Roll No:	

Tatyasaheb Kore Institute of Engineering & Technology, Warananagar
(An Autonomous Institute)
S.Y. B. Tech (Sem-II), In Semester Examination – I, April 2023

Automata Theory (CSE-401)

Day and Date: Wednesday , 26/04/2023 **Marks: 40**

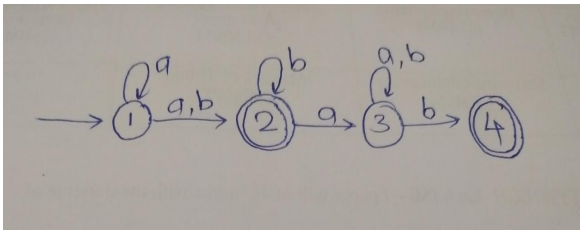
Time : 9:15 AM to 10:45 AM

Instructions: i. Figure to the right indicates full marks.

ii. Assume suitable data if missing.

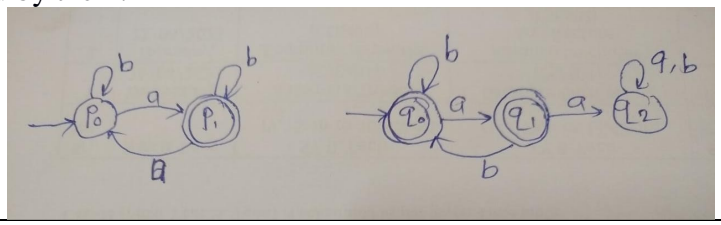
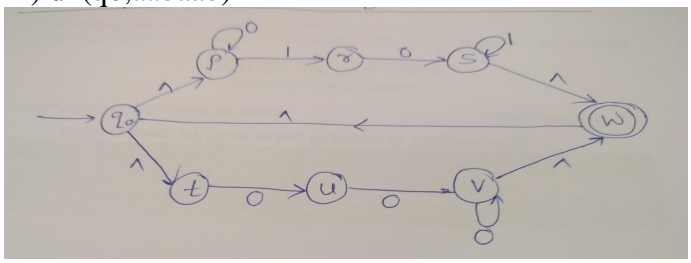
Q.1		Attempt any 2 from the following questions.	Unit No	CO	PO	Marks
	a)	Find regular expression for following language i) Language of all string with even length. ii) Language of all string ending with '011' iii) Language of all strings that starting and end with different symbol.	1	1	1,12	**7**
	b)	Give recursive for the following language. i)Language of odd length palindrome. ii) Language of all stings that ends with 10 or 11.	1	1	1	**7**
	c)	i) Define and explain Deterministic Finite Automata with example. ii) Construct DFA for language of all string over the alphabet {a, b} that string start with ab	1	1	1,12	**7**
Q.2		**Attempt any 2 from the following questions.**				
	a)	NFA with state 1-5 and input alphabet {a,b} has following transition table. a) Draw Transition diagram b) Calculate d*(1,ab)	2	2	1,3, 4	**7**
	b)	State and prove Kleene's Theorem.	2	2	1,2, 3	**7**
	c)	Convert following NFA to DFA	2	2	1,3,4	**7**

q	d(q, a)	d(q, b)
1	{1,2}	{1}
2	{3}	{3}
3	{4}	{4}
4	{5}	{ ϕ }
5	{ ϕ }	{5}



Roll No:	

Tatyasaheb Kore Institute of Engineering & Technology, Warananagar
(An Autonomous Institute)
S.Y. B. Tech (Sem-II), In Semester Examination – I, April 2023

Q.3	Attempt any 2 from the following questions.					
	a)	Construct DFA for union of following two DFA's. Also find language accepted by them. 	1	3	1,3	**6**
	b)	For following FA, find 1) ʌ(s) 2) d*(q0,aabaab) 	2	2,3	1,2, 4	**6**
	c)	I. Define the following terms i) Alphabet ii) Sting iii) language II. Differentiate between NFA & DFA with example.	1 and 2	1	1	**6**

Seat No.	

