.64 x 10^-2 w/mk , v= 30.09 x 10^-6 m^2/s , Pr= 0.682.
use the co relation for Nusselt No. ,Nu = 053 (Gr.Pr)^0.25 (CO2)

Q.6. **Derive the relation of LMTD for counter flow heat exchanger.** (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCE501 **Subject Name:-** geotechnical engg

YEAR:- 3RD **Branch:-CIVIL**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Learn basics of origin & classification of soil. [KL-1]
CO2	Implement the concept of stress of soil . [KL-2]
CO3	Student can explain the concept of compaction. [KL-2]
CO4	Learning different types of shear stress. [KL-3]
CO5	Learning the concept of earth pressure. [KL-2]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Define void ratio, bulk unit weight and specific gravity. (CO1)

(b) Define coefficient of permeability. (CO2)

(c) What are the properties of a flow net. (CO2)

(d) Define consistency limits (CO3)

(e) Write methods to determine the water content. (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. Establish the following relationship : (CO1)

$n = \{e(1-S)\}/(1+e)$

where nu: Percentage air voids S : Degree of saturation e : Void ratio

Q.3. A soil sample of saturated soil has a water content of 35% and bulk unit weight of 25 KN/ m3. Determine dry density, void ratio and specific gravity of solid particles. What would be the bulk unit weight of the same soil at the same void ratio but at a degree of saturation 60% take yw=10 KN/m3. (CO1)

Q.4. Define index properties of soil. (CO2)

Q.5. Write short notes on: Field compaction control & Effects of compaction on soil properties. (CO2)

Q.6. Explain how upward flow of seepage water causes the effective stress. What is the role of the pore water pressure in the quick sand condition?. (CO3)

Q.7. Compare b/w compaction and consolidations. (CO3)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. How will you perform the Proctor's needle test in a site for controlling the degree of compaction (CO1)

Q.9. Explain field methods to determine permeability. (CO2)

Q.10. Give the assumptions of the Terzaghi's theory for calculating the rate of 1- consolidation and prove that (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- REC 702 **Subject Name:- VLSI Design**

YEAR:- 4th Year **Branch:- ECE**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Basic concept of Model behavior of a MOS Transistor. [KL-2]
CO2	Analyze design combinational and sequential circuits using CMOS gates. [KL-2]
CO3	Design combinational and sequential circuits using CMOS gates.[KL-3]
CO4	Analyze the properties of SRAM cell and memory arrays.[KL-2]
CO5	Description of Language concepts of modeling a digital system using Hardware Description Language.[KL-2]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) What is CMOS technology? (CO1)

(b) What are the advantages of CMOS technology? (CO2)

(c) What is Design rule? (CO2)

(d) Explain pass transistor logic. (CO3)

(e) Define the Power dissipation. (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. What are the steps involved in manufacturing of IC? (CO1)

Q.3. Define fabrication process. (CO1)

Q.4. What is stick diagram? (CO2)

Q.5. List the methods to reduce dynamic power dissipation. (CO2)

Q.6. Write the importance of low power in VLSI architectures. (CO3)

Q.7. Define delay time and discuss delay models. (CO3)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. Discuss the Hierarchy of various semiconductor technology with Moore's and VLSI design flow. (CO1)

Q.9. Explain the two kinds of design rules –micro rules and lambda rules. (CO2)

Q.10. Analyze the characteristics of CMOS inverter with neat sketch. (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- RCE 701 **Subject Name:- Design of Structures-III**

YEAR:- 4th year **Branch:- Civil Engineering**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:*** **50]**

COURSE OUTCOMES

CO1	Explain type of structures and method for their design. [KL-3]
CO2	Explain design of connections. [KL-3]
CO3	Explain design of tension members and gusset plate.[KL-3]
CO4	Explain design of compression members and base plate. [KL-3]
CO5	Explain design of beams and purlins. [KL-3]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Explain stress-strain curve for mild steel (CO1)

(b) Demonstrate various parameters for earthquake load. (CO2)

(c) Explain various rolled sections of steel. (CO2)

(d) Discuss the mode of failure of bolt . (CO3)

(e) Compare welded joint with bolted joints . (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. What is serviceability limit state? Explain why it is considered as important as failure limit state. (CO1)

Q.3. List various loads which are considered in design. (CO1)

Q.4. Two plates 10 mm X 60 mm are connected in a lap joint with 5 M 16 bolts of grade 4.6 and 410 grade plates. Calculate the strength of joint. Bolts are provided in a single line and edge and pitch distance are 30 mm and 40 mm respectively. (CO2)

Q.5. Discuss the advantages of fillet weld over butt weld . (CO2)

Q.6. A single unequal angle 100X75X6 mm connected to a 8 mm thick gusset plate at ends by 4 mm weld. The average length of weld is 225 mm. Determine the design tensile strength of angle section if the gusset is connected to 100 mm leg. The yield and ultimate strength of steel used are 250 MPa and 400 MPa. (CO3)

Q.7. Two plates 10 mm X 60 mm are connected in a lap joint with 5 M 16 bolts of grade 4.6 and 410 grade plates. Calculate the strength of joint. Bolts are provided in a single line and edge and pitch distance are 30 mm and 40 mm respectively. (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:-KCE503 **Subject Name:-** Quantityestimation& construction practice

YEAR:- 3RD **Branch:-CIVIL**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Explain the basics of measurement unit and prepare a detailed estimation of building. [KL-1]
CO2	Be familiar with the concept of contract, tender & estimate the labour & material cost. [KL-2]
CO3	Fundamental Concepts of management & its network. [KL-2]
CO4	Learning the management of equipment. [KL-3]
CO5	Learn the estimation of project management cost. [KL-2]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) What is centre line method? (CO1)

(b) What are the elements of tender preparation? (CO2)

(c) What is a contract? Write different types of contracts (CO2)

(d) Explain project cycle. (CO3)

(e) What is the use of a dummy in a network? (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. Write Short Notes on –Administrative Approval, Technical Sanction, Competent Authority (CO1)

Q.3. What is tender and what are the Elements of tender preparation. (CO1)

Q.4. What is a contract? Write different types of contracts. (CO2)

Q.5. Prepare a preliminary estimate of a double stored building having carpet area of 1800m^2.It may be assumed that 30% of the built up area will be taken by corridors, verandahs, etc and 10% of the area to be occupied by walls. Given, Plinth Area Rate Rs.1500/m^2.Extra of water supply and sanitary 5% of building cost, Electrical Installation 12.5% of building cost, Contingencies 10%. (CO2)

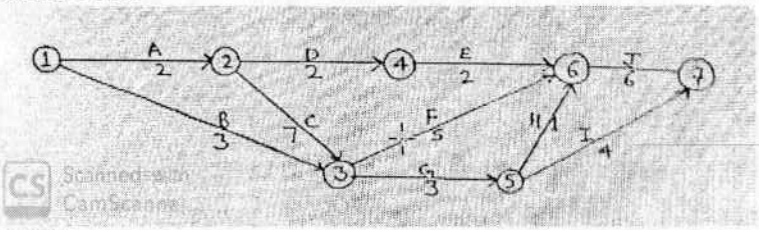
Q.6. What are the limitations of PERT network? (CO3)

Q.7. Write short notes on: Tender, Earnest money deposit and Commissioning of project (CO3)

SECTION-C

NOTE: Attempt any two parts: **(2*10=20)**

Q.8. Find the critical path ad project duration of the given CPM project. Also calculate EST, EFT, LST, LFT and all the floats in a tabular form



(CO3)

Ç Above plan represents the plan of superstructure wall of a single room building of 5 m x 4 m and section represent the cross section of the walls

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: - KCS-054 **Subject Name:- Object Oriented System Design**

YEAR: - III[rd] **Branch: - CSE**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Understand the application development and analyze the insights of object-oriented programming to implement application [KL-2]
CO2	Describe, analyze, and apply the role of overall modeling concepts (i.e. System, structural) [KL-3]
CO3	Discuss, analyze, and apply oops concepts (i.e. abstraction, inheritance) [KL-2]
CO4	Implement basic concepts of C++. [KL-3]
CO5	Discuss the object-oriented approach to implement real world problem. [KL-3]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Explain inheritance and its types. (CO1)

(b) How class diagram is different from object diagram. (CO2)

(c) Discuss concepts of Use Case diagram. (CO2)

(d) Define the term object oriented analysis. (CO3)

(e) List various advantages of UML. (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. List various UML diagrams and explain any one in detail. (CO1)

Q.3. What are different principles of modeling. (CO1)

Q.4. Explain architecture of UML. (CO2)

Q.5. Explain the use of Collaboration diagram using example. (CO2)

Q.6. Design use case diagram of reservation system. (CO3)

Q.7. How the object oriented concepts can be mapped into non object oriented languages? (CO3)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. Discuss all the concepts of Object Oriented paradigm in detail. (CO1)

Q.9. A manufacturing company produces products. The following product information is stored: product name, product ID and quantity on hand. These products are made up of many components. Each component can be supplied by one or more suppliers. Create an ER Diagram to show how you would track this information. (CO2)

Q.10. Explain three models of Object oriented system. Also explain how structured analysis is different from that of structured design using example. (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KME 058 **Subject Name: Fuels and combustion**

YEAR:-3rd **Branch:-M.E**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Understand the properties of different types of fuel with their application. KL2
CO2	Classify different types of fuels. KL2
CO3	Understand the concept of combustion. KL2
CO4	Classify various types of combustion appliances. KL3
CO5	Understand the fundamental concept of air pollution and its control. KL2

SECTION-A

Q.1. Attempt all parts: (2×5=10)

(a) **Define fuels** (CO1)

(b) **Define cracking of petroleum.** (CO2)

(c) **Define Wobbe Index.** (CO2)

(d) **Define enthalpy of formation.** (CO3)

(e) **What is chemical equilibrium** (CO3)

SECTION-B

NOTE: Attempt any four parts (4x5=20)

Q.2. **What is calorific value and how it is obtained using Bomb calorimeter.** (CO1)

Q.3. **Define carbonization of coal ,how it is done?** (CO1)

Q.4. **Write about the origin of coal.** (CO2)

Q.5. **Classify the crude petroleum.** (CO2)

Q.6. **Define theoretical air and equivalence ratio.** (CO3)

Q.7. **What are the parameters responsible for flame stability.** (CO3)

SECTION-C

NOTE: Attempt any two parts: (2x10=20)

Q.8. **What is proximate and ultimate analysis.** (CO1)

Q.9. **Write about produce gas, water gas, coal gasification.** (CO2)

Q.10. **Define limits of inflammability and burning velocity of fuels.** (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- RME-701 **Subject Name:- CAD/CAM**

YEAR:- IV **Branch:-** ME

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours]* ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Understanding basics of Computer Graphics. [KL-2]
CO2	Understanding basics of FEA. [KL-2]
CO3	Implementing Automation in manufacturing process and understanding basics of CAM. [KL-3]
CO4	Understanding basics of Robotics. [KL-2]
CO5	Understanding advancements in manufacturing systems. [KL-2]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Define pixel (CO1)

(b) What do you understand by Resolution? . (CO2)

(c) Give examples of FEA software (CO2)

(d) Define Robotics. (CO3)

(e) What do you understand by CAM?. (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. What are different steps of a design process?. (CO1)

Q.3. Explain DDA (CO1)

Q.4. Write down steps explaining Bresenham's line algorithm (CO2)

Q.5. Explain midpoint circle algorithm. (CO2)

Q.6. Write down blending function for Bezier Curve. (CO3)

Q.7. What do you understand by IGES ? (CO3)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. Points A(1,1), B(3,1), C(4,2) and D(2,3) defines a 2D polygon. Develop a transformation matrix that (CO1)

i) Reflects through the line x=0

ii) Translates by -2 units along both coordinate axis

Rotates about z axis by 120^0.

Q.9. What do you understand by single and mixed mode assembly lines? (CO2)

Q.10. What are steps for FEM? (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- REC 071 **Subject Name:- Information theory & coding**

YEAR:- 4th year **Branch:- ECE**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Model the Entropy, Joint Entropy and Conditional Entropy, Relative Entropy and Mutual Information, Relationship Between Entropy and Mutual Information. (KL-1)
CO2	Design Data Compression, Examples of Codes, Kraft Inequality, Optimal Codes, Bounds on the Optimal Code Length.(KL-2)
CO3	Identify the Examples of Channel Capacity, Symmetric Channels, Properties of Channel Capacity, Preview of the Channel Coding Theorem (KL-2)
CO4	Analyse Introduction to block codes, Single-parity-check codes, Product codes, Repetition codes, Hamming codes.(KL-4)
CO5	Design Generator matrices for convolutional codes, Generator polynomials for convolutional codes.(KL-3)

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) What is Entropy? (CO1)

(b) What is coding efficiency? (CO2)

(c) State the AEP theorem. (CO2)

(d) Explain noiseless binary channel. (CO3)

(e) Write the properties of channel capacity? (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. What are the properties of Entropy? (CO1)

Q.3. What is the joint Entropy and conditional Entropy? (CO1)

Q.4. State and prove kraft inequality. (CO2)

Q.5. Discuss bounds on optimal code length. (CO2)

Q.6. Explain the channel capacity of a continuous memoryless channel. (CO3)

Q.7. State channel coding theory. (CO3)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. State Jensen inequality. Mention its Consequences. (CO1)

Q.9. State and prove source coding theorem. (CO2)

Q.10. Write down shanon's encoding algorithm. (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- RCE-074 **Subject Name:- River Engineering**

YEAR:- 2020-2021 **Branch:-** Civil Engineering

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Explain river morphology and its classification.
CO2	Explain hydraulic geometry and behavior of river.
CO3	Explain socio-cultural influences and ethics of stream restorations.
CO4	Analyze flow and sediment transport in rivers and channels.
CO5	Design guide band, embankments and flood protection systems.

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Explain the term Sediment transport. (CO1)

(b) Define Non-Himalayan Indian Rivers? (CO1)

(c) What are cut-offs? (CO2)

(d) What is flood plain? (CO3)

(e) Explain Himalayan Indian Rivers? (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. Write short notes on: Cut off River and Cut off Ratio and draw the fig. (CO2)

Q.3. Explain Meandering of a river and its causes. (CO1)

Q.4. Explain Aggrading and Degrading Rivers? (CO2)

Q.5. Discuss ethics of stream restoration. (CO2)

Q.6. Discuss braiding pattern of a river. (CO3)

Q.7. What do you understand by river morphology? (CO1)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. What is stream restoration? Explain stream restoration techniques. (CO3)

Q.9. Differentiate between the following? (CO1)

a) Flashy River.

b) And Virgin River.

