S2 CSE QUESTION BANK
COMPUTER SCIENCE & ENGINEERING

Index

Course Code: GAMAT201
Course Name: Mathematics for Computer and Information Science-2

Module 1			
Sl. No	**Questions**	**Marks**	**KU/KTU**
1	**Solve the system of equations by Gauss elimination method** **x+2y+3z=12** **3y + 2z = 2** **3x+3y+4z= 1**	**7**	**KTU** **Mar 2017** **Dec 2019** **Dec 2021** **Feb 2022**
2	**What kind of conic section or pair of straight lines is given by the quadratic form $3x^2 + 22xy + 3y^2 = 0$ express $(x, y)^T$ in terms of new co-ordinates.**	**7**	**KTU** **Dec 2016** **Dec 2021** **Dec 2022**
3	**Determine the rank of the matrix** $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \\ 1 & 2 & 5 \end{bmatrix}$ $B = \begin{bmatrix} 3 & 0 & 2 & 2 \\ -6 & 42 & 24 & 54 \\ 21 & -21 & 0 & -15 \end{bmatrix}$	**3 +3**	**KTU** **Mar 2017** **Dec 2019** **Sept 2021** **Feb 2022**
4	**Find the Eigen values and Eigen vectors of** $A = \begin{bmatrix} 4 & 2 & -2 \\ 2 & 5 & 0 \\ -2 & 0 & 3 \end{bmatrix}$	**7**	**KTU** **Mar 2017** **Dec 2019** **Sept 2021** **Dec 2022**
5	**Find the values of β and μ for which the system of equations** **2x + 3y + 5z = 9 7x+3y+−2z= 8** **2x+3y+βz= μ** **Has (i) no solution, (ii) a unique solution (iii) infinite solution**	**7**	**KTU** **Dec 2019** **Dec 2022**
6	**Find the matrix of transformation that diagonalize the matrix. Also, find the diagonal matrix.** $A = \begin{bmatrix} 3 & 1 & -1 \\ -2 & 1 & 2 \\ 0 & 1 & 2 \end{bmatrix}$	**7**	**KTU** **Dec 2018** **Dec 2019**

7.	**Find the matrix of transformation that diagonalize the matrix** $A = \begin{bmatrix} -19 & 7 \\ -42 & 16 \end{bmatrix}$ **. Also write the diagonal matrix.**	**7**	**KTU Dec 2019 Dec 2022**
8	**If 2 is an Eigen value of, without using its characteristic equation, find the other Eigen values.** $\begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$	**7**	**KTU Sept 2021 Dec 2019**
9	**Reduce to echelon form and hence find the rank of the matrix** $A = \begin{bmatrix} 3 & 0 & 2 \\ -6 & 4 & 2 \\ 24 & 2 & 1 \\ -2 & 1 & 0 \end{bmatrix}$	**7**	**KTU Mar 2017 Sept 2021**
10	**Solve the following system of equations?** **y+ z− 2w= 0** **2x−3y−3z+6w=2** **4x + y + z − 2w = 4**	**7**	**KTU Mar 2017 Dec 2018 Sept 2021**
	Module 2		
1	**Check whether** $W = \{(x, x-2) : x \epsilon R\}$ **is a subspace of** R^2 **under standard operations.**	**3**	**Model QP**
2	**Check whether set of all points on the plane** $3x + y + 3z = 0$ **is a subspace of** R^3 **under standard operations.**	**4**	**Model QP**
3	**Show that the set of vectors** $\{(1,3,1), (2,3,3), (3,0,1)\}$ **form a basis of** R^3**.**	**5**	**Model QP**
4	**For which values of** λ **do the following vectors form linearly dependent set in** R^3**?** $v_1 = (\lambda, -1, -1), v_1 = (-1, \lambda, -1), v_1 = (-1, -1, \lambda)$	**3**	**Model QP**
5	**Find the transition matrix from B to** B^1 **where** $B = \{(1,3), (-2,-2)\}$ **and** $B^1 = \{(-12, 0), (-4, -4)\}$ **are two bases of** R^2**.Hence find the coordinate matrix if** $[x]_B = \begin{bmatrix} -1 \\ 3 \end{bmatrix}$**.**	**6**	**Model QP**
6	**Let** $T: \mathbb{R}^4 \rightarrow \mathbb{R}^7$ **be a linear transformation. Find the dimension of the kernel of T when the dimension of the range is 1.**	**3**	**Model QP**
	Module 3		
1	**Find the angle between the vectors** $u = (1, 2, 0, -1)$ **and** $v = (1, 1, 0, -2)$	**3**	**Model QP**