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

F.Y.B.Tech.(All Branches) (Sem-II)

End Semester Examination,July-2023

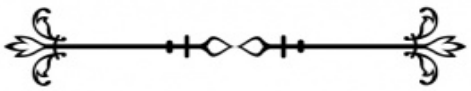
Course Name : Computer Networks — Course Code: CSE 402

Day & Date : **Thursday, 6-Jul-2023** — Max Marks 60 Marks

Time : **10:00 am to 12:00 pm**

Instructions:
a) All questions are compulsory
b) Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL)(**L1-Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**
c) Use of non-programmable calculator is allowed
d) Assume suitable data if required.

		Marks	B.L	CO
Q.1	**Attempt any two**	**12**		
a)	Draw and explain TCP Header Format.		**L2**	**1**
b)	Draw and explain the DHCP Client transition diagram.		**L1**	**2**
c)	Explain the Functionality of transport layer in detail		**L1**	**1**
Q.2	**Attempt any two**	**12**		
a)	Illustrate FTP data Connection and control connection with suitable diagrams.		**L2**	**2**
b)	Draw and illustrate format of HTTP request message.		**L1**	**2**
c)	Compare the feature and functionalities between POP3 and IMAP4 protocols.		**L4**	**4**
Q.3	**Attempt any two**	**12**		
a)	Define Socket. Draw and explain format of socket structure.		**L2**	**2**
b)	Illustrate Socket function calls for connection-less client and server with syntax.		**L1**	**4**
c)	Write a socket program in C for connection less Echo Client and Server.		**L3**	**4**
Q.4	**Attempt any two**	**12**		
a)	Describe AH and ESP protocols of IPSec in brief with their formats.		**L3**	**3**
b)	What is the concept of SSL? Explain SSL Services.		**L2**	**3**
c)	Discuss Four Protocols of SSL in brief.		**L1**	**4**
Q.5	**Attempt any two (Unit 1 to Unit 6)**	**12**		
a)	Why we need DNS in the Internet?		**L2**	**2**
b)	What are the typical applications of Cookies?		**L3**	**2**
c)	What are the Socket Types? Explain in detail.		**L1**	**4**
d)	What is Firewall? Illustrate its types in detail.		**L2**	**3**



Seat No.	

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

S.Y.B.Tech.(Comp. Sci. and Engg.) (Sem-II)

End Semester Examination, July- 2023

Course Name : Computer Organization and Microcontroller **Course Code:** CSE403

Day & Date : Saturday, 8-Jul-2023 **Max Marks :** 60 Marks

Time : 10:00 am to 12:00 pm

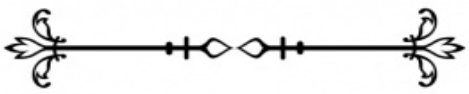
Instructions:
a) All questions are compulsory
b) Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL)
(L1-Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)
c) Use of non-programmable calculator is allowed
d) Assume suitable data if required.

		Marks	B.L	CO
Q.1	**Attempt any two**			
a)	Distinguish between Generations of Computer?	**6**	**L1**	**1**
b)	Calculate the number of Address Lines for the following memory i. 512KB ii. 8MB iii. 4TB	**6**	**L5**	**2**
c)	Describe DMA with diagram.	**6**	**L2**	**1**
Q.2	**Attempt any two**			
a)	Represent $(-85.125)_{10}$ in IEEE 754 format in single and double precision.	**6**	**L5**	**2**
b)	With neat diagram describe the operations of Relay in embedded system.	**6**	**L2**	**3**
c)	Discuss Booth's Algorithm and solve -13 X 11 using it.	**6**	**L3**	**2**
Q.3	**Attempt any two**			
a)	Describe the STATES and Instruction set of ARM Processor.	**6**	**L4**	**4**
b)	Draw and explain the Banked Register set of ARM Processor.	**6**	**L1**	**4**
c)	Define Pipeline? Describe ARM7 FIVE stage pipeline.	**6**	**L2**	**4**
Q.4	**Attempt any two**			
a)	Find the output for the following instruction. Consider PRE cpsr=nzcvqiFt_USER, r_0=0x000000F9, r_1=0xF0000004 i. MOVS r_0, r_1,LSL #1 ii. ADD r_2, r_0, r_1	**6**	**L5**	**5**

b)	List Logical Instructions set of ARM Processor with suitable example	**6**	**L1**	**5**
c)	What is Barrel Shifter? Explain with suitable example.	**6**	**L1**	**5**