Q.10. Classify rivers in flood plain and explain in short. (CO2)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- RCS 702 **Subject Name:- Artificial Intelligence**

YEAR:- IV **Branch:- CSE**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2020-21)

[Time: 2 *Hours*] ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	Describe different models of AI system and its various application in industries. [KL-2]
CO2	Demonstrate various AI searching algorithm for real life problems [KL-3]
CO3	Implement knowledge representation schemes for predicates used in knowledge based system.[KL-3]
CO4	Solve real world problems using supervised learning algorithms.[KL-3]
CO5	Execute algorithms for feature extraction in pattern recognition.[KL-3]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Define the term Artificial Intelligence. (CO1)

(b) What is Informed Search. (CO2)

(c) Why Searching is required in AI techniques? (CO2)

(d) How reasoning is performed by AI agent. (CO3)

(e) Define Prepositional Logic. (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. What are Intelligent Agents. Explain its types. (CO1)

Q.3. Explain NLP in detail. (CO1)

Q.4. How searching techniques are implemented in gaming? Explain. (CO2)

Q.5. What are various Local search algorithms? Explain. (CO2)

Q.6. Explain Bayesian Networks. (CO3)

Q.7. What is difference between forward and backward chaining? (CO3)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. Explain various applications of AI detail. (CO1)

Q.9. Explain 8 queen problem using example. (CO2)

Q.10. How Knowledge is represented by AI systems. Explain in detail. (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS201T **Sub. Name:** Programming for Problem Solving (PPS)

Year: B.tech 1st **Branch:** DS\AI \ CSE(B)

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	To develop simple algorithms for arithmetic and logical problems.
CO2	To translate the algorithms to programs & execution (in C language)
CO3	To implement conditional branching, iteration and recursion
CO4	To decompose a problem into functions and synthesize a complete program using divide and conquer approach.
CO5	To use arrays, pointers and structures to develop algorithms and programs.

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Describe the functionalities of operating system	CO1
b.	What are header file? Why are they important?	CO1
c.	Differentiate between type implicit type & Explicit type conversion.	CO2
d.	What do you understand by mixed operands? Explain with example.	CO2
e.	Differentiate between while and do-while loop.	CO3
f.	Show the usage of break statement.	CO3
g.	Write an algorithm to find second largest element in array.	CO4
h.	Difference between structure and union.	CO4
i.	Define preprocessor and its usage in programming.	CO5
j.	Explain the significance of End of File (EOF).	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	Draw block diagram of computer and explain each of its components in brief.	CO1
b.	Differentiate between type conversion and typecasting. Write a program to input a floating-point number and find leftmost digit of integral part of a number.	CO2
c.	Write a program to find the sum of series using function 1!+2!+3!+4!+.....n terms.	CO3
d.	Write the advantage of using array. Write the program for matrix multiplication of two matrix element	CO4
e.	Explain file handling and write a program for copying the content of one file to another file.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Differentiate between: (i) compiler and interpreter (ii) linker and loader (iii) break and continue.	CO1
b.	(i) Define data type in C. Discuss primitive data types in terms of memory size, format specifier and rang. (ii) Explain structure of C program.	CO1

4. Attempt any one **10x1=10**

a.	What are different conditional statement in C programming? Example with proper example of each	CO2
b.	Explain Logical, Unary and Bitwise operators in detail.	CO2

5. Attempt any one **10x1=10**

a.	Define recursion. Write a program to find sum of Fibonacci series using recursion.	CO3
b.	Write a program to find the entered number is Palindrome number or not.	CO3

6. Attempt any one **10x1=10**

a.	Explainthe Selection sort with example.	CO4
b.	What is searching? Write a program to implement linear search.	CO4

7. Attempt any one **10x1=10**

a.	Define dynamic memory allocation .Differentiate between malloc() and calloc() with proper example.	CO5
b.	Explain different file opening file opening modes. Write a program to read content of any file and display the number of lines and words in that file.	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KNC-402 **Sub. Name:** **PYTHON PROGRAMMING**

Year: 2 **Branch:** CSE /AI/DS

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	To read and write simple Python programs. (K1, K2)
CO2	To develop Python programs with conditionals and loops.(K2, K4)
CO3	To define Python functions and to use Python data structures — lists, tuples, dictionaries(K3)
CO4	To do input/output with files in Python. (K2)
CO5	To do searching, sorting and merging in Python (K2, K4)

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Define ADT interface.	CO1
b.	Differentiate Fruitful functions and void functions.	CO1
c.	Explain the Nested-if statement with the help of example	CO2
d.	In some languages, every statement ends with a semi-colon (;). What happens if you put a semi-colon at the end of a Python statement?	CO2
e.	How is Python an interpreted language?	CO3
f.	Define recursion. Also, give example.	CO3
g.	Differentiate between recursion and iteration.	CO4
h.	Explain the import statement with the help of example.	CO4
i.	What do you mean by the term strings?	CO5
j.	Write a short note on Boolean expression.	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	What is Python? How Python is interpreted? What are the tools that help to find bugs or perform static analysis.	CO1
b.	Explain different types of operators defines in python.	CO2
c.	Explain all the Conditional statement in Python using small code example.	CO3
d.	Write a Python program to sum all the items in a list	CO4
e.	What is List () function? Explain various function used on lists.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	What is conditional statement in python? .	CO1
b.	Explain the term indexing in Python.	CO1

4. Attempt any one **10x1=10**

a.	Discuss all the conditional statement in Python using small code example.	CO2
b.	Define the following terms Nested loops, Break, Continue.	CO2

5. Attempt any one **10x1=10**

a.	What do you meant by Inheritance & Explain types of Inheritance.	CO3
b.	Explain in details Python data structure.	CO3

6. Attempt any one **10x1=10**

a.	Explain abstract data types & ADT Interface in Python Programming in details.	CO4
b.	Explain the special methods in details.	CO4

7. Attempt any one **10x1=10**

a.	Write a program to perform a selection sort.	CO5
b.	Write a program to perform binary search.	CO5

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KNC-401 **Sub. Name:** CSS

Year: 2ND YEAR **Branch:** DS

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats
CO2	To discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats
CO3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.
CO4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios
CO5	To articulate the well known cyber attack incidents, explain the attack scenarios, and explain mitigation techniques.

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Explain control hijacking with example.	CO1
b.	What is Buffer Overflow.	CO1
c.	Explain Confinement Principle.	CO2
d.	Explain Covert Channels.	CO2
e.	Explain Security Interface.	CO3
f.	Explain threat modeling.	CO3
g.	Explain names of distribution of public keys.	CO4
h.	What is public key cryptography.	CO4
i.	What is Security Issue?	CO5
j.	What is Data Breach?	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	Explain Error 404 Hacking Digital India part 1 chase.	CO1
b.	Explain rootkits with its types.	CO2
c.	Explain working of CSRF.	CO3
d.	Explain working of IP Security.	CO4
e.	Explain basic security problem of Internet Infrastructure.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Explain Attack types with its Phases.	CO1
b.	Explain Computer security with its types and with CIA triad.	CO1

4. Attempt any one **10x1=10**

a.	Explain software fault isolation.	CO2
b.	Explain intrusion detection system.	CO2

5. Attempt any one **10x1=10**

a.	Explain Browser Isolation with its types.	CO3
b.	Explain cross site scripting(XSS) with its working and types.	CO3

6. Attempt any one **10x1=10**

a.	Explain working of TLS.	CO4
b.	Explain cryptography Hash function.	CO4

7. Attempt any one **10x1=10**

a.	Explain Routing security with its working with diagram.	CO5
b.	Explain Packet filtering with its types.	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KEC-201 **Subject Name : EDEE**

YEAR- 1st Year **Branch:** CSE(A)

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Understand the concept of PN Junction and devices.(KL-2)
CO2	Understand the concept of BJT, FET and MOFET.(KL-2)
CO3	Understand the concept of Operational amplifier.(KL-2)
CO4	Understand the working principle of different type of sensor and their uses.(KL-2)
CO5	Understand the concept of IoT system & Understand the component of IoT system.(KL-2)

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Differentiate between P-type and N-type Semiconductors.	CO1
b.	Why Silicon is mostly proffered as a Semiconductor material.	CO1
c.	Explain how a transistor is used as an electronic switch.	CO2
d.	Define: a) Current gain(α) b) Current gain(β).	CO2
e.	What is op-amp?	CO3
f.	Define CMRR and Slew Rate.	CO3
g.	What are universal gates? Draw OR gate using NAND gate.	CO4
h.	Given the two binary numbers X = 11010 and Y = 1101, perform the subtraction X-Y using 2's complement.	CO4
i.	Discover the need modulation in communication systems?	CO5
j.	Write the advantages and disadvantages of Satellite Communication.	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	Derive the relation between ∝ and β for BJT.	CO1
b.	Explain Zener Diode as a Voltage Regulator.	CO2
c.	Draw CB configuration of transistor. Sketch and explain family of CB input and output characteristics for npn transistor.	CO3
d.	In a full wave rectifier the load resistance is 2 K Ω, rf = 400 Ω. Voltage applied to each diode is 240Sinωt. Find (i) Peak value of current i.e. Im (ii) DC value of current i.e Idc (iii) RMS value of current i.e. Irms(iv) Efficiency (v) Ripple Factor.	CO4
e.	Write the properties of an Ideal Operational Amplifier and also draw its equivalent circuit.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Describe working of n-channel JFET with help of constructional diagram and draw its drain characteristics.	CO1
b.	Obtain a minimum Boolean expression for F(A,B,C,D) = πM (1,2,3,8,9,10,11,14).d(7,15) .	CO1

4. Attempt any one **10x1=10**

a.	Derive an expression for voltage gain of inverting and non-inverting ideal operational amplifier configurations.	CO2
b.	Explain the construction, working and characteristics of MOSFET.	CO2

5. Attempt any one **10x1=10**

a.	Describe the working of voltage multiplier circuit.	CO3
b.	Draw the circuit and discuss the working of full wave bridge rectifier with suitable input -output waveforms.	CO3

6. Attempt any one **10x1=10**

a.	Define amplitude Modulation. Mention the use of Envelope Detector.	CO4
b.	Define: Integrated Circuit and briefly explain SSI, MSI, LSI and VLSI.	CO4

7. Attempt any one **10x1=10**

a.	Explain about the GSM system and the CDMA system.	CO5
b.	Obtain a minimum Boolean expression for F(A,B,C,D) = Σ m(0,1,2,3,4,7,8,9,10,11,12,14). and implement it using logic gates.	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:-KEE201T **Subject Name:- Electrical Engineering**

YEAR:- I/II Sem. **Branch:-CSE(B),AI & DS**

PUT Exam (EVEN SEMESTER 2021-22)

[Time: 3 *Hours*] ***[Total Marks: 100]***

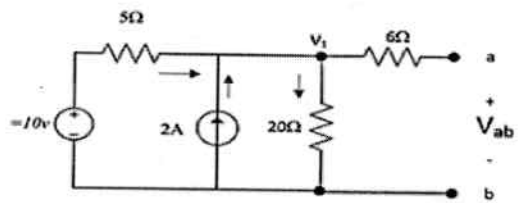
COURSE OUTCOMES

CO1	Apply the concepts of KVL/KCL and network theorems in solving DC circuits.. [KL-3]
CO2	Analyze the steady state behavior of single phase and three phase AC electrical circuits.[KL-4]
CO3	Identify the application areas of a single phase two winding transformer as well as an auto transformer and calculate their efficiency. Also identify the connections of a three phase transformer.[KL-3]
CO4	Illustrate the working principles of induction motor, synchronous machine as well as DC machine and employ them in different area of applications.[KL-3]
CO5	Describe the components of low voltage electrical installations and perform elementary calculations for energy consumption..[KL-2]

SECTION-A

Q.1	**Attempt all parts:**	**(2×10=20)**
a.	Explain the bilateral network and unilateral network.	(CO1)
b.	The three resistance 5 ohms connected to the star circuit. Find the equivalent delta circuit.	(CO1)
c.	Give the relation of quality factor in terms of bandwidth and resonance frequency.	(CO2)
d.	A series circuit has R=10 ohms L= 0.05H C=10μF. Calculate Q-factor of the circuit.	(CO2
e.	What is the condition of maximum efficiency of transformer?	(CO3)
f.	Draw the no load phasor diagram of a transformer.	(CO3)
g.	What is the application of DC series and DC shunt motor?	(CO4)
h.	A 3-phase slip- ring 4-pole induction motor has a rotor frequency of 2Hz while connected to 400V, 3-phase, 50Hz supply. Determine rotor speed.	(CO4)
i.	Full form of MCB, MCCB and SFU	(CO5)
j.	Define battery backup.	(CO5)

SECTION-B

Note: Attempt any three parts:			**(10x3=30)**
Q.2.	**a.**	Find the Thevenin's theorem parameter for given circuit. 	(CO1)
	b.	A coil having a R=6 ohms and L= 0.0255H is connected across a 230V, 50Hz ac supply. Calculate current, power factor, active power, apparent power and reactive power.	(CO2)
	c.	Derive the EMF equation of transformer. And also derive the condition for maximum efficiency in single phase transformer.	(CO3)
	d.	A 4 pole 250V dc series motor has a wave connected armature with 200 conductors. The flux per pole is 25 mwb when motor is drawing 60A from the supply. Armature resistances are 0.15ohms while series field winding resistances is 0.2 ohms. Calculate the speed under this condition.	(CO4)
	e.	What is the Earthing. Explain the requirement of earthing for electrical equipments. And also explain the different type of earthing.	(CO5)

SECTION-C

Note: Attempt any one parts:			**(10x1=10)**
Q.3.	**a.**	Find the current I in 10 ohms resistances by	(CO1)

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS-402 **Sub. Name:** TAFL

Year: 2 Year **Branch:** CSE,AI,DS

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Analyse and design finite automata, pushdown automata, Turing machines, formal languages, and grammars.
CO2	Analyse and design, Turing machines, formal languages, and grammars.
CO3	Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and complexity through problem solving.
CO4	Prove the basic results of the Theory of Computation.
CO5	State and explain the relevance of the Church-Turing thesis.