2	**Find an orthogonal projection of $u = (2, -1)$ on to $v = (3, 2)$ in R^2**	**3**	**Model QP**
3	**Find $\|u\|$, $\|v\|$ and $d(u, v)$ for the given inner product. of $u = (-1, 2)$ on to $v = (4, 3)$ $\langle u,v \rangle = u.v$**	**4**	**Model QP**
4	**Find the orthonormal basis corresponding to the basis $B = \{(1, -1, 0), (-1, 2, 0), (0, -1, 2)\}$**	**5**	**Model QP**
5	**Find an orthonormal basis for the subspace R^3,spanned by the vectors $v_1 = (3, 4, 0)$ and $v_2 = (-2, 0, 0)$**	**5**	**Model QP**
6	**Verify Cauchy-Schwarz inequality for $u = (0, 2.1)$ $v = (1, -1, 3)$**	**5**	**Model QP**
Module 4			
1	**Check whether $T: \mathbb{R}^2 \to \mathbb{R}^2$ defined by $T(x, y) = (x + y, 3y)$ ia a linear transformation or not.**	**3**	**Model QP**
2	**If $T: \mathbb{R}^2 \to \mathbb{R}^2$ is a linear transformation defined by $T(v) = Av$, where $A = \begin{bmatrix} 1 & -1 \\ 2 & 0 \end{bmatrix}$, find $T(1, 2)$.**	**3**	**Model QP**
3	**Let $T: \mathbb{R}^2 \to \mathbb{R}^2$ be a linear transformation such that $T(1, 3) = (1, 0)$, $T(-2, 1) = (0, 1)$. Find $T(2, 1)$ & T(0, 4)**	**4**	**Model QP**
4	**Let $T: \mathbb{R}^3 \to \mathbb{R}^2$ be a linear transformation defined by $T(x, y, z) = (3x + z, 2y - 3z)$. Find the matrix for T relative to the bases $B = \{(1, 0, 1), (0, 1, 0), (0, 0, 1)\}$ and $C = \{(1, 1), (1, 0)\}$.**	**5**	**Model QP**
5	**For a linear transformation $T: \mathbb{R}^2 \to \mathbb{R}^2$ given by the matrix $A = \begin{bmatrix} a & -b \\ b & a \end{bmatrix}$, find a and b such that $T(12, 5) = (13, 0)$.**	**3**	**Model QP**
6	**For the following linear transformation $T: \mathbb{R}^2 \to \mathbb{R}^2$ defined by $T(v) = Av$, where $A = \begin{bmatrix} 1 & -1 & 2 \\ 0 & 1 & 2 \end{bmatrix}$, find** **(a) Basis for the range of T,** **(b) Rank of T,** **(c) Basis for the null space of T,** **(d) Nullity of T**	**6**	**Model QP**

Course Code: GAPHT121
Course Name: Physics for Information Science

MODULE 1			
Sl. No	**Questions**	**Marks**	**KTU, Year**
1	**Define conduction band and valence band.**	**3**	**Model question**
2	**Evaluate the Fermi function at T greater than 0 and T=0.**	**3**	**Model question**
3	**Derive an expression for electrical conductivity of metals.**	**6**	**Model question**
4	**What are the postulates of free electron theory?**	**3**	**Model question**
5	**Distinguish between Type I and Type II superconductors with appropriate graphs**	**8**	**KTU AUG 2022**
6	**Explain BCS theory of superconductivity. Describe high temperature superconductors. Write three applications of superconductors.**	**10**	**KTU AUG 2023**
7	**Explain the Meissner effect and show that superconductors are perfect diamagnets.**	**10**	**KTU AUG 2022**
MODULE -2			
1	**a) What are matter waves? Obtain an expression for de Broglie wavelength. Derive expressions for the de Broglie wavelength of an electron (i) accelerated from rest through a potential of V volts (ii) having kinetic energy T.**	**10**	**KTU AUG 2023**
2	**An electron is confined to one dimensional potential box of width 25Å. Calculate the energies corresponding to the first and second quantum states in eV.**	**4**	**KTU DEC 2023**
3	**Write down Schrodinger's time dependent equation and hence derive Schrodinger's time independent equation.**	**10**	**KTU DEC 2023**