Q.5 Attempt any two

a)	Explain the Structure of Memory Hierarchy?	**6**	**L4**	**1**
b)	Draw and explain single bus organization of the datapath inside a processor.	**6**	**L1**	**3**
c)	List the difference between General Purpose Computing System and Embedded System.	**6**	**L1**	**4**
d)	List and explain Load-Store Instructions set of ARM Processor	**6**	**L2**	**2**



Roll No.	

SWVSM's

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

Department of Computer Science and Engineering

S.Y.B.Tech In-Semester Examination-I, September- 2023

Course Name :-	Data Communication and Networks	**Course Code :-**	CSE304
Day & Date :-	Friday, 29-09-2023	**Max Marks :-**	40 Marks
Time :-	09:15 am to 10:45 am		

Instructions:

i. All questions are compulsory

ii. Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL) (**L1- Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**

iii. Use of non-programmable calculator is allowed iv. Assume suitable data if required

Course Outcome's (CO) are:

CO-1: To explain the basic concepts, components of data communication System and Transmission Media.

CO-2: To describe the basis and structure of an abstract layered protocol model and Network topologies

Q.1	**Attempt any two**	**Marks**	**B.L**	**CO**
a)	Explain Router and Switch with diagram.	**7**	**L1**	
b)	Discuss Transmission Impairments with suitable diagram in detail.	**7**	**L1**	**CO-1**
c)	Compare LAN,MAN,WAN.	**7**	**L1**	
Q.2	**Attempt any two**	**Marks**	**B.L**	
a)	List the various Topologies. Which one is the best topology without considering cost and mention some of the drawbacks and advantages for the same. Justify your answer.	**7**	**L2**	
b)	Define Bandwidth? If a periodic signal is decomposed into five sine waves with frequencies of 100, 300, 500, 700, and 900 Hz, what is its bandwidth? Draw the spectrum, assuming all components have a maximum amplitude of 10 V.	**7**	**L4**	**CO-2**
c)	A sine wave is offset 1/6 cycle with respect to time 0. What is its phase in degrees and radians?	**7**	**L4**	
Q.3	**Attempt All**	**Marks**	**B.L**	
a)	Draw and explain the Communication Model in detail.	**6**	**L1**	**CO-1**
	OR			
a)	Describe how the data flows while doing the communication between two devices.	**6**	**L2**	
b)	Explain the different terminologies used to represent signal by considering Phase, Amplitude and Frequency with example.	**6**	**L2**	
	OR			**CO-2**
b)	Define Transmission Medium. Enlist the broad categories of Transmission Media. Explain any one in detail in each category.	**6**	**L1**	

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SWVSM's

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

Department of Computer Science and Engineering

S.Y.B. Tech In-Semester Examination-II, October- 2023

Course Name :	Data Communication and Network	Course Code:	CSE304
Day & Date :	Monday and 30/10/2023	Max Marks :	40Marks
Time :	9.15 am to 10.45 am		

Instructions:

i. All questions are compulsory

ii. Figures to the right indicates full marks,

iii. Course Outcome (CO) & Bloom's Taxonomy Level (BL) (**L1- Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**

iv. Use of non-programmable calculator is allowed v. Assume suitable data if required

Course Outcome's are:

CO1- Explain the basic concepts, components of data communication System and Transmission Media.

CO2- Describe the basis and structure of an abstract layered protocol model and Network topologies.

CO3- Understand the usability of different protocols and Standards.

CO4- Understand and apply the skills of subnetting and routing mechanisms.