SECTION-A

1. Attempt all parts: 2×10=20

a.	**Write the name of Fundamental Computational Models.**	CO1
b.	**Construct a DFA for the language that contains the string ending with 0.**	CO1
c.	**What is Pigeonhole principle.**	CO2
d.	**What are transition diagram/transition graphs?**	CO2
e.	**What is context free grammar (CFG)?**	CO3
f.	**What is the difference between CNF and GNF?**	CO3
g.	**What is the difference between DPDA and NPDA?**	CO4
h.	**What is DCFL?**	CO4
i.	**What is Universal Turing Machine?**	CO5
j.	**What is Church Thesis?**	CO5

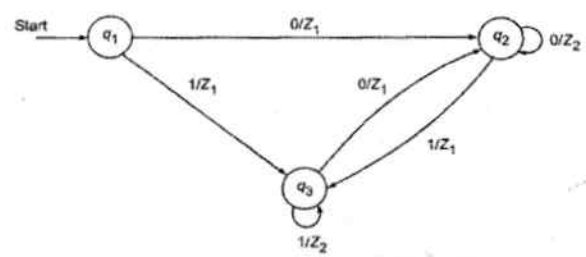
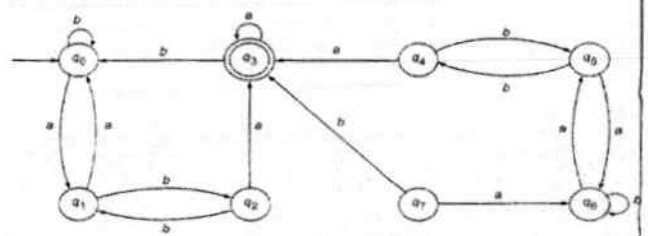
SECTION-B

2. Attempt any three parts: 10x3=30

a.	**Define dead state, inaccessible state, equivalent state in case of finite automata.**	CO1
b.	**State and prove Arden's theorem with its application.**	CO2
c.	**Discuss closure properties of CFL.**	CO3
d.	**What is Push Down Automata ? Explain with diagram.**	CO4
e.	**Write a short note on multihead Turing machines.**	CO5

SECTION-C

3. Attempt any one 10x1=10

a.	**Consider a Mealy machine represented by fig. Construct a Moore machine equivalent to this mealy machine** 	CO1
b.	**Construct a minimum state automaton equivalent to a DFA whose transition diagram is given by** 	CO1

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KMC-202 **Sub. Name:** Emerging Technology For Engineering

Year: 1st Year(2nd Sem) **Branch:** CSE (A)

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Understand the concepts of internet of things, smart cities and industrial internet of things
CO2	Understand the concepts of cloud computing
CO3	Understand the concepts of block chain, cryptocurrencies, smart contracts
CO4	Understand design principles, tools, trends in 3 D printing and drones
CO5	Understand augmented reality (AR), virtual reality (VR), 5G technology, brain computer interface and human brain

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Define Industrial internet of things.	CO1
b.	What is sensor?	CO1
c.	What is cloud computing?	CO2
d.	Define distributed computing.	CO2
e.	What is smart contract?	CO3
f.	Give two applications of Blockchain.	CO3
g.	What do you mean by additive manufacturing?	CO4
h.	Write down two use cases of 3D printing.	CO4
i.	Define Augmented Reality.	CO5
j.	What do you mean by Virtual Reality?	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	Discuss the advantages of smart city over the traditional city.	CO1
b.	Define AWS. Write down the use cases of AWS.	CO2
c.	Explain the benefits and uses of smart contract.	CO3
d.	Explain any five engineering disciplines.	CO4
e.	Discuss brain computer interface. Write down its applications.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Discuss the layers of IoT in detail.	CO1
b.	What do you mean by sensor? Explain the types of sensor in detail.	CO1

4. Attempt any one **10x1=10**

a.	Explain the cloud computing services provided by Microsoft in brief.	CO2
b.	Explain the architecture of cloud computing. Also list out the benefits of cloud computing.	CO2

5. Attempt any one **10x1=10**

a.	What is Bitcoin? How the Bitcoin is different from other traditional currency.	CO3
b.	Discuss the principles and features of Blockchain technology.	CO3

6. Attempt any one **10x1=10**

a.	What are the regulations and procedures for becoming a drone pilot?	CO4
b.	Define 3D printing. Explain its design principles in detail.	CO4

7. Attempt any one **10x1=10**

a.	Compare between 4G and 5G. How 5G will boost virtual reality?	CO5
b.	Compare between augmented reality and virtual reality with their examples in detail.	CO5

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS 403 Sub. Name: MP

Year: 2nd Branch: CSE, AI, DS

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Apply a basic concept of digital fundamentals to Microprocessor based personal computer system. [KL-2]
CO2	Analyze a detailed s/w & h/w structure of the Microprocessor. [KL-2]
CO3	Illustrate how the different peripherals (8085/8086) are interfaced with Microprocessor.[KL-2]
CO4	Analyze the properties of Microprocessors(8085/8086).[KL-2]
CO5	Evaluate the data transfer information through serial & parallel ports.[KL-2]

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Explain the control and status signal of 8085.	CO1
b.	Explain the evolution of microprocessors in brief?	CO1
c.	Draw the basic block diagram of microprocessors.	CO2
d.	How 8086 is superior to 8085?	CO2
e.	What do you understand by logical address and physical address?	CO3
f.	How does BIU generate 20 bit address to access external Memory?	CO3
g.	Explain XCHG, XTHL, SHLD and SPHL instructions.	CO4
h.	What do you mean by pipelined architecture?	CO4
i.	Evaluate the data transfer information through serial & parallel ports.	CO5
j.	Explain how interrupts are prioritized.	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	Draw the architecture of 8085 and mention its various functional blocks.	CO1
b.	What is addressing mode? Explain the types of the addressing modes of 8085.	CO2
c.	Draw flag register of 8086 microprocessor showing the Status of each flag at its proper position.	CO3
d.	Write a 8085 ALP to convert an 8 bit binary number into equivalent ASCII code.	CO4
e.	Explain PPI (8255) with its block diagrams. Also explain its operating modes.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	How instruction cycle, machine cycle, and clock cycle are related? Explain them with proper sketches.	CO1
b.	Explain the requirement of peripheral devices with the Microprocessor.	CO1

4. Attempt any one **10x1=10**

a.	Differentiate between hardware and software interrupts? What is priority Interrupt? Differentiate between vectored & no-vectored Interrupt.	CO2
b.	Explain different call and jump instruction used in 8085.	CO2

5. Attempt any one **10x1=10**

a.	Draw internal architecture of 8086 and explain each component.	CO3
b.	Draw the pin diagram and functional block diagram of 8254.	CO3

6. Attempt any one **10x1=10**

a.	Write a program for addition of two 8-bit numbers stored in memory locations FC00 and FC01 (using 8085 microprocessor). Write a program to convert a packed BCD to binary equivalent.	CO4
b.	Write an ALP (Assembly Language Program) for arranging a string of data in ascending order.	CO4

7. Attempt any one **10x1=10**

a.	Explain briefly DMA mode of data transfer. Why is handshaking required between a CPU and I/O device? Describe briefly.	CO5
b.	Draw the block diagram of 8251 USART and explain each block. Also draw its interfacing with 8086.	CO5

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KMC-201 **Sub. Name:** Artificial Intelligence For Engineers

Year: 1st Year (2nd Sem) **Branch:** CSE/AI/DS

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Understand the evolution and various approaches of AI
CO2	Understand data storage, processing, visualization, and its use in regression, clustering etc
CO3	Understand natural language processing and chatbots
CO4	Understand the concepts of neural networks
CO5	Understand the concepts of face, object, speech recognition and robots

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Discuss about ethical approach.	CO1
b.	What is Blockchain?	CO1
c.	Define data visualization.	CO2
d.	Differentiate between data and information.	CO2
e.	What is NLP?	CO3
f.	List any two applications of Speech recognition.	CO3
g.	Define neuron.	CO4
h.	What do you mean by recurrent neural network (RNN)?	CO4
i.	Define computer vision.	CO5
j.	Write down two applications of object recognition.	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	What should all engineers know about AI?	CO1
b.	Define data storage. Why is it important and how can data be stored?	CO2
c.	Explain the natural language understanding and natural language generation.	CO3
d.	Explain generative adversarial networks with its models.	CO4
e.	Write a short note on Intelligent Robots. Give the applications of Robots.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Discuss the future and Evolution of AI in detail.	CO1
b.	Discuss various approaches of AI in detail.	CO1

4. Attempt any one **10x1=10**

a.	Discuss the stages of data processing in detail.	CO2
b.	Explain classification with examples. How is clustering different from classification?	CO2

5. Attempt any one **10x1=10**

a.	What is Machine translation? How is it helpful for differently abled persons?	CO3
b.	Explain the difference between chatbots and virtual assistants with real life examples.	CO3

6. Attempt any one **10x1=10**

a.	What is neural network? Explain its advantages and disadvantages.	CO4
b.	Compare between the machine learning and deep learning in detail. Explain the various applications of object recognition.	CO4

7. Attempt any one **10x1=10**

a.	What do you mean by Object recognition? Explain the various applications of object recognition.	CO5
b.	Discuss various applications of AI in real world.	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS-401 **Sub. Name:** OPERATING SYSTEM

Year: 2ND **Branch:** CSE/AI/DS

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Understand the structure and functions of OS
CO2	Learn about Processes, Threads and Scheduling algorithms
CO3	Understand the principles of concurrency and Deadlocks
CO4	Learn various memory management scheme
CO5	Study I/O management and File systems

SECTION-A

1. Attempt all parts: **2×10=20**

a.	What is an Operating System?	CO1
b.	Define System Call	CO1
c.	Define the different states of a process with diagram?	CO2
d.	Define Process Control Block?	CO2
e.	What are the necessary conditions of Deadlock?	CO3
f.	Explain any one difference between SJF and SRTF.	CO3
g.	How many types of Page Replacement Algorithm	CO4
h.	Define Demand Paging	CO4
i.	How many types of I/O devices?	CO5
j.	Explain Spooling	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	What are the functions of an operating system?	CO1
b.	Explain the dinning philosopher problem with code	CO2
c.	What are the principles of deadlock?	CO3
d.	What are the differences between Paging and Segmentation?	CO4
e.	Explain RAID.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	What are the types of Operating System?	CO1
b.	What is Kernel? What are the types of Kernel?	CO1

4. Attempt any one **10x1=10**

a.	What is Semaphore? What are the types of Semaphore? Explain Critical Section.	CO2
b.	Write a short note on a) Race Condition b) Barbershop Problem.	CO2

5. Attempt any one **10x1=10**

a.	List various performance criteria for scheduling algorithm. Five processes A,B,C,D,E require CPU Burst of 3,5,2,5 and 5 units respectively.Thier arrival times in the system are 0,1,3,9,12 respectively. Draw Gantt Chart and compute the average TAT and AWT of these process for the shortest job first (SJF) and SRTF(Shortest Remaining Time First) scheduling algorithms	CO3
b.	Discuss the performance criteria of scheduling algorithm **OR** Explain Round Robin Scheduling with examples.	CO3

6. Attempt any one **10x1=10**

a.	Write a short note on a) Fragmentation b) Multiprogramming with variable partitioning c) Multiprogramming with fixed Partitioning	CO4
b.	Consider the following page reference string 1 2 3 4 1 2 5 1 2 3 4 5 for a memory with frames .How many page fault would occur for following page replacement algorithm a)FIFO b) LRU(Least Recently Used c) Optimal Page Replacement Algorithm.	CO4

7. Attempt any one **10x1=10**

a.	Discuss the Disk Scheduling Algorithm.	CO5
b.	Write a short note on a) RAID b) I/0 Buffering	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KAS-202T **Sub. Name: Engg. Chemistry**

Year: B.Tech. 1st Year **Branch: CSE (A)**

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Demonstrate the technique of water softening and fuel analysis. [KL-3]
CO2	Discuss the concept & preparation of polymers and organo metallic compounds. [KL-2]
CO3	Discuss the concept of Atomic & Molecular Structures with examples[KL-3]
CO4	Explain the concept of Electrochemistry, Corrosion and Phase Rule with numerical. [KL-2]
CO5	Describe Spectroscopic Techniques and its applications. [KL-2]

SECTION-A

1. Attempt all parts: **2×10=20**

a.	A water sample contains 408 mg of $CaSO_4$ per litre. Calculate the hardness in terms of $CaCO_3$ equivalents.	CO1
b.	What do you mean by temporary hardness? Give suitable example	CO1
c.	What is tacticty polymer?	CO2
d.	What do you mean by Polymer Blends?	CO2
e.	Compare and arrange the following in increase order of stability: N_2, N_2^+, N_2^-, and N_2^{-2}	CO3
f.	Give the approaches used for the preparation of Nanomaterials.	CO3
g.	Predict the number of phases in saturated NaCl solution.	CO4
h.	What do you mean by Standard Electrode potential?	CO4
i.	Define microwave Spectroscopy?	CO5
j.	Explain the significance of Finger print region in IR Spectroscopy	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	A sample of ground water has 150mg/L of Ca^{+2} and 60mg/L of Mg^{+2} Find the total hardness in mg/L in terms of $CaCO_3$ equivalent.	CO1
b.	What are Organ metallic compounds? Explain their synthetic method of preparation and applications.	CO2
c.	What is point defect? How many types of defects are there in solids?	CO3
d.	State and explain Phase Rule. Discuss the salient features of phase diagram of water system	CO4
e.	Explain the basic principle of UV-spectroscopy and various types of electronic transitions.?	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	What are ion exchangers? With the help of neat sketch, discuss ion-exchange process of water softening.	CO1
b.	A sample of coal contains 93% C, 6% H and 1% ash. When this coal was tasted for its calorific value in the Bomb calorimeter, The following results were obtained: Weight of the coal burnt = 0.92gm, Water equivalent of calorimeter = 550gm, Water taken in calorimeter = 2000gm, Rise in temperature = 2.42 ^{0}C, Acid correction=50.0 Cal. Fuse wire correction= 10Cal. Calculate the GCVand NCV of fuel sample.	CO1

4. Attempt any one part **10x1=10**

a.	Give the preparation, properties and applications of following polymers: NBR, NYLON-6, NYLON-6, 6 , Terylene	CO2
b.	Describe what are conducting polymers? How many types of conducting polymers? Give their applications	CO2

5. Attempt any one **10x1=10**

a.	Write down the electronic configuration, bond order and magnetic behavior of O_2, O_2^+ and O_2^-. Draw molecular orbital energy level diagram.	CO3
b.	What is liquid crystal? Difference between Nemetic liquid crystal and Semitic liquid crystal. Write their application.	CO3