4	**An electron is moving in a one dimensional box of infinite height and width $10A^0$. Calculate the first three permitted energy levels.**	**5**	**KTU AUG 2023**
5	**Obtain Schrödinger's wave equation for a particle in square well potential and discuss energy levels.**	**10**	**KTU AUG 2023**
6	**State Heisenberg's uncertainty principle. Write its mathematical form with different pairs of variables. With the help of it, explain the absence of electrons inside the nucleus of an atom.**	**10**	**KTU AUG 2022**
7	**Calculate the voltage that must be supplied to an electron microscope to produce an electron of wavelength 3 Å.**	**4**	**KTU DEC 2023**
8	**Show that the uncertainty in the location of the particle is equal to de Broglie wavelength when the uncertainty in velocity is equal to its velocity.2 (9) M**	**5**	**KTU DEC 2023**
9	**What is meant by quantum mechanical tunneling? Name two electronic devices based on this phenomenon**	**3**	**KTU AUG 2023**
10	**An electron and a Proton are moving with the same kinetic energy. Which one has a shorter wavelength? Why?**	**4**	**KTU DEC 2022**
	MODULE -3		
1	**Define fermi energy. Give the significance of fermi level.**	**3**	**KTU DEC 2024**
2	**Distinguish between intrinsic and extrinsic semiconductors.**	**3**	**KTU DEC 2024**
3	**Derive diode equation.**	**6**	**KTU DEC 2024**
4	**At what temperature, the probability of a state to be occupied by an electron is 2 %. Given that the energy of the state is 0.1eV above the fermi level.**	**3**	**KTU DEC 2024**
5	**Derive an expression for density of holes in the valence band of an intrinsic semiconductor.**	**6**	**KTU DEC 2024**
6	**Calculate the intrinsic carrier concentration for silicon at 300 K with a band gap of 1.1 eV. Given m n * = 0.12 m e and m p * = 0.28 m e**	**3**	**KTU DEC 2024**

7	**Derive the expressions for concentration of holes in valence band.**	**6**	**Model question**
8	**What is a pn junction? Explain the flow of current across pn junction in forward bias and reverse bias conditions.**	**3**	**Model question**
9	**What are intrinsics and extrinsic semiconductors?**	**3**	**Model question**
10	**What is the meaning of forward biasing of a p-n junction diode?**	**3**	**Model question**
MODULE -4			
1	**Write a short note on semiconductor lasers.**	**3**	**KTU DEC 2024**
2	**Explain stringing of solar cells.**	**3**	**KTU DEC 2024**
3	**Explain the working and VI characteristics of a tunnel diode.**	**6**	**KTU DEC 2024**
4	**In a centre tap full wave rectifier each diode has an internal resistance of 10 Ω. The transformer rms secondary voltage from centre tap to each end of secondary is 50 V and load resistance is 980 Ω. Find mean load current and rms value of load current.**	**3**	**KTU DEC 2024**
5	**Explain the working of a solar cell and draw its IV characteristics. Define fill factor and efficiency.**	**6**	**KTU DEC 2024**
6	**Calculate the band gap energy of the semiconductor material used in an LED which emits light of wavelength 654 nm.**	**3**	**KTU DEC 2024**
7	**With neat labelled diagram explain the working of i) centre tap full wave Rectifier and ii) full wave bridge rectifier.**	**6**	**Model question**
8	**Draw V-I characteristics of Zener diode and Tunnel diode.**	**3**	**Model question**
9	**Explain the working of LEDs. Write any six advantages of LED**	**6**	**Model question**