			Marks	B.L.	CO
Q.1		**Attempt any Two**			
	a)	What are the various protocols in application layer of TCP/IP? Explain them in short.	**7**	**L2**	**CO3**
	b)	Compare OSI Model Vs TCP/IP Model.	**7**	**L1**	
	c)	Draw and explain the OSI reference Model in detail.	**7**	**L2**	
Q.2		**Attempt any Two**			
	a)	Brief about design issues of DLL. Explain Bit stuffing & Byte stuffing.	**7**	**L3**	**CO4**
	b)	Explain polynomial concept and CRC division using polynomial	**7**	**L3**	
	c)	Draw & Explain CRC Encoder & Decoder for C(7,4)	**7**	**L4**	
Q.3		**Attempt All**			
	a)	Explain Unicast, Multicast & Broadcast Addressing with example.	**6**	**L2**	**CO3**
		OR			
	a)	Define Protocol. Explain the Concept of Layered Architecture with Neat Diagram.	**6**	**L1**	
	b)	What are the Types of Errors? Explain Detection Vs Correction.	**6**	**L4**	**CO4**
		OR			
	b)	Sender wants to send 7, 11, 12, 0, 6 then what will be the check sum values at sender's side and receiver's side?	**6**	**L4**	

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Roll No.	

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

Department of Computer Science and Engineering

S. Y. B. Tech In-Semester Examination-I, September- 2023

Course Name :	**Discrete Mathematical structures**	Course Code:	**CSE-302**
Day & Date :	Tuesday, 26/09/2023	Max Marks :	40Marks
Time :	9:15 am to 10:45 am		

Instructions:

i. All questions are compulsory

ii. Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL) (**L1- Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**

iii. Use of non-programmable calculator is allowed iv. Assume suitable data if required

Course Outcome's are:

CO1- Define the concepts of propositional logic, set theory and graph theory.

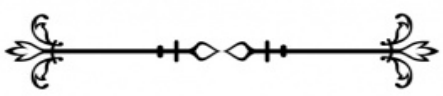
CO2-Classify relations, functions, lattice and algebraic systems based on their properties.

CO3- Apply the basic concepts of Sets, Boolean algebra and Graphs to represent structures, logic design in digital computer and to solve basic computer science problems respectively.

		Marks	B.L	CO
Q.1	**Attempt any two**			
a)	Define a proposition with an example. Explain the difference between Inclusive and Exclusive OR with truth tables	**7**	**L1,L2**	
b)	Define the Power Set. Write the power set of X={{}, a, b,{c}}	**7**	**L1,L2**	**CO1**
c)	State the following with example 1. Well-formed formulas 2. Duality Law and Duality Theorem 3. Functionally complete set of connectives	**7**	**L1**	
Q.2	**Attempt any two**			
a)	Prove the following without constructing the truth table **1. (P v Q) ^ (P -> R) ^ (Q - >R) ==> R** **2. ~ (P ^ Q) --> (~ P v (~P v Q)) <=> (~ P v Q)**	**7**	**L3**	**CO1**
b)	Write a **AxBxC** and $\mathbf{B^3}$ of A{1}, B={a, b} and C={2,3,4}	**7**	**L3**	
c)	Given S= {a1, a2, a3, …., a8}, give a subset represented by B18 & B34. Also designate the subsets {a2,a6,a7} and {a1,a8}	**7**	**L3**	

Q.3 Attempt any two

a)	Express P→ (~P→Q) in terms of ↑ only.	**6**	**L3**	
b)	((~P --> Q) -> (Q->P)) verify the truth value of the formula (Tautology or Contradiction)	**6**	**L4**	**CO3**
c)	"If Jerry takes calculus the ken takes sociology". Write the symbolic form of the proposition and write its **converse, inverse and contrapositive**	**6**	**L3**	



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SWVSM's

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

Department of Computer Science and Engineering

S. Y. B. Tech In-Semester Examination-II, October- 2023

Course Name :	Discrete Mathematical Structures	Course Code:	CSE302
Day & Date :	**27/10/2023**	Max Marks :	40 Marks
Time :	**9:15 am to 10:45 am**		

Instructions:

i. All questions are compulsory

ii. Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL) (**L1- Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**

iii. Use of non-programmable calculator is allowed

iv. Assume suitable data if required

CO2 : Classify relations, functions, lattice and algebraic systems based on their properties.

CO3: Apply the basic concepts of Sets, Boolean algebra and Graphs to represent structures, logic design in digital computer and to solve basic computer science problems respectively.

		Marks	B.L	CO