6. Attempt any one **10x1=10**

a.	Describe the electrochemical theory of corrosion. How can be prevented by sacrificial and impressed cathodic protection.	CO4
b.	Describe principle and working of Galvanic cell.	CO4

7. Attempt any one **10x1=10**

a.	State the principle of Raman-Spectroscopy. Describe their applications	CO5
b.	Write short notes: (1) Applications of IR Spectroscopy (2) Molecular vibrations	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KAS-201T **Subject Name : Engg Physics**

YEAR- I **Branch : CSE/AI/DS**

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:* 100]**

COURSE OUTCOMES

CO1	To explain the relative difference between two bodies problems (KL-2)
CO2	To formulate and solve the engineering problem on electromagnetism (KL-3)
CO3	To solve quantum mechanics study of a particles. (KL-3)
CO4	To understand and demonstrate the study of wave optics (KL-3)
CO5	To use the concept of laser light solve the wave optics and fibres problems (KL-3)

SECTION-A

Q.1 Attempt ALL parts: **(2×10=20)**

a	What are inertial and non-inertial frames?	**CO1**
b	Explain Einstein's postulates of special theory of relativity.	**CO1**
c	What do you mean by depth of penetration?	**CO2**
d	What is displacement current?	**CO2**
e	State Wien's law of radiation.	**CO3**
f	Write the de-Broglie concept of matter waves	**CO3**
g	Why Newton's rings are circular?	**CO4**
h	What do you understand by dispersive power of grating?	**CO4**
i	Define the meta stable state.	**CO5**
j	Describe the applications of optical fibre?	**CO5**

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	Derive Einstein's mass energy relation $E=mc^2$ and discuss it.	**CO1**
b.	Derive an expression for electric and magnetic field vector using Maxwell equation for electromagnetic waves in free space.	**CO2**
c.	What do you mean by Compton effect. Derive an expression for direction and energy of recoil electron.	**CO3**
d.	Discuss the phenomena of Fraunhofer diffraction at a single slit and show that the relative intensities of successive maxima are nearly 1: $4/9\pi^2$: $4/25\pi^2$: $4/49\pi^2$…..	**CO4**
e.	What do you mean by spontaneous and stimulated emission. Show that the ratio of spontaneous and stimulated emission is directly proportional to the υ^3.	**CO5**

SECTION-C

Q. 3: Attempt any parts **(10x1=10)**

a.	(i) Prove that the relation $E^2 - p^2c^2 = m_0^2c^4$, Where the symbols have their usual meaning (ii)Deduce the relativistic velocity addition theorem	**CO1**
b.	A clock keeps correct time. With what speed should it be moved relative to an observer so that it may appear to lose 4 minutes in24 hours?	**CO1**

Q. 4: Attempt any parts **(10x1=10)**

a.	What is poynting vector? Discuss the work-energy theorem for the flow of energy in electromagnetic waves.	**CO2**
b.	State and prove equation of continuity equation and also give the properties of electromagnetic wave.	**CO2**

Q. 5: Attempt any parts **(10x1=10)**

a.	Solve Schrodinger's time independent and dependent wave equation.	**CO3**
b.	(i)Write short notes on: **i)** black body radiation ii) stefan's law (ii) Determine the velocity and kinetic energy of a neutron having de-Broglie wavelength 1 Å. Mass of neutron= 1.67×10^{-27}, h= 6.63×10^{-34} j-s	**CO3**

Q. 6: Attempt any parts **(10x1=10)**

a.	What are Newton's rings. Derive expression for the radius of n^{th} dark as well as bright ring..	**CO4**
b.	What do you understand by the resolving power of a grating? Derive the expression.	**CO4**

Q. 7: Attempt any parts **(10x1=10)**

a.	Give the construction and working of He-Ne laser. How He-Ne laser is superior then Ruby laser.	**CO5**
b.	An optical fibre has NA of 0.20 and cladding refractive index of 1.59. Determine the acceptance angle for the fibre in water which has refractive index of 1.33.	**CO5**

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KNC-201 **Sub. Name:** SOFT SKILLS -2

Year: BTECH.1ST YEAR **Branch:** B TECH (AI,DS,CSE)

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Students will be able to converse well with effective LSRW skills in English.
CO2	Students will evaluate the importance of conversation in their personal and professional domain and apply it for extending their professional frontiers.
CO3	Students will learn to apply motivation skills for their individual and professional excellence.
CO4	Students will utilize their teamwork and their interpersonal communication skills to survive and excel at their work-place.
CO5	Students will learn to evaluate creativity for their professional innovation and critical thinking for their competence.

SECTION-A

1. Attempt all parts: **2×10=20**

a.	What are the stages of listening?	CO1
b.	Analyze the art of listening	CO1
c.	Write the importance of conversation.	CO2
d.	What does tongue twister explain with examples ?	CO2
e.	Explain steps of critical thinking ?	CO3
f.	What is speaking skill ? its elements explain ?	CO3
g.	how to sustain interest in conversation?	CO4
h.	What is Leadership ? What is compassion in leadership ?	CO4
i.	Differentiate among Inductive & deductive method	CO5
j.	How can we master the art of listening ?	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	What is Motivation and its types? How can you motivate others ?	CO1
b.	Explain communication skills & Write the importance of Communication Skills at Work-Place.?	CO2
c.	Who is a Critical Thinker? Write some methods to become a Critical Thinker.	CO3
d.	What is the different Reading Style? Explain steps to improve reading skills.	CO4
e.	What is conversation ? Differentiate between conversation and Speech.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	What is Socialization ?Explain Social Skills in Detail.	CO1
b.	What is personality justifie & how we can become a good personality?	CO1

4. Attempt any one **10x1=10**

a.	What are the sources of Motivation? explain some motivational skills ?	CO2
b.	What do you mean by Listening? explain its the Types?	CO2

5. Attempt any one **10x1=10**

a.	What is the writing method and its types ? How can we enhance them?	CO3
b.	What is stress? Write some tips to manage stress. explain different skills at the workplace ?	CO3

6. Attempt any one **10x1=10**

a.	What is the different Resilience's type ? Write its importance.	CO4
b.	What are teamwork skills ? role of communication in team work	CO4

7. Attempt any one **10x1=10**

a.	What is Positive Thinking? How can you control your Mind?	CO5
b.	What is stress? Write some tips to manage stress.	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KVE-401

Subject Name : Universal Human values & Professional Ethics

YEAR- 2nd Year **Branch:** ALL

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Describe need of Universal Human Value Education in human life and identify basic human aspiration through self exploration.KL-2
CO2	Identify coexistence and relationship of Self and Body with their needs. KL-2
CO3	Recognize human participation in family and society and its effect to maintain harmony in human relationship.KL-2
CO4	Recognize units of nature & existence and participation of human in larger order. KL-2
CO5	Discuss holistic approaches for humanistic education and humanistic constitution and apply human values in professional life for better living. KL-2

SECTION-A

1. Attempt all parts: **2×10=20**

a.	What is the need for value education in technical and other professional Institutions?	CO1
b.	I' is a conscious UNIT while the Body is a material UNIT. Examine this statement.	CO1
c.	Define Sanyam and Svasthya. How are the two related?	CO2
d.	What is the meaning of education and sanskara? How does sanskara follow education?	CO2
e.	Define trust. Illustrate the feeling of trust with one example.	CO3
f.	State the comprehensive human goals in society.	CO3
g.	What do you mean by Ethics?	CO4
h.	Define the terms SVDD, SSDD & SSSS.	CO4
i.	Identify between units & Space. How are units self organized in space?	CO5
j.	What do you mean by 'profession'? Why is it required to acquire ethical competence in profession?	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	What do you mean by values? How do they differ from skills? How are values and skills complementary?	CO1
b.	Briefly explains the natural characteristics of the four orders in nature	CO2
c.	What do you understand by prosperity? What is the difference between prosperity and wealth? How are the two related?	CO3
d.	Distinguish between the activities going on in the self, going on in the body, and involving both the Self and the Body. Give two examples of each.	CO4
e.	Right understanding in the individuals in the basis for harmony in the family, which is the building block for harmony in the society. Give your comments.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Explain the process of Self Exploration to understand unman values. How does our preconditioning hinder this process? Give one example	CO1
b.	What are the requirements to fulfill basic human aspirations?	CO1

4. Attempt any one **10x1=10**

a.	Distinguish between the activities going on in the self, going on in the body, and involving both the Self and the Body. Give two examples of each.	CO2
b.	Suggest programs to ensure proper functioning of your body. Can we sustain them without right understanding?	CO2

5. Attempt any one **10x1=10**

a.	Suggest ways to enhance the fulfillment of human order with the other three orders. Mention any two programs you can undertake in light of the above.	CO3
b.	What do you mean by competence in professional ethics? Give two examples of its implication in industry.	CO3

6. Attempt any one **10x1=10**

a.	Explain the feelings of 'care' and 'guidance', 'glory', 'reverence' and 'gratitude	CO4
b.	Explain briefly the importance of value based education for the development of a society.	CO4

7. Attempt any one **10x1=10**

a.	What do you mean by your natural acceptance? Is it innate, invariant and universal? Explain.	CO5
b.	How can you say that love is the complete value?	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KAS 203T **Sub. Name: ENGG. MATHS II**

Year: 2022 **Branch: CSE, AI &DS**

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:* 100]**

COURSE OUTCOMES

CO1	**Apply the mathematical concepts for solving differential equations**
CO2	**Apply the concept of definite integral for evaluating surface areas and volumes**
CO3	**Apply the concept of convergence in sequence and series and evaluate the expansion in terms of sine and cosine**
CO4	**Apply the working methods of complex functions to find analytic functions**
CO5	**Expand Taylor's series and Laurent's series for complex function and evaluation of definite integrals**

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Solve $\frac{d^3y}{dx^3}-3\frac{d^2y}{dx^2}+4\frac{dy}{dx}-2y=e^x+\cos x$	CO1
b.	Solve $D^6 y = 0$	CO1
c.	Evaluate $\int_0^\infty \frac{x^8(1-x^6)}{(1+x)^{24}}dx$	CO2
d.	*Solve* $\int_0^{\pi/2}\sqrt{\tan\theta}\,d\theta$	CO2
e.	Test the nature of the series $-1-8-27-64-\cdots\infty$	CO3
f.	Expand f(x) = x as a half range,(i) sine series in $0 < x < 2$. (ii) cosine series in $0 < x < 2$	CO3
g.	State and Proof Cauchy- Integral theorem.	CO4
h.	State and Proof Cauchy- Integral formula.	CO4
i.	State and Proof Cauchy Residue theorem.	CO5
j.	Find the Zero's and Poles of $f(z)=\frac{(z+2)^2}{(z+3)^3}$	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	Solve by the method of variation of parameters: $\frac{d^2y}{dx^2}+a^2y=\sec ax.$	CO1
b.	Find the value of $\iiint xyz\sin(x+y+z)dx\,dy\,dz$ the integral being extended to all positive value of the variable subject to the condition $x+y+z \le \pi/2$	CO2
c.	Find the Fourier series for the function $f(x)=x+x^2$, $-\pi < x < \pi$, hence show that (i) $\frac{\pi^2}{6}=1+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+\ldots\ldots$ (ii) $\frac{\pi^2}{12}=1-\frac{1}{2^2}+\frac{1}{3^2}-\frac{1}{4^2}+\ldots\ldots$	CO3
d.	Show that the function $f(z)$ defined by $f(z)=\frac{x^2y^3(x+iy)}{x^6+y^{10}}$ $z \neq 0$ $f(0)=0$ is not analytic at the origin even though it satisfies Cauchy-Riemann equations at the origin.	CO4
e.	Evaluate the residue $\int_0^\infty \frac{\cos mx}{x^2+1}\,dx$	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KAS-402 **Subject Name:-** *Mathematics-IV*

YEAR-2nd **Branch**: CS/AI/DS

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:* 100]**

COURSE OUTCOMES

CO1	The idea of partial differentiation and types of partial differential equations.
CO2	The idea of classification of second partial differential equations, wave, heat equation and transmission lines.
CO3	The basic ideas of statistics including measures of central tendency, correlation, regression and their properties.
CO4	The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.
CO5	The statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties.

SECTION-A

Q.1 Attempt all parts: **(2×10=20)**

a. Solve the following partial differential equation $yq - xp = z$. (CO1)

b. Solve the Cauchy's problem $u_x - u_y = 0$. $u(x, 0) = x$. (CO1)

c. Classify the following $x^2 \frac{\partial^2 u}{\partial x^2} - \frac{\partial^2 u}{\partial y^2} = u$ (CO2)

d. Solve the partial differential equation $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial x \partial y} = 0$ (CO2)

e. Find the median of 6,8,9,10,11,12,13. (CO3)

f. The first three central moments of a distribution are 0, 15, -31. Find the moment coefficient of skewness. (CO3)

g. If the p.m.f of a discrete random variable X is

X	1	2	3
f(x)	1/2	1/3	1/6

Determine E(X) and V(X) (CO4)

h. The probability density function f(x) of a continuous random variable

X is defined by $f(x) = \begin{cases} \frac{A}{x^2}, 5 \le x \le 10 \\ 0, otherwise \end{cases}$

Find the value of A. (CO4)

i. Find the mean of the Binomial Distribution B(4,1/3). (CO5)

j. A machine which produces mica insulating washers for use in electric device to turnout washers having a thickness of 10 mm. A sample of 10 washers has an average thickness 9.52 mm with a standard deviation of 0.6 mm. Find outt. (CO5)

SECTION-B

NOTE: Attempt any one part of the following **(10x5=50)**

Q.2 a. Solve $(D + 1)(D + D' - 1)z = \sin(2x + 3y)$. (CO1)

b. Solve $x^2 \frac{\partial^2 z}{\partial x^2} - 4y^2 \frac{\partial^2 z}{\partial y^2} - 4y \frac{\partial z}{\partial y} - z = x^2 y^2 \log y$. (CO1)

Q.3a. A tightly stretched string with fixed end points x = 0 and $x = l$ is initially in a position given by $y = y_0 \sin^3 \pi x$. If it is released from rest from this position, find the displacement y(x,t). (CO2)

b. An insulated rod of length l its ends A and B maintained at 0°C and 100° C respectively until the steady state condition prevails. If B is suddenly reduced to 0°C and maintained at 0°C , Find the temperature at a distance x from A at time t. (CO2)

Q.4a. In a partial destroyed laboratory record of an analysis of correlation data, the following resultonly are legible :

Variance of x = 9, Regression equation: 8x - 10y + 66 = 0, 40x -18y = 214.