10	**Write a short note on stringing of solar cells**	**3**	**Model question**

Course Code: PCCST205
Course Name: Discrete Mathematics

MODULE 1			
Sl. No	**Questions**	**Marks**	
1	**Define the following with examples** **1. Proper subset** **2. Complement of a set** **3. What is the set** $\{x: x \in R, x^2 = 9, 2x = 4\}$	**3**	**Model Question**
2	**Let** $f: A \rightarrow$**B such that** $f(x)$ **=x-1 and g: B→** CC **such that** $g(y) = y^2$**. Find** f **0** $g(y)$	**3**	**Model Question**
3	**Let** $f: R \rightarrow R$ **and** $g: R \rightarrow R$ **be defined by f(x) =x – 1 and** $g(x) = x^2 + 1$**.** $find\ fog(2), gof(2), fof(2), gog(2)$	**9**	**Model Question**
4	**If A =**$\{1, 2, 3\}$**,** $B = \{4, 5, 6\}$**,** $C = \{7, 8, 9\}$ **then verify that :** $A \cup (BC) = (A \cup B) \cap (A \cup C)$	**4**	**Model Question**
5	**In a school there are 20 teachers who teach mathematics or physics of these 12 teach mathematics and 4 teach physics and mathematics. How many teach physics .**	**6**	**Model Question**
6	**Let R and S be two relations on a set A . If R and S are symmetric, Prove that (R∩S) is also symmetric.**	**5**	**Model Question**
7	**Suppose f(x) = x+2 , g(x) = x-2, and h(x) = 3x for x ε R , where R is the set of real numbers. Find** **1.(g o f) ,** **2. (f o g) ,** **3.(f o f)** **4.(g o g)**	**5**	**Model Question**
8	**Define a poset with an example**	**3**	**Model Question**

9	**lf A = {1,2,3,4}, B = {5,6}, C={3,4,7}, determine (i)AU (B x C), (ii) (AU B) x C (iii)(AxC) U (BxC0**	**3**	**Model Question**
10	**What is a chain lattice ? Explain. Also show that every chain is a distributive lattice.**	**3**	**Model Question**
	MODULE 2		
1.	**Determine the validity of the following statements using rule CP. "My father praises me only if I can be proud of myself. Either I do well in sports or I can't be proud of myself. If I study hard, then I can't do well in sports. Therefore if my father praises me then I do not study well"**	**9**	**Model Question**
2.	**Describe Rules of Inference**	**5**	**Model Question**
3.	**Prove that the sum of an irrational number and a rational number is irrational.**	**3**	**Model Question**
4.	**Write the symbolic form of the following statement and its negation. Also express the negation in words. "If cow is black then milk is white."**	**6**	**Model Question**
5.	**State Pigeon hole principle. Let .S be a set with positive integers and lSl = 32. How many elements of .S have the same remainder upon division by 36?**	**3**	**Model Question**
6.	**Show that p∧ (~p∧q) is a contradiction. Use Truth table**	**3**	**Model Question**
7.	**Let P(x) and q(x) denote the open statements in the universe of all integers p(x) : $x_2 - 2x - 3 = 0$ & q(x): x < 0**	**6**	**Model Question**
8	**In how many ways can we distribute eight identical white balls into 4 distinct containers so that (i)no container is left empty (ii)the 4^{th} container has an odd no. of balls in it?**	**8**	**Model Question**

9	**Discuss indirect method of proof . Show that the following premises are inconsistent (i) If Jack misses many classes through illness, then he fails high school. (ii) If Jack fails high school, then he is uneducated. (iii)If Jack reads a lot of books, then he is not uneducated. (iv)Jack misses many classes through illness and reads a lot of books.**	**6**	**Model Question**
10	**Show the following implication without constructing a truth table: (P∧Q)→ P→Q**	**3**	**Model Question**
	MODULE 3		
1	**Solve a_n - 3a_n-1 + 2 ; a0 = 1 n ≥ 1, using generating functions.**	**8**	**Model Question**
2	**Use generating function to solve the following recurrence relation a_n = 2a_{n-1}+ 2n ; with a_0 = 2.**	**6**	**Model Question**
3	**Solve the recurrence relation a_r- 7a_{r-1}+ 10a_{r-2} = 0 for r ≥ 2 ; Given a_0 = 0; a_1 = 41 using generating functions**	**8**	**Model Question**
4	**What is meant by exponential generating function? Explain.**	**3**	**Model Question**
5	**Provide one example of linear homogeneous recurrence relation. Mention the degree also.**	**3**	**Model Question**
6	**Solve the recurraence relation $a_{n+2} + a_n$= 0, $n \geq 0$, a_0 = 0, a_1 = 3**	**8**	**Model Question**
7	**Determine the sequence generated by the exponential generating function f(x)= $\frac{1}{1-x}$**	**6**	**Model Question**
8	**Solve the recurrence relation $a_{n+2} - 10a_{n+1} + 21a_n$=7(11)^n**	**8**	**Model Question**