What were (a) the mean value of x and y (b) the standard deviation of y and the co-efficient ofcorrelation between x and y? (CO3)

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KOE083 **Subject Name:** Entrepreneurship Development

YEAR-4th **Branch: CE, ME, EC, CSE**

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:* 100]**

COURSE OUTCOMES

CO1	Understanding Basic Concepts In The Area Of Entrepreneurship.
CO2	Understanding The Role And Importance Of Entrepreneurship For Economic Development,
CO3	Be Able To State, Understand And Evaluate The Key Factors Needed To Develop A Successful Business.
CO4	Understand The Central Role Of Opportunity Recognition And Marketing To Business Development.
CO5	Understand The Creation Of Business Sustainability.

SECTION-A

Q.1 Attempt all parts: **(2×10=20)**

a. Write a note on Women Entrepreneurs. (CO2)
b. What do you mean by business risk? Explain its causes? (CO2)
c. Differentiate between small scale and large scale industry. (CO1)
d. What are differences between manager and entrepreneur? (CO3)
e. Explain the various steps taken to start an SSI. (CO3)
f. What is the IRR? Explain (CO1)
g. Describe the types of entrepreneurs. (CO3)
h. What is business planning process? (CO3)
i Explain the role of Small scale industries in the national economy. (CO4)
j What is double taxation? (CO4)

SECTION-B

NOTE: Attempt any five parts **(10x5=50)**

Q.2a. What is entrepreneurship? Describe how risk taking is an important element of entrepreneurship. (CO2)

OR

b. Explain about the contents and formulation of project report. (CO1)

Q.3a. Write a note on Women Entrepreneurs. (CO1)

OR

b. Explain the meaning, definition and evolution of Small and Medium Enterprises. (CO2)

Q.4a. what is the significance of promoting women Entrepreneurship in India? (CO1) **OR**

b. Define Quality management. Total Quality revolves on some concepts, what are these concepts. (CO3)

Q.5a For a project for which initial investment is Rs. 300000 and future cash flows are Rs. 60000, Rs. 100000, Rs 120000-and Rs. 150000 for next 4 years the interest rate is 12%. Calculate NPV. (CO4)

Q.6a. What is the significance of promoting women Entrepreneurship in India? (CO1) **OR**

Q.7a. What are the identification and classification of ideas? Discuss the various idea generation techniques? (CO4)

OR

b. What are the various steps to start a S.S.I.? (CO4)

Q.8a Discuss various types of risk involved in entrepreneurship. Explain factory act, 1948. (CO5)

Q.9a. Which are various forms of business ownership? Discuss the salient features of Indian: Partnership Act. (CO1)

OR

b. Explain the term EBIT (earnings before income tax).How it is determined in an income statement? What are excise duties, tangible property tax, capital gain tax and income tax (CO4)

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KOE-091 **Subject Name: Automation & Robotics**
YEAR- 4th Year **Branch: ME & EC**

PUT EXAMINATION (ODD SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:* 100]**

COURSE OUTCOMES

CO1	To give idea about automation.
CO2	To discuss robotic automation.
CO3	To define robotics.
CO4	To give knowledge about robot drives and power transmission systems.
CO5	To give knowledge about robot simulation.

SECTION-A

Q.1 Attempt all parts: **(2×10=20)**

a. What are the kinematics chains? (CO1)
b. List some of the important reasons for using robots instead of human to perform a task. (CO1)
c. What is program synthesis? (CO2)
d. State the types of joints commonly used in industrial robots. (CO2)
e. What is adaptive control? (CO3)
f. State advantages of rectangular co-ordinates. (CO3)
g. How to select robotic drive? Discuss. (CO4)
h. Discuss the applications of robotic system in assembly line. (CO4)
i Comment on geometric classification. (CO5)
j What do you understand by robot vision? (CO5)

SECTION-B

NOTE: Attempt any five parts **(10x5=50)**

Q.2 Describe about parallel actuated and closed loop manipulators. (CO1)
Q.3. What are the various levels of robot programming? (CO2)
Q.4. What do you understand by robot coordinate system representation? (CO3)

Q.5 Differentiate between external and internal sensors with suitable examples in support (CO4)

Q.6 Discuss various types of power sources used in robots. Also detail their relative merits and demerits. (CO5)

Q.7 List relevant factors that must be considered for robotic applications in gripping operation. (CO1)

Q.8 Discuss the process of digitization in detail. (CO2)

Q.9 Discuss the general characteristics of industrial work situations that tend to promote the substitution of robots for human labour. (CO3)

SECTION-C

NOTE: Attempt any two parts: **(15x2=30)**

Q.10. Discuss the difference between feed-back control and adaptive control. Differentiate between ACO and ACC types of adaptive control. (CO1)
Q.11. Sketch and describe the working of a Wrist mechanism with 2 DOF. (CO4)
Q.12. Give a list of factors that should be considered while evaluating a robot for welding capabilities. Give suitable explanations in support of your answer. (CO5)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KOE094 **Subject Name:** D&SM MARKETING

YEAR-4th **Branch:** CE

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:* 100]**

COURSE OUTCOMES

CO1	Introduce current and core practices of Digital and Social Media Marketing that will allow learners to analyses, plan, execute and evaluate a digital marketing strategy.
CO2	Develop an understanding of Social Media Optimization, execute and evaluate a digital marketing strategy.
CO3	Develop an understanding of Search Engine Optimizations (SEO).
CO4	Affiliate and other relevant communication channels for engagement of digital communities.
CO5	Draw on knowledge about word-of-mouth marketing to develop effective approaches for propagating ideas, messages, products, and behaviors across social networks.

SECTION-A

Q.1 Attempt all parts: **(2×10=20)**

a. What do you mean by business risk? Explain its causes? (CO2)
b. Compare online and offline marketing strategies. (CO2)
c. What are differences between manager and entrepreneur? (CO1)
d. Define Digital Marketing. (CO3)
e. Explanations: Search Engine Marketing. (CO4)
f. Who are modern digital consumers? (CO1)
g. Compare online and offline marketing strategies. (CO3)
h. What is Social Media Marketing? (CO5)
i What is Inbound Link? (CO4)
j Define co-creation (CO2)

SECTION-B

NOTE: Attempt any five parts **(10x5=50)**

Q.2. Discuss critical strengths and applications of Digital Marketing. (CO3)

Q.3. What is Mobile Marketing? Explain mobile campaign development process in detail. (CO1)

Q.4. What is SEO? Explain the difference between on-page and off-page SEO. Explain major on-page SEO tools and techniques. (CO1)

Q.5. what is Twitter Marketing? Explain the different types of campaigns Under Twitter Ads? (CO4)

Q.6. What are the major differences between traditional and digital marketing? (CO1)

Q.7. What content Strategy works for LinkedIn? (CO4)

Q.8. Digital Marketing changed the world" Are you agree? Explain. (CO5)

Q.9. How are companies making use of Instagram for Digital Marketing? (CO1)

SECTION-C

NOTE: Attempt any two parts: **(15x2=30)**

Q.10. Differentiate between the following Facebook Applications. Give examples to illustrate Facebook Events, Facebook Platform and Facebook Marketplace. (CO3)

Q.11. Based on the case study as a digital marketing manager, what are your recommendations for your brands YouTube videos? (CO5)

Q.12. What is ROI? How to Calculate ROI in Digital Marketing?(CO5)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: K0E093 **Subject Nam:DWDM**
YEAR- 4TH YEAR **Branch**: CSE

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:* 100]**

COURSE OUTCOMES

CO1	Analyze, design, build and deploy data warehousing systems using a variety of current application technologies and architectures.
CO2	Evaluate and select appropriate technologies and tools for building and deploying modern computer systems.
CO3	Manage the Data Mining development process in an individual or team context.
CO4	Plan, design and deploy the necessary data mining technologies to support a Software System.
CO5	Design, build and manage Business Intelligence Computer and Communications Systems fit for a given business purpose.

SECTION-A

Q.1 Attempt all parts: **(2×10=20)**

a. Define Data Warehousing? (CO1.)
b. What is a Fact Table? (CO1)
c. Distinguish Data Mining? (CO2)
d. What is a Dimensional Table? (CO2)
e. What are the different methods of loading dimension tables? (CO3)
f. Define Clustering? (CO3)
g. What is real time Data ware housing? (CO4)
h. What is Star Schema? (CO4)
i What is ODS? (CO5)
j What are the applications of DWDM? (CO5)

SECTION-B

NOTE: Attempt any five parts (10x5=50)

Q.2 What is the difference between Data Warehouse and Database? (CO1)

Q.3. What are the stages of Data Warehousing? (CO2)

Q.4. Discuss the lifecycle of Data mining Projects? (CO3)

Q.5 Explain Decision Tree-Based Algorithm? (CO4)

Q.6 Explain a) ROLAP b) MOLAP c) HOLAP d) OLAP (CO5)

Q.7 What are the operations of Data Cube? Explain briefly (CO1)

Q.8 Explain the architecture of DWDM. (CO2)

Q.9 Explain the decision Tree Classifier? (CO3)

SECTION-C

NOTE: Attempt any two parts: (15x2=30)

Q.10. Explain the mapping of Warehouse on a Multiprocessor Architecture. (CO1) (CO1)

Q.11. Explain Parallel and Distributed Algorithm? (CO4)

Q.12. What is the difference between OLTP and OLAP? (CO5)

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS-601 Subject Name: Software Engineering
YEAR- 3rd **Branch**: CSE

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:* 100]**

COURSE OUTCOMES

CO1	Explain various software characteristics and analyze different software Development Models
CO2	Demonstrate the contents of a SRS and apply basic software quality assurance practices to ensure that design, development meet or exceed applicable standards
CO3	Compare and contrast various methods for software design
CO4	Formulate testing strategy for software systems, employ techniques such as unit testing, Test driven development and functional testing.
CO5	Manage software development process independently as well as in teams and make use of Various software management tools for development, maintenance and analysis

SECTION-A

Q.1 Attempt all parts: **(2×10=20)**

a. Write down the objective of software Engineering (CO1)
b. What is a Decision Table? (CO1)
c. Differentiate verification and validation. (CO2)
d. Write Principle of software Design. (CO2)
e. What is Architectural Design and Low Level Design
f. Explain CASE Tools. (CO3)
g. What is Code Inspection? (CO3)
h. What are the Testing Objectives? (CO4)
i. Differentiate ALPHA and BETA testing. (CO4)
i Explain Software Maintenance . (CO5)
j What are the software crisis (CO5)

SECTION-B

NOTE: Attempt any five parts **(10x5=50)**

Q.2 Explain Spiral Model in detail with advantages and disadvantages. (CO1)

Q.3. What is a Data Flow Diagram? Make a level-0 and level-1 DFD of the Library Management System. (CO2)

Q.4. Write a short note on: (CO3)
a) SRS Document
b) Entity Relationship Diagram
c) Requirement Engineering Process

Q.5 What is a structure Chart? Explain different basic blocks used to build structure charts with suitable examples. (CO4)

Q.6 Explain in detail Coupling and Cohesion .And for a good design, the modules should have low coupling. Why? (CO5)

Q.7 Explain Various Software configuration management activities .Also Explain Re-engineering and Reverse Engineering. (CO1)

Q.8 Explain COCOMO model in detail. Suppose a project was estimated to be 400 KLOC. Calculate the effort and development time for each of the three model i.e., organic, semi-detached & embedded. (CO2)

Q.9 Explain CMM model and ISO model in detail .Compare CMM and ISO model . (CO3)

SECTION-C

NOTE: Attempt any two parts: **(15x2=30)**

Q.10. Write a note on (CO1)
1. White Box Testing and Black Box Testing
2. Formal Technical Review
3. Testing for functionality
4. Risk Management
5.

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS 602 **Subject Name: W T**
YEAR- 3 **Branch:** CSE

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Understand principle of Web page design and about types of websites
CO2	Visualize and Recognize the basic concept of HTML and application in web designing.
CO3	Recognize and apply the elements of Creating Style Sheet (CSS).
CO4	Understanding the basic concept of Java Script and its application.
CO5	Introduce basics concept of Web Hosting and apply the concept of SEO

SECTION-A

Q.1 Attempt all parts: **(2×10=20)**

a. Write about function in java script with syntax. (CO1.)
b. What do you mean by AJAX explain. (CO1)
c. Write about web governing protocol. (CO2)
d. Write about array and show how to insert data in it. (CO2)
e. How to import and tag image in HTML. (CO3)
f. What is IP address in web . (CO3)
g. How to use CSS with java script with syntax. (CO4)
h. What is the role of DTD in web designing. (CO4)
i Write about DOM in XML processors. (CO5)
j How java differ with java script. (CO5)

SECTION-B

NOTE: Attempt any five parts **(10x5=50)**

Q.2 How to create a java bean explain with syntax and type . (CO1)

Q.3 How to perform joining operation in data base explain in detail. (CO2)

Q.4 What do you mean by JDBC how to use it with application. (CO3)

Q.5 Explain XML in detail with syntax and example. (CO4)

Q.6 What is java and its different applications ? (CO5)

Q.7 What do you mean by transaction in JDBC? (CO1)

Q.8 Draw and write life cycle of servlet. (CO3)

Q.9 What is cookies and sessions in servlet? (CO5)

SECTION-C

NOTE: Attempt any two parts: **(15x2=30)**

Q.10 What is JSP explain with syntax and example (CO1)

Q.11 What do you mean by statefull and stateless session explain. (CO4)

Q.12 What is exception handling in java how it work? (CO3)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS-603 **Subject Name:** Computer Networks
YEAR- 3rd (VI Sem.) **Branch:** CSE

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Explain basic concepts, OSI reference model, services and role of each layer of OSI model and TCP/IP, networks devices and transmission media, Analog and digital data transmission
CO2	Apply channel allocation, framing, error and flow control techniques.
CO3	Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism.
CO4	Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism.
CO5	Explain the functions offered by session and presentation layer and their Implementation. Explain the different protocols used at application layer i.e. HTTP, SNMP, SMTP, FTP, TELNET and VPN.