9	**Find the unique solution of the recurrence relation $2a_n - 3a_{n-1}=0$, n ≥ 1, $a_4=81$**	**6**	**Model Question**
10	**A bank pays 6%o interest on savings, compounding the interest yearly. Write (3) the recurrence relation for this and solve it to find how much will a deposit of Rs 1000 be worth after l2years.**	**7**	**Model Question**
	MODULE 4		
1	**Is the set of integers Z, a semi group under subtraction? Justify your answer**	**3**	**Model Question**
2	**Show that the inverse of an element in a group is unique.**	**3**	**Model Question**
3	**a) Define a group with an example (b) Show that a cyclic monoid is abelian. _**	**8**	**Model Question**
4	**Show that the direct product of two group is a group.**	**6**	**Model Question**
5	**Show that the subgroup of a cyclic group is cyclic.**	**8**	**Model Question**
6	**Let (A,*) be a group. Show that (A,*) is an abelian group if and only if $a^2 * b^2=(a*b)^2$ for all 'a' and 'b' in A**	**6**	**Model Question**
7	**Define (i)Semi group (ii)Monoid (iii)group. Give one example each ,different from one another .Is R the set of real numbers ,a group under multiplication ?Justify ?**	**8**	**Model Question**
8	**If H and K are the subgroups of a group G ,Prove that H∩Kis also a subgroup of G**	**6**	**Model Question**

9	**Let (G,o)and (H,*) be the groups with respective identities e_G& e_H.If f: G→ H is a homomorphism ,Prove that ,for all G and $n \in Z$ (i)f(e_G) = e_H. (ii)f(a^{-1})=[f(a)]$^{-1}$ (iii)f(a^n)=[f(a)]^n**	**8**	**Model Question**
10	**Let G=(Z,+) be the group of integers under addition ,Let H ={…..,-8,-4,0,4,8…….}.Show that H is a subgroup of G .Write all the left cosets of H in G.**	**6**	**Model Question**

Course Code: GXEST203
Course Name: Foundations of Computing: From Hardware Essentials to Web Design

MODULE 1			
Sl. No.	**Questions**	**Marks**	
1	**How does the form factor of a motherboard affect the compatibility of hardware components?**	**3**	**Model Question**
2	**How do firmware updates improve the functionality and security of hardware devices?**	**3**	**Model Question**
3	a) **With a block diagram explain the architecture of CPU?** b) **How does pipe-lining in CPUs enhance processing efficiency, and what are its limitations?**	**9**	**Model Question**
4	**Compare and contrast HDDs and SSDs in terms of performance, storage capacity, and cost**	**9**	**Model Question**
5	a) **What is a motherboard, and what are its main components?** b) **Discuss the role of ALU in executing program instructions**	**9**	**Model Question**
6	**What is the role of the boot loader in the boot process?**	**9**	**Model Question**
7	**How does the installation of a new interface card affect the system's performance?**	**9**	**Model Question**

MODULE 2			
1	**Add the hexadecimal numbers A2F and 4B7, Express the result both in hexadecimal and decimal**	**3**	**Model Question**
2	**Design a simple 3stage- pipeline for a CPU and explain how the instruction flows occur across Fetch, Decode, Execute, stages.**	**3**	**Model Question**
3	a) **How do you convert a decimal number to binary? Provide an example** b) **Convert1024bytestokilobytes, and1gigabyte to megabytes.**	**9**	**Model Question**
4	a) **Explain the two's complement representation and how it is used for signed integer representation** b) **How many bits are there in one byte, and how many Bytes in one kilobyte?**	**9**	**Model Question**
5	**Explain the purpose of opcodes in an instruction format. Give examples of some basic opcodes.**	**9**	**Model Question**
6	**What are operands in an instruction? How do they relate to the operation performed by the CPU?**	**9**	**Model Question**
7	**What is the difference between direct and indirect addressing in instruction formats?** **Explain the concept of binary representation. Why is binary used in computers?**	**9**	**Model Question**

MODULE 3			
1	**What are the main difference between 32bit and 64bit pc operating system**	**3**	**Model Question**
2	**What are the potential risk of relying solely on DHCP in a network**	**3**	**Model Question**
3	**a) Analyze the risks and benefits of third party utility programs. What measures should users take to ensure safety when using such tools**	**9**	**Model Question**
4	**What are DHCP and NAT, and how do they contribute to network management?**	**9**	**Model Question**
5	**Explain the key functions of an operating system and its types and how it manages computer resources.**	**9**	**Model Question**
6	**Compare and contrast the different types of computer communications networks, including LAN, MAN, and WAN, and discuss their typical use cases.**	**9**	**Model Question**
7	**Explain the concepts of IP addresses, DHCP, and NAT, and how they work together in a network**	**9**	**Model Question**