SECTION-A

Q.1 Attempt all parts: **(2×10=20)**

a. What are the applications of Computer Networks? (CO1.)
b. List the advantages and disadvantages of Star topology. (CO1)
c. What are header and trailers and how do they get added and removed? (CO2)
d. Compare ALOHA with slotted ALOHA. (CO2)
e. With the given IP-address, how will you extract its net-id and host-id? (CO3)
f. If a Class B network on the internet has a subnet mask of 255.255.248.0,What is the maximum number of hosts per subnet? (CO3)
g. Discuss UDP Protocol. (CO4)
h. Provide few reasons for congestion in a network. (CO4)
i Mention the use of HTTP. (CO5)
j List out few e-mail gateways. (CO5)

SECTION-B

NOTE: Attempt any five parts **(10x5=50)**

Q.2 What is OSI Model? Explain the functions of each layer with its diagram? (CO1)

Q.3. Explain CRC. What are the requirements of CRC? (CO2)

Q.4. Write advantages of Next-generation IPV6 over IPV4. (CO3)

Q.5 Enumerate on TCP header and working of TCP and differentiate TCP and UDP with frame format. (CO4)

Q.6 How does FTP work? Differentiate between passive and active FTP. (CO5)

Q.7 List the advantages and disadvantages of mesh topology, bus topology and ring topology. (CO1)

Q.8 A slotted ALOHA network transmits 400-bit frames on a shared channel of 400kbps. What is the throughput if the system (all stations together) produces–

i. 1000 frames per second
ii. 500 frames per second
iii. 250 frames per second (CO2)

Q.9 What is IP addressing? How it is classified? How is subnet addressing is performed? (CO3)

SECTION-C

NOTE: Attempt any two parts: **(15x2=30)**

Q.10. a) Explain different switching techniques used in computer network.
b) Difference between connectionless communication and connection-oriented communication. (CO1)

Q.11. What do you understand by quality of service, parameters? List various quality of service parameters. (CO4)

Q.12. Explain about E-mail architecture and services. (CO5)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS-064 **Subject Name: Data Compression**

YEAR- 3rd Year **Branch:** CSE/ VI Sem.

PUT EXAMINATION (EVEN SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Define a data Compression Mathematical Preliminaries [KL-1]
CO2	Demonstrate Data Compression Techniques. [KL-3]
CO3	Determining lossless encoding and Run length encoding scheme[KL-3]
CO4	Implement various data Compression Algorithm[KL-3]
CO5	Implement LZ77 , LZ78, Quantization Approach [KL-3]

SECTION-A

Q.1 Attempt all parts: **(2×10=20)**

a. Explain Lossy Compression (CO1.)
b. Define Physical model (CO1)
c. What is minimum variance Huffman Code? (CO2)
d. Define Markov Model (CO2)
e. Explain Audi Compression Techniques (CO3)
f. What are Prefix Codes (CO3)
g. Explain JBIG Standard (CO4)
h. What is entropy encoded quantization (CO4)
i Explain the uniform Quantizer (CO5)
j Explain Entropy (CO5)

SECTION-B

NOTE: Attempt any five parts **(10x5=50)**

Q.2 Explain encoding and decoding in LZW algorithm. (CO-4)

Q.3. What are the applications of Huffman Code (CO-2)

Q.4. What is the requirement of Rice Code? Explain with an example (CO-3)

Q.5 Explain various types of dictionary based coding techniques. (CO-3)

Q.6 Explain two main phases of development of data compression algorithm for a variety of data. (CO5)

Q.7 What do you understand by compression ratio? What is the need for it? (CO2)

Q.8 Explain the steps Lende-Buzo-Gray Algorithm. (CO5)

Q.9 What is Quantization? Explain Additive Noise model of quantizes. (CO4)

SECTION-C

NOTE: Attempt any two parts: **(15x2=30)**

Q.10. Consider source alphabet of {a1, a2, a3} having probabilities P(a1)=0.6,P(a2)=0.3 and P(a3)=0.1.Design the Huffman code. Also calculate average length of codeword's and redundancy. (CO1)

Q.11. What do you understand by adaptive quantization? Explain the various approaches to adapting the quantizes parameters. (CO-5)

Q.12. What is Facsimile Encoding? Explain Run-Length coding technique used earlier for facsimile. (CO4)

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: -KNC-602 **Subject Name:- ITC&S**

YEAR: -III[Year] **Branch**: -CSE

PUT EXAMINATION (ODD SEMESTER 2021-22)

[Time: 3 *Hours]* ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Ability to understand, connect up and explain basics of Indian Traditional knowledge modern scientific perspective.
CO2	The student will be able to understand the early Indian classical literatures and languages
CO3	The student will have an understanding of religious ideas and practices of ancient India
CO4	After the completion of this course, the students will have a fair idea about the different aspects of the ancient history of Mesopotamia and Egypt.
CO5	the students will have a comprehensive understanding of the development of science and technology in different fields in ancient India.

SECTION-A

Q.1Attempt all parts: **(2×10=20)**

a.What do you understand by Council of Ministers (CO1)
b.What were the four important theories regarding the origin of the state in ancient India? (CO1)
c.What are the different languages of India? (CO2)
d.Describe briefly Harappa script in India (CO2)
e. What do you mean by 'Veda'? (CO3)
f. What do you mean byBuddhism. (CO3)
g.What is the need to study geography? (CO4)
h.How were the manuscripts written in India (CO4)
i. What are the classical dances of India? (CO5)
j.What do you understand by the term Stupa? (CO5)

SECTION-B

NOTE: Attempt any five parts **(10x5=50)**

Q.2 Describe Kingship in ancient India (CO1)

Q.3 Write an essay on the origin and development of Brahmi script in India (CO2)

Q.4 Give an account on the Buddhist literature (CO3)

Q.5 What are the six systems of ancient Indian philosophy? (CO4)

Q.6 Write a short note on structure of Ashokan pillars (CO5)

Q.7 Write a short note on : Kautilya'saptanga (The seven limbs) theory of state. (CO1)

Q.8 Give an account on the Harappan script of India. (CO2)

Q.9 Give an account of contribution made by Kabir in Bhakti movement (CO3)

SECTION-C

NOTE: Attempt any two parts: **(15x2=30)**

Q.10 What was the contribution of Aryabhata in Astronomy. (CO1)

Q.11 Describe Indian chemistry through the ages (CO4)

Q.12 What are the different types of architecture found in India ? Describe them in brief (CO5)

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS-402 **Subject Name:** TAFL

Year: 2YR **Branch:** CSE,AI,DS

PUT EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 3 *Hours]* ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Analyses and design finite automata, pushdown automata, Turing machines, formal languages, and grammars.
CO2	Analyses and design, Turing machines, formal languages, and grammars.
CO3	Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and complexity through problem solving.
CO4	Prove the basic results of the Theory of Computation.
CO5	State and explain the relevance of the Church-Turing thesis.

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Write the name of Fundamental Computational Models.	CO1
b.	Find a minimal DFA's for the language $L=\{a^n b^m : n\geq 2, m\geq 1\}$	CO1
c.	What is Pigeonhole principle?	CO2
d.	What are transition diagram/transition graphs?	CO2
e.	Write a application pumping lemma	CO3
f.	What is the difference between CNF and GNF?	CO3
g.	What is the difference between DPDA and NPDA?	CO4
h.	Explain the Myhill-nerode Theorem	CO4
i.	What is Universal Turing Machine?	CO5
j.	What is Church Thesis?	CO5

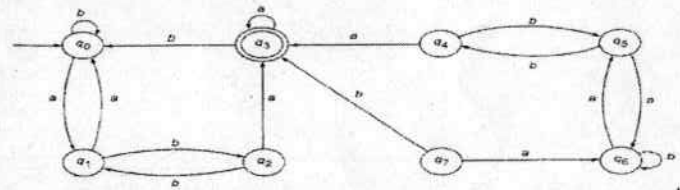
SECTION-B

2. Attempt any three parts: **10x3=30**

a.	Define dead state, inaccessible state, equivalent state in case of finite automata.	CO1
b.	State and prove Arden's theorem with its application.	CO2
c.	Discuss CFG (Context free grammar) in details.	CO3
d.	What is Push Down Automata? Explain with diagram.	CO4
e.	Write a short note on Turing machines.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Design a FA that accepts set of strings such that every string ends in 00 over alphabet.	CO1
b.	Construct a minimum state automaton equivalent to a DFA whose transition diagram is given by 	CO1

4. Attempt any one **10x1=10**

a.	State pumping lemma for regular languages. Use pumping lemma to prove that the language L,defined as follows ,is not regular. $L=\{0^m 1^n$ where m and n are positive integers and m is not equal to n.	CO2
b.	Draw the finite automata recognizing the following language: 1(1+10)*+10(0+01)*	CO2

5. Attempt any one **10x1=10**

a.	Explain the Chomsky hierarchy of languages .Determine the type of the following grammar: S→aAb/ε ,A→aA/Ab/a/b	CO3
b.	Prove that the following Language $L = \{a^n b^n\}$ is not regular	CO3

6. Attempt any one **10x1=10**

a.	Explain two stack PDA with example.	CO4
b.	Design PDA for the grammar G (Vn,Vt,P,S) Vn={S}, Vt={a,b,c),And P is defined as S→aSa, S→bSb, S→c	CO4

7. Attempt any one **10x1=10**

a.	Discuss the halting problem of Turing machine, an Recursively enumerable language.	CO5
b.	Design a Turing machine that can compute proper subtraction,m and n,where m and n are positive integers and n is defined as m-n if m>n and 0 if m≤n.	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: BME-201 **Sub. Name:** FME

Year: 1st year **Branch:** CSE

PUT EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Apply the concept of force resolution and stress and strain to solve basic problems
CO2	Understand the construction details and working of internal combustion engines, electric vehicle and hybrid vehicles.
CO3	Explain the construction detail and working of refrigerator, heat pump and air conditioner.
CO4	Understand fluid properties, conservation laws and hydraulic machinery used in real life.
CO5	Understand the working principle of different measuring instrument and mechatronics with their advantages, scope and Industrial application.

SECTION-A

1. Attempt all parts: **2×10=20**

a.	State Hook's Law.	CO1
b.	Explain Poisson's ratio.	CO1
c.	Write any six components of IC engines.	CO2
d.	What is Scavenging process?	CO2
e.	Define dry and wet bulb temperature.	CO3
f.	Define COP.	CO3
g.	What are Newtonian and Non-Newtonian Fluids?	CO4
h.	Write any four properties of fluid.	CO4
i.	Differentiate between accuracy and precision?	CO5
j.	Define Calibration.	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	State and drive the Varignon's theorem.	CO1
b.	Explain the working of four stroke petrol engine with diagram.	CO2
c.	Explain the working and construction of domestic refrigerator.	CO3
d.	Explain the working and construction of reciprocating pumps.	CO4
e.	Explain the working of optical pyrometer.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Draw and discuss the stress strain diagram for ductile and brittle material.	CO1
b.	Drive the relationship between young's modulus of elasticity and bulk modulus.	CO1

4. Attempt any one **10x1=10**

a.	With a neat sketch explain the working of a four stroke CI engine.	CO2
b.	Compare Two stroke & Four stroke engines.	CO2

5. Attempt any one **10x1=10**

a.	Define various methods of refrigeration.	CO3
b.	Explain the working and construction of window AC.	CO3

6. Attempt any one **10x1=10**

a.	What are hydraulic turbines? How are the classified? Write their advantages and disadvantages?	CO4
b.	State & drive Pascal's Law.	CO4

7. Attempt any one **10x1=10**

a.	Define Mechatronics. Write the advantages, disadvantages and application of Mechatronics.	CO5
b.	What are actuators? Discuss all types of actuation systems in details.	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: BAS-202 **Sub. Name:** Engg. Chemistry

Year: B.Tech. I Year **Branch:** CSE/CSE-DS/CSE-AI

PUT EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 3 *Hours]* ***[Total Marks:* 70]**

COURSE OUTCOMES

CO1	Develop understanding of the sources, impurities and hardness of water, apply the concepts of determination of calorific values and analyze the coal. [KL-3]
CO2	Develop the understanding of Chemical structure of polymers and its effect on their various properties when used as engineering materials. Understanding the applications of specific polymers and Chemistry applicable in industrial process. [KL-3]
CO3	Get an understanding of the theoretical principles of chemistry of molecular structure, bonding and properties, Chemistry of advanced materials (liquid crystals, an materials, Graphite & Fullerene) as well as the Principles of Green Chemistry [KL-3]
CO4	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion and develop understanding of Chemistry of Engineering materials (Cement).[KL-3]
CO5	Apply the fundamental concepts of determination of structure with various spectral techniques and stereochemistry. [KL-4]

SECTION-A

1. Attempt all parts: **2×7=14**

a.	What is the difference between Gross calorific value and Net calorific value of a fuel?	CO1
b.	A sample of hard water has hardness 500 PPM .Express the hardness in ^{0}fr and ^{0}Cl.	CO1
c.	Define biodegradable polymers? Give suitable example.	CO2
d.	What is the difference between thermoplastics and thermosetting Polymer? Give suitable example	CO2
e.	Compare and arrange the following in increase order of stability: N_2, N_2^+, and N_2^-	CO3
f.	Explain what is nanotechnology? Write its applications	CO3
g.	What are Chromospheres and Auxochromes? Give example.	CO4

SECTION-B

2. Attempt any three parts: **7x3=21**

a.	Explain the Zeolite process of water softening? The hardness of 10,000L of a sample of water was removed by passing it through a zeolite softener. The zeolite softener then required 200 L of NaCl solution containing 150 gm/L of NaCl for regeneration. Find the hardness of water sample	CO1
b.	Explain what are composites? Give their classification and its advantages	CO2
c.	Calculate the bond order of the following and comment on the stability and magnetic behavior: O_2^+, O_2^-, O_2	CO3
d.	Give reactions of lead acid storage cell when it behaves like a galvanic cell.	CO4
e.	Write the principle of IR Spectroscopy and explain the significance of Finger print region?	CO5

SECTION-C

3. Attempt any one **7x1=7**

a.	What are ion exchangers? With the help of neat sketch, discuss ion-exchange process of water softening.	CO1
b.	Calculate the amount of lime and soda required for the treatment of 50,000 litres of water whose analysis is as follow. Ca $(HCO_3)_2$ = 9.2 ppm; Mg $(HCO_3)_2$ = 7.9 ppm; $CaSO_4$ =15.3 ppm; $MgSO_4$ = 15 ppm; $MgCl_2$ = 3.0 ppm.	CO1

4. Attempt any one part **7x1=7**

a.	Give the preparation, properties and applications of following polymers: NBR Thiokol, Terylene, Lucite and Kevlar	CO2
b.	Describe what are conducting polymers? How many types of conducting polymers? Give their applications	CO2