MODULE 4			
1	**Compare XHTML with HTML5? What are the key differences and why did HTML5 become the preferred standard**	**3**	**Model Question**

2	**Discuss the structure and significance of HTML in Web development. How does it serve as the foundation for the modern web.**	**3**	**Model Question**
3	a) **What are the key elements of HTML?** b) **What is the role of CSS in web design?**	**9**	**Model Question**
4	**a) What are the main features of JavaScript?** **b) How does web content delivery work?**	**9**	**Model Question**
5	**Create a basic HTML page with the following elements:** **A title "My First Web Page".** **A heading "Welcome to My Web Page". A paragraph describing the purpose of the page.** **An image with a source URL.** **A hyperlink to an external website.**	**9**	**Model Question**
6	**Explain the purpose and structure of CSS selectors and provide examples of different types of selectors.**	**9**	**Model Question**
7	**Describe the role of CSS in web design, including how it enhances the appearance and layout of web pages**	**9**	**Model Question**

Course Code: GXEST 204
Course Name: PROGRAMMING IN C

Module I			
1.	**Write a menu driven program to find the area of square, triangle, circle and rectangle according to the choice given.**	**10**	**June 2023**
2.	**Differentiate between break and continue statements using an example.**	**4**	**June 2023 May 2024**
3.	**Explain any four types of operators used in C**	**7**	**June 2023 Jan 2024 May 2024**
4.	**Write a program to generate the following pattern** **1** **1 2** **1 2 3** **1 2 3 4**	**7**	**June 2023**
5.	**Give the syntax of switch statement. Write a program to check whether a given number is positive, negative or zero using switch.**	**3**	**Jan 2024**
6.	**Write a c program to check whether a counting number is prime or not.**	**6**	**Jan 2024 May 2024**
7.	**with suitable examples describe the conditional statements in c.**	**8**	**Jan 2024**
8.	**Explain various data types used in C programming language.**	**3**	**May 2024**
9.	**Write a C program to find the sum of digits of a given number.**	**3**	**May 2024**
10.	**Write a C program to implement basic arithmetic operations of a calculator using switch constructs.**	**7**	**May 2024**
Module II			
1.	**Explain any 4 string handling functions in C programming.**	**7**	**July 2021 June 2022 Jan 2024 May 2024**
2.	**Write a C program to sort an array of numbers using bubble sort**	**7**	**June 2022**
3.	**What are the different ways of declaring and initializing a single and multi dimensional arrays?**	**3**	**June 2023 Jan 2024 May 2024**

4.	**Implement string concatenation without using built in functions.**	**8**	**June 2023 May 2024**
5.	**Write a C program to accept a 2-D integer matrix and check whether it is symmetric or not (A matrix 'A' is symmetric if $A=A^T$).**	**6**	**June 2023**
6.	**Write a program to print the product of two matrices**	**8**	**June 2023 Jan 2024**
7.	**Develop a c program to accept a string from the user. Display the count of uppercase and lowercase characters in that string.**	**6**	**Jan 2024**
8.	**Write a C program to find average marks obtained by a class of 50 students in a test.**	**3**	**May 2024**
9.	**Write a C program to find the sum of two matrices**	**7**	**May 2024**
10.	**Write a C program to find the length of a given string without using built in string functions.**	**7**	**May 2024**
	Module III		
1.	**What is recursion? Write a C program to display Fibonacci series using recursive function**	**7**	**July 2021 June 2022**
2.	**What are the main differences between structures and unions? Which is preferred in what situation? Give examples.**	**7**	**June 2022 Jan 2024**
3.	**Define function prototype. Why is it used? Differentiate formal and actual parameters.**	**3**	**June 2023 May 2024**
4.	**Mention the difference between structure and union using suitable examples**	**3**	**June 2023 May 2024**
5.	**Explain different storage classes used in C by providing suitable examples.**	**8**	**June 2023 Jan 2024 May 2024**
6.	**What is meant by recursion? Write a program to find the factorial of a number using recursion.**	**6**	**June 2023 Jan 2024 May 2024**
7.	**Implement linear search using function. Reading the inputs and printing the result must be done in the main function.**	**10**	**June 2023**
8.	**Compare User defined functions with library functions.**	**4**	**June 2023**
9.	**Describe different methods of parameter passing in functions and implement a program to swap two variables using those methods.**	**6**	**Jan 2024**