5 Attempt any one **7x1=7**

a.	What is liquid crystal? Difference between Nemetic liquid crystal and Semitic liquid crystal. Write their application.	CO3
b.	A sample of coal contains 60% Carbon, 33% Oxygen, 6.0% Hydrogen, 0.5%Sulphur, 0.2%Nitrogen and 0.3% Ash. Calculate GCV and NCV of coal..	CO3

6. Attempt any one **7x1=7**

a.	Describe the mechanism of electrochemical theory of corrosion by absorption of oxygen and hydrogen of evaluation mechanism.	CO4
b.	What is the Portland cement? .Write the chemical reactions involved in manufacture of the portland cement.	CO4

7. Attempt any one **7x1=7**

a.	Describe the principle of UV-spectroscopy and various types of electronic transitions.	CO5
b.	What is the optical activity? Give the stereo isomers of Tartaric. How do you account for lack of optical activity in meso-forms and recemic mixtures	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:- KNC-602 **Subject Name:- ITCS**

YEAR:-IIIrd **Branch:- CSE/AI/DS**

1st SESSIONAL EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 2 *Hours*] ***[Total Marks:* 30]**

COURSE OUTCOMES

CO1	Ability to understand, connect up and explain basics of Indian Traditional and Culture in ancient India
CO2	The student will be able to understand the early Indian classical literatures and languages
CO3	The student will have an understanding of religious ideas and practices of ancient India
CO4	The students will have a comprehensive understanding of the development of science and technology in different fields in ancient India.
CO5	After the completion of this course, the students will have a fair idea about the different aspects of the ancient history

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) What is evolutionary theory? (CO1)

(b) What do you mean by Force theory? (CO1)

(c) Define sabha and samiti in ancient India (CO1)

(d) Write short note on: Brahmi script. (CO2)

(e) Discuss the different language of India. (CO2)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Explain the Mystical and Contract theory of the state in ancient India (CO1)

Q.3. Explain the Varnashrama Dharma in the history of ancient India. (CO1)

Q.4. What do you mean by vedic literature? Explain them in details. (CO2)

Q.5. Write short note on: Kautilya's Arthashastra. (CO2)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Describe the Saptanga theory/seven limbs of the state in ancient India. (CO1)

Q.7. Explain the linkage between culture and civilization; Culture and heritage giving examples. (CO2)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:KCS-401 **Sub. Name: Operating System**

Year: 2nd **Branch: CSE/DS/AI**

PUT EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Understand the structure and functions of OS
CO2	Learn about Processes, Threads and Scheduling algorithms
CO3	Understand the principles of concurrency and Deadlocks
CO4	Learn various memory management scheme
CO5	Study I/O management and File systems.

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Define Operating System. List the objectives of an operating system	CO1
b.	Difference between Process and Program.	CO1
c.	What is critical section problem?	CO2
d.	Explain the principle of concurrency	CO2
e.	What are the various scheduling criteria for CPU scheduling?	CO3
f.	Difference between Process and Program.	CO3
g.	Difference between External fragmentation and Internal fragmentation.	CO4
h.	Explain Performance of demand paging.	CO4
i.	Explain RAID.	CO5
j.	Difference between Directory and File.	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	What is Kernel? Describe various operations performed by Kernel	CO1
b.	Give the principles, mutual exclusion in critical section problem. Also discuss how well these principles are followed in Dekker's solution	CO2
c.	Describe Banker's algorithm for safe allocation	CO3
d.	Explain the cause of Thrashing? Also explain the steps are taken by the system to eliminate this problem?	CO4
e.	Write short notes on : i) File system protection and security and ii) Linked File allocation methods	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Differentiate between (with one suitable example): i) Interactive and Batch processing System. ii) Multiprogramming and Time Sharing System.	CO1
b.	Write about monolithic kernel, layered, and microkernel structures of operating systems.	CO1

4. Attempt any one **10x1=10**

a.	Explain what semaphores are, their usage, implementation given to avoid busy waiting and binary semaphores.	CO2
b.	Explain Producer Consumer problem? How it can illustrate the classical problem of synchronization? Explain.	CO2

5. Attempt any one **10x1=10**

a. Consider the following snapshot of a system: CO3

	Allocated			Maximum			Available		
Process	R1	R2	R3	R1	R2	R3	R1	R2	R3
P1	2	2	3	3	6	8	7	7	10
P2	2	0	3	4	3	3			
P3	1	2	4	3	4	4			

Answer the following questions using the banker's algorithm:

1) What is the content of the matrix need?
2) Is the system in a safe state?

CO3

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: BEC201 **Sub. Name:** Fundamentals of Electronics Engineering

Year: 1YR **Branch:** CSE

PUT EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 3 *Hours*] ***[Total Marks:* 70]**

COURSE OUTCOMES

CO1	Describe the concept of PN Junction and devices.
CO2	Explain the concept of BJT, FET and MOFET.
CO3	Apply the concept of Operational amplifier to design linear and non-linear applications
CO4	Perform number systems conversions, binary arithmetic and minimize logic functions
CO5	Describe the fundamentals of communication technologies.

SECTION-A

1. Attempt all parts: **2×7=14**

a.	What do you mean by the term doping? Why it is required?	CO1
b.	Differentiate between avalanche and zener breakdown.	CO1
c.	State two differences between FET and BJT.	CO2
d.	if I_E = 5 mA, I_C = 4.95 mA. Determine β.	CO2
e.	What do you mean by CMRR?	CO3
f.	Find 1's and 2's complement of : 1101001	CO3
g.	What is RADAR?	CO4

SECTION-B

2. Attempt any three parts: **7x3=21**

a.	Write a short note on varactor diode.	CO1
b.	Describe the construction of a NPN bipolar junction transistor. Draw well labeled input and output characteristics of a NPN transistor in Common Emitter Configuration. Also mark all the regions of operation.	CO2
c.	What is an operational amplifier? Draw its block diagram. Write the characteristics of an ideal operational amplifier.	CO3
d.	What are universal gates? Why are they called so? Explain with neat diagrams.	CO4
e.	Describe briefly Satellite Communication.	CO5

SECTION-C

3. Attempt any one **7x1=7**

a.	With help of neat circuit diagrams, explain the working of a full wave bridge rectifier.	CO1
b.	Explain the I-V graph of Tunnel Diode.	CO1

4. Attempt any one **7x1=7**

a.	Give the basic difference between an enhancement and depletion type MOSFET.	CO2
b.	Draw the Structure of Depletion type N-MOSFET. Explain its operation with characteristic graph.	CO2

5. Attempt any one **7x1=7**

a.	What is an operational amplifier? Draw its block diagram. Write the characteristics of an ideal operational amplifier.	CO3
b.	Draw and explain the working of Integrator and Differentiator using OPAMP	CO3

6. Attempt any one **7x1=7**

a.	Simplify the Boolean function using Boolean Algebra theorems: ′ + ABC′C′ + AB′BC′ + A′C′B′A	CO4
b.	Simplify the following function using K map F (A, B, C, D) = ∑ m (1, 3, 4, 5, 6, 7, 9, 11, 13, 15) Also implement the simplified function using basic gates only.	CO4

7. Attempt any one **7x1=7**

a.	What do you mean by amplitude modulation? Explain with help of proper waveforms.	CO5
b.	AM radio transmitter radiates 6KW power when modulation percentage is 70 %. Determine the carrier power.	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:-KCS 601/KDS 603 **Subject Name:- Software Engineering**

YEAR:-IIIrd **Branch:-CSE/AI/DS**

1st SESSIONAL EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 2 *Hours]* ***[Total Marks:*30]**

COURSE OUTCOMES

CO1	Explain various software characteristics and analyze different software Development Models. [KL-1] [KL-2]
CO2	Demonstrate the contents of a SRS and apply basic software quality assurance practices to ensure that design, development meet or exceed applicable standards. [KL-1] [KL-2]
CO3	Compare and contrast various methods for software design. [KL-2] [KL-3]
CO4	Formulate testing strategy for software systems, employ techniques such as unit testing, Test driven development and functional testing. [KL-3]
CO5	Manage software development process independently as well as in teams and make use of Various software management tools for development, maintenance and analysis. [KL-5]
CO6	Apply estimation techniques, schedule project activities and compute pricing. [KL-3]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Define Software engineering process. (CO1)

(b) What is different Software quality attributes? (CO1)

(c) Write the methods of requirement elicitation. (CO2)

(d) What is the difference between verification and validation (CO2)

(e) Write the difference between Software and Software Engineering. (CO2)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Define software with its components, characteristics & crisis (CO1)

Q.3. Explain software development life cycle. Discuss various activities during SDLC. (CO1)

Q.4. Define SRS with its five desirable characteristics. Also explain IEEE format of SRS document. (CO2)

Q.5. Discuss about decision tables and its components. Create a decision table for upload a photo and consider a dialogue box that will ask the user to upload a photo with certain conditions like – (CO2)

1. You can upload only '.jpg' format image
2. file size less than 32kb
3. Resolution 137*177.

If any of the conditions fails the system will throw a corresponding error message stating the issue and if all conditions are met photo will be updated successfully

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Discuss Spiral Model for Software development life cycle and highlight the risk analysis in this context. (CO1)

Q.7. What is Data Flow Diagram? Explain rules for drawing good Data Flow Diagram with the help of example of smart college campus. (CO2)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:KOE-068 **Subject Name:-** Software Project Management

YEAR:- 3rd **Branch:-CSE**

1st SESSIONAL EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 2 *Hours*] ***[Total Marks:*30]**

COURSE OUTCOMES

CO1	Identify project planning objectives, along with various cost/effort estimation models.
CO2	Organize & schedule project activities to compute critical path for risk analysis.
CO3	Monitor and control project activities.
CO4	Formulate testing objectives and test plan to ensure good software quality under SEI-CMM.
CO5	Configure changes and manage risks using project management tools.
CO6	Identify & describe the key phases of project management.

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Define Software Project Management? (CO1)

(b) What are the characteristics of a Project? (CO1)

(c) What is meant by Risk Evaluation? (CO2)

(d) What is the role of a Project Manager? (CO2)

(e) Briefly discuss about Project Life Cycle. (CO2)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Describe in detail about Cost Benefit Evaluation Technology. (CO1)

Q.3. Describe the activities & importance of software project management. (CO1)

Q.4. Explain about Rapid Application Development. (CO2)

Q.5. What is the concept and need of Agile Methods in Project Life Cycle? (CO2)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Explain in detail about Project Portfolio Management & its benefits? (CO1)

Q.7. Explain Waterfall Model along with its advantages & disadvantages. (CO2)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS 602 **Sub. Name:** Web Technology

Year: 3rd year **Branch:** CSE/AI/DS

PUT EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 3 *Hours]* ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Explain web development Strategies and Protocols governing Web.
CO2	Develop Java programs for window/web-based applications.
CO3	Design web pages using HTML, XML, CSS and JavaScript.
CO4	Creation of client-server environment using socket programming
CO5	Building enterprise level applications and manipulate web databases using JDBC
CO6	Design interactive web applications using Servlets and JSP

SECTION-A

1. Attempt all parts: **2×10=20**

a.	What are the stages and strategies required to develop a web project ?	CO1
b.	State the various DNS and protocols used.	CO1
c.	Difference between HTML Schema and XML Schema.	CO2
d.	What is PCDATA in XML?	CO2
e.	Compare between JDK, JRE and JVM?	CO3
f.	What are JAR and Manifest files?	CO3
g.	Difference between JDBC and ODBC?	CO4
h.	Define types of beans with example.	CO4
i.	Compare doGet() and doPost() method?	CO5
j.	Write Difference JSP and Servlet?	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	Explain different design issues at the time of designing an effective website.	CO1
b.	Explain Applet with its life cycle. Write a program to demonstrate simple java applet to display any image. Compare Applets over HTML.	CO2
c.	Write a JavaScript program to print first N odd numbers divisible by 7.	CO3
d.	Discuss AJAX. Explain the application of AJAX with the help of suitable examples.	CO4
e.	Discuss JSP in details What are JSP directives? Explain various types of directives with suitable examples.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Explain the difference between static web pages, dynamic web page and active web pages..	CO1
b.	Define class and object with example in Java.	CO1

4. Attempt any one **10x1=10**

a.	What are the benefits of using XML when compared to HTML? Where is XML better than HTML?	CO2
b.	Explain CSS. What are the CSS frameworks? Explain in brief. What are the different ways of using the stylesheet?	CO2

5. Attempt any one **10x1=10**

a.	Compare Java and JavaScript. Explain and demonstrate 5 different types of objects in JavaScript with example.	CO3
b.	Write the javaScript code to design a registration form. (Assume fields are as per your actual registration form in B.Tech.)	CO3

6. Attempt any one **10x1=10**

a.	Explain the concept of URL and IP address. How is an IP Address assigned to host?	CO4
b.	Discuss EJB and its architecture. Differentiate Stateful and Stateless EJB.	CO4

7. Attempt any one **10x1=10**

a.	JSP is an extension of Servlets not replacement. Justify? What problems of Servlets technology can JSP is supposed to solve?	CO5
b.	Explain Servlets with its life cycle. How its life cycle is different from the life cycle of JSP? Explain with an example.	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KOE 093 **Sub. Name:** Data Warehousing & Data Mining

Year: 4th year **Branch:** CSE

PUT EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 3 *Hours*] ***[Total Marks:* 100]**

COURSE OUTCOMES

CO1	Identify the scope and necessity of Data Mining & Warehousing for the society.
CO2	Describe the designing of Data Warehousing so that it can be able to solve the root problem and also how data warehousing is implemented on client-server architecture.
CO3	To understand various tools of Data Mining and their techniques to solve the real time problems.
CO4	To develop ability to design various algorithms based on data mining tools.
CO5	To develop further interest in research and design of new Data Mining techniques.
CO6	Develop skill in selecting the appropriate data mining algorithm for solving practical problems

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Discuss the term Data Mining and Data Warehousing.	CO1
b.	Difference between Database System and Data Warehouse.	CO1
c.	What are the hardware and operating system for data warehousing.	CO2
d.	Describe client/Server Computing Model.	CO2
e.	How can we fill up the Missing Values from large amount of data?	CO3
f.	What do you mean by hierarchy generation?	CO3
g.	Discuss about the Classification.	CO4
h.	Discuss about the Statistical measures in large Databases in Classification.	CO4
i.	Write a short note on Data Visualization	CO5
j.	Write a short note on Aggregation.	CO5