10.	**Write a C program to read and display data of n employees (Name, Employee Id and Salary) using structure.**	**7**	**May 2024**
	Module IV		
1.	**What do you mean by a pointer variable? How is it initialized?**	**3**	**June 2022 Jan 2024**
2.	**Write a C program to replace vowels in a text file with character 'x'**	**7**	**June 2022**
3.	**Write a C program to print the elements of an array in reverse order using pointers**	**7**	**June 2022**
4.	**List out the various modes of opening a file in C language.**	**3**	**June 2023 Jan 2024 May 2024**
5.	**Write a program to read and store the details (the name, employee code (integer) and salary) of 'n' employees in a company into a file using structure. Print the details of the employee whose employee code is given as input**	**14**	**June 2023**
6.	**Write a program to copy the content of a file to another.**	**6**	**June 2023**
7.	**Explain any four file handling functions used in C.**	**7**	**May 2024**
8.	**Write a C program to swap two numbers using pointers.**	**7**	**May 2024**
9.	**Write a C program to read the data in a given file and display the file content on console.**	**7**	**May 2024**
10.	**Explain any three file Input and Output functions used in C.**	**7**	**May 2024**

Course Code: UCEST206
Course Name: Engineering Entrepreneurship &IPR

Module I			
Sl. No	**Questions**	**Marks**	**Year**
1	**What is Ideation?**	**3**	**Model Question**
2	**Explain about Barriers to innovation in entrepreneurship?**	**3**	**Model Question**
3	**Explain about Frameworks for innovation and different types of innovation framework?**	**6**	**Model Question**
4	**What are the resources for Aspiring Entrepreneurs?**	**8**	**Model Question**
5	**Explain about the 4 main types of intellectual property rights(IPR)**	**8**	**Model Question**
6	**Explain about strategies for protecting intellectual property based on the type on innovation?**	**8**	**Model Question**
7	**Explain the Role of IPR in securing funding and competitive advantages?**	**6**	**Model Question**
8	**What is the importance of Building a strong team?**	**8**	**Model Question**
9	**Explain about Techniques for Generating Ideas?**	**9**	**Model Question**
10	**Explain develop strategies for bringing your innovation to life?**	**5**	**Model Question**

Module II			
1	**Explain about problem and solution canvas preparation?**	**3**	**Model Question**
2	**What to include in a competitive analysis?**	**3**	**Model Question**
3	**Explain about customer profiling and importance of customer profiling?**	**8**	**Model Question**
4	**What are the different types of Market Research and benefits of Market Research?**	**8**	**Model Question**
5	**Discuss about types of customer segmentation?**	**6**	**Model Question**
6	**How to create a customer profile in steps and what data is necessary to create and ideal customer profile?**	**8**	**Model Question**
7	**What are the Benefits of persona development?**	**10**	**Model Question**
8	**Explain best practices to prioritize customer request?**	**6**	**Model Question**
9	**Explain about competitor analysis?**	**9**	**Model Question**
Module III			
1	**How to describe products and services in detail?**	**7**	**Model Question**
2	**Explain about Business plan preparation?**	**7**	**Model Question**
3	**What is the operational planning process?**	**8**	**Model Question**
4	**What should operational planning include?**	**8**	**Model Question**
5	**What are the steps to Build an operational plan?**	**6**	**Model Question**
6	**Explain prototype development plan preparation?**	**10**	**Model Question**
7	**What are the application of Software Testing?**	**5**	**Model Question**
8	**Difference between software testing and Quality assurance?**	**10**	**Model Question**
9	**Explain importance of feedback loops in Software Development?**	**10**	**Model Question**
Module IV			
1	**What Are The Types Of Investors?**	**(3**	**Model Question**
2	**What are the 3 types of investors in Business?**	**3**	**Model Question**
3	**Explain about partners in Business?**	**8**	**Model Question**
4	**What are core functions of prototype development advisors?**	**6**	**Model Question**
5	**Explain the importance of a prototype mentors?**	**8**	**Model Question**

6	**Explain about customers?**	**6**	**Model Question**