SECTION-B

2. Attempt any three parts: **10x3**

a.	Discuss various components. & major issues related to Data Mining.	CO1
b.	Explain the concept of hierarchy generation.	CO2
c.	How can Noise be removed from data?	CO3
d.	Write Short notes on following: ii. CLIQUE iii. STING	CO4
e.	Define and describe the basic similarities and differences among ROLAP, MOLAP, and HOLAP.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	What is Multidimensional Database Schema? Discuss Star, Snow Flack and Fact Constellation schema in detail with suitable example.	CO1
b.	Explain the architecture of Data Mining System.	CO1

4. Attempt any one **10x1=10**

a.	Describe warehousing strategies, warehouse management and support processes.	CO2
b.	Describe Distributed DBMS implementation. Also explain warehouse schema design.	CO2

5. Attempt any one **10x1=10**

a.	Describe in detail about any two of the following. (i) Binning (ii) Clustering (iii) Regression	CO3
b.	What do you understand by Data Cube Aggregation and Dimensionality reduction in Data Mining?	CO3

6. Attempt any one **10x1=10**

a.	Compare and contrast between Distance-Based Algorithms and Decision Tree-Based Algorithms.	CO4
b.	What do you understand by Hierarchical and Partitioned Algorithms under the Clustering in Data Mining and Warehousing?	CO4

7. Attempt any one **10x1=10**

a.	Discuss about the Web Mining, Spatial Mining and Temporal Mining under the Data Visualization.	CO5
b.	Define Tuning and Testing of Data Warehouse under the Data Visualization.	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KA1601 **Sub. Name:** Machine Learning Techniques

Year: 3rd year **Branch:** CSE-AI

PUT EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	To understand the need for machine learning for various problem solving
CO2	To understand a wide variety of learning algorithms and how to evaluate models generated from data
CO3	To understand the latest trends in machine learning
CO4	To design appropriate machine learning algorithms and apply the algorithms to a real world problems
CO5	To optimize the models learned and report on the expected accuracy that can be achieved by applying the models

SECTION-A

1. Attempt all parts: **2×10=20**

a.	Define well defined learning problem.	CO1
b.	What Support Vector Machine?	CO1
c.	Define Issues in machine Learning.	CO2
d.	What is hyperplane?	CO2
e.	Explain Inductive bias.	CO3
f.	Explain Instance based learning.	CO3
g.	What is convolutional neural network	CO4
h.	Explain the application areas of artificial neural network.	CO4
i.	What is the reproduction in GA?	CO5
j.	What is Genetic Programming?	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	Define the term learning. What are the components of a learning system?	CO1
b.	Write down the performance measures for learning.	CO2
c.	Elaborate k-Nearest Neighbor Learning.	CO3
d.	What is SOM Algorithm? Explain in details.	CO4
e.	Explain different types of neuron connection with arch.	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Describe briefly linear regression.	CO1
b.	What are the types of logistics regression?	CO1

4. Attempt any one **10x1=10**

a.	Explain Bayesian learning. Explain two category classifications.	CO2
b.	Explain how the decision error for Bayesian classification can be minimized.	CO2

5. Attempt any one **10x1=10**

a.	Explain Issues in decision tree learning in details.	CO3
b.	Explain ID-3 Algorithm in details.	CO3

6. Attempt any one **10x1=10**

a.	Briefly explain: a) Activation function b) Backpropagation in details. c) Deep Learning	CO4
b.	What is Gradient descent? Explain in details.	CO4

7. Attempt any one **10x1=10**

a.	What is the main function of crossover operation in GA?	CO5
b.	Why mutation is done in genetic algorithm? Explain types of mutation.	CO5

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KCS061/KD S 601 **Sub. Name:** BIG DATA AND ANALYTICS

Year: 3RD **Branch: CSE / DS**

PUT EXAMINATION (EVEN SEMESTER 2022-23)

[Time: 3 *Hours*] ***[Total Marks:*** **100]**

COURSE OUTCOMES

CO1	Demonstrate knowledge of Big Data Analytics concepts, analytic processes and tools, and its applications in business
CO2	Demonstrate functions and components of Map Reduce Framework, Different Components in Hadoop Eco System and HDFS.
CO3	Explain Map Reduce Framework And Basics, process of developing Map Reduce based distributed processing applications.
CO4	Explain process of developing applications using HBASE, HIVE, PIG, SPARK, SCALA, build applications with Zookeeper, Spark Streaming.
CO5	Iinstallation , Administering & Maintenance of Hadoop Eco System Frameworks , solving real-world Big Data Applications.

SECTION-A

1. Attempt all parts: **2×10=20**

a.	List out various big data technologies?	CO1
b.	Discuss the various characteristics of big data?	CO1
c.	Discuss Why Hadoop came into an existence in processing big data?	CO2
d.	Explain Big Data Analytics functionalities in detail.	CO2
e.	State the core components of Hadoop?	CO3
f.	Define the term sharding and replication.	CO3
g.	How RACK in Data Nodes (RAID) is implemented in HDFS ?	CO4
h.	Differentiate Hadoop 1.0, Hadoop 2.0 .	CO4
i.	List out In-memory analytics and In-database processing system .	CO5
j	Differentiate SQL and NoSQL with corresponding example.	CO5

SECTION-B

2. Attempt any three parts: **10x3=30**

a.	Explain components and steps involved in YARN architecture with its diagram.	CO1
b.	Explain the Hadoop Cluster in processing big data environment? Also explain basic concepts of HDFS architecture with proper diagram.	CO2
c.	Explain Big Data architecture and characteristics with proper diagram	CO3
d.	Explain HADOOP Architecture and its different Components with proper diagram.	CO4
e.	What is Map Reduce workflow ? Explain different steps involved in Map Reduce job run, job failures, job scheduling, shuffle and sort, task execution in Map Reduce .	CO5

SECTION-C

3. Attempt any one **10x1=10**

a.	Explain parallel and distributed system terminologies with its diagram. Explain In-memory analytics and In-database processing system in detail .	CO1
b.	Explain Big Data architecture and characteristics with proper diagram. Also explain parallel and distributed system terminologies with its diagram.	CO1

4. Attempt any one **10x1=10**

a.	State the purpose of following components of Hadoop ecosystems: ZooKeeper, Oozie, Mabout, hive, hbase, Ambari.	CO2
b.	Explain working of following phases of Map Reduce with one common example with proper diagram. (i) Map Phase (ii) Combiner Phase (iii) Shuffle and Sort Phase (iv) Reducer Phase.	CO2

5. Attempt any one **10x1=10**

a.	What is Cluster? Explain the process of installation & setting up a Hadoop cluster.	CO3
b.	What is HADOOP Ecosystem also explain different components of HADOOP Ecosystem with proper diagram.	CO3

6. Attempt any one **10x1=10**

a.	Explain the HDFS Architecture, Nodes Replication & different features in HDFS Architecture with proper diagram.	CO4
b.	Explain how HBase uses Zookeeper to Build Applications with Zookeeper. Also Explain how Spark job run, Spark on YARN	CO4

7. Attempt any one **10x1=10**

a.	What is RDD? Explain about transformations and actions in the context of RDDs. State and explain RDD operations with diagram.	CO5
b.	Explain how HBase uses Zookeeper to Build Applications with Zookeeper. Explain in detail IBM infosphere Big insights and Streams	CO5

Name: ..... Roll No. .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:-KCS 101T **Subject Name:-** ***PROGRAMMING FOR PROBLEM SOLVING***

YEAR:-1st **Branch:-CSE(Sec-A & B)**

1st SESSIONAL EXAMINATION (ODD SEMESTER 2022-23)

[Time: 2 *Hours*] ***[Total Marks:*30]**

COURSE OUTCOMES

CO1	To develop simple algorithms for arithmetic and logical problems.
CO2	To translate the algorithms to programs & execution (in C language)
CO3	To implement conditional branching, iteration and recursion
CO4	To decompose a problem into functions and synthesize a complete program using divide and conquer approach.
CO5	To use arrays, pointers and structures to develop algorithms and programs.

SECTION-A

Q.1.	**Attempt all parts:**	**(2×5=10)**
(a)	What are input devices? Give the name of five input devises.	(CO1)
(b)	In C programming what will be the value of r if r = p % q where p = -17 and q= 5?	(CO1)
(c)	What is Algorithm? List characteristics of an algorithm.	(CO1)
(d)	Define compiler and interpreter	(CO1)
(e)	What is RAM and ROM.	(CO1)

SECTION-B

NOTE: Attempt any three parts		**(3x5=15)**
Q.1	Write a program in C to calculate roots of a quadratic equation.	(CO1)
Q.2.	Write a program in C to check whether a number in prime or not.	(CO1)
Q.3.	Differentiate between the following: - i) High level language and low level language. (ii) Compiler and interpreter. (iii) Logical error and run time error. (iv)Algorithm and flowchart.	(CO1)
Q.4.	What are different data types in C. Explain in terms of memory size, format specifier and range?	(CO2)
Q.5.	Draw a neat schematic of a digital computer and explain the role of each functional unit.	(CO1)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. What are the different types of operators in C language? Explain with example. Discuss the significance of each. (CO2)

Q.7. Write about the formatted and unformatted Input / Output functions in 'C' (CO1)

Name: ..... Roll No: .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code: KNC 301 **Subject Name:- CSS**

YEAR:-II **Branch:-CSE/AI/DS**

2nd SESSIONAL EXAMINATION (ODD SEMESTER 2022-23)

[Time: 2 *Hours]* ***[Total Marks:* 50]**

COURSE OUTCOMES

CO1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats
CO2	To discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threats
CO3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.
CO4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios
CO5	To articulate the well-knowncyber-attack incidents, explain the attack scenarios, and explain mitigation techniques.

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) What are the types of Computer System Security? (CO1)

(b) What is Rootkit? (CO2)

(c) What are the goals of Confidentiality Policies? (CO2)

(d) What are the differences between Discretionary Access Control and Mandatory Access Control? (CO3)

(e) What is Web Security? (CO3)

SECTION-B

NOTE: Attempt any four parts **(4x5=20)**

Q.2. Explain "CIA". (CO1)

Q.3. Discuss error 404 hacking digital India part 1 chase. (CO1)

Q.4. Write short notes on System call Interposition. (CO2)

Q.5. Explain the need of Software fault isolation. (CO2)

Q.6. What is Access Control List (ACL) and also defined what are the technologies used in Access Control. (CO3)

Q.7. Define role-based access control its major properties and why would you use it? (CO3)

SECTION-C

NOTE: Attempt any two parts: **(2x10=20)**

Q.8. What is Control hijacking with an example? Explain the term of Buffer overflow in Control hijacking. (CO1)

Q.9. What is Intrusion Detection System? What are the difficulties in Anamoly Detection? (CO2)

Q.10. What's the difference between Browser Isolation and Remote Browser Isolation? (CO3)

Name: …… Roll No: ……

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:-KCS 301 **Subject Name:- Data Structure using C**

YEAR:-IInd **Branch:-CSE/DS/AI**

1st SESSIONAL EXAMINATION (ODD SEMESTER 2022-23)

[Time: 2 *Hours]* ***[Total Marks:*30]**

COURSE OUTCOMES

CO1	Discuss algorithm and various data structures. [KL-2]
CO2	Implement linear data structure, [KL-3]
CO3	Implement various searching and sorting techniques. [KL-3]
CO4	Explain non linear data structure (Graph). [KL-2]
CO5	Explain tree concepts. [KL-2]

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) Define the term Data Structure. List some linear and non-linear data structures stating the application area where they will be used. (CO1)

(b) List the various operations of Linked List. (CO1)

(c) Differentiate between overflow and underflow condition in stack. (CO2)

(d) Convert the following arithmetic infix expression into its equivalent postfix expression. (CO2)
Expression: A-B/C+D*E+F

(e) Explain recursion. (CO2)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. What do you understand by time space trade off? Explain best, worst and average case analysis in this respect with an example. (CO1)

Q.3. Suppose a multidimensional array P and Q are declared as P(-2:2, 2:22) and Q (1:8, -5:5, -10:5) stored in column major order (CO1)
i) Find the length of each dimension of P and Q
ii) The number of elements in P and Q.
iii) Assuming base address (Q) = 400, W= 4, Find the effective indices E1, E2, E3 and address of the element Q[3,3,3].

Q.4. Explain tower of Hanoi problem and write a recursive algorithm to solve it. (CO2)

OR

Explain various operations on stack.

Q.5. Differentiate between recursion and iteration. (CO2)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. What is doubly linked list? Write down its applications. Explain how an element can be deleted from doubly linked list using C program. (CO1)

Q.7. Write algorithm for Push and Pop operation in stack. Transform the following expression into its equivalent postfix expression using stack: A+(B*C-(D/E^F)*G)*H. (CO2)

Name: ..... *Roll No:* .....

Mangalmay Institute of Engineering and Technology, Gr. Noida

Subject Code:-KHU701 **Subject Name:- RDAP**

YEAR:-IV/IV B.Tech **Branch:-CSE**

1st SESSIONAL EXAMINATION (ODD SEMESTER 2022-23)

[Time: 2 *Hours]* ***[Total Marks:*30]**

COURSE OUTCOMES

CO1	Students can understand the definitions, concepts and components of Rural Development
CO2	Students will know the importance, structure, significance, resources of Indian rural economy.
CO3	Students will have a clear idea about the area development programmes and its impact.
CO4	Students will be able to acquire knowledge about rural entrepreneurship.
CO5	Students will be able to understand about the using of different methods for human resource planning

SECTION-A

Q.1. Attempt all parts: **(2×5=10)**

(a) List out the basic elements of the rural development? (CO1)

(b) What are the key issues in rural development? (CO1)

(c) What is Rainfed area rural development program(RADP)? (CO1)

(d) The Srinikethanprogramme covered in which areas? (CO2)

(e) List out the drawbacks of Gurgaon experiment? (CO2)

SECTION-B

NOTE: Attempt any three parts **(3x5=15)**

Q.2. Discuss the Major objectives of Rural development? (CO1)

Q.3. Explain the importance of Rural development for creation of sustainable livelihood? (CO1)

Q.4. Explain Minimum Needs Programme(MNP) and its objective? (CO1)

Q.5. Discuss the MarthandumExperiment? (CO2)

SECTION-C

NOTE: Attempt any one parts: **(1x5=5)**

Q.6. Explain Various Policies undertaken by govt of India for rural development in the agriculture sector? (CO1)

Q.7. Write a short note on Baroda Experiment? (CO2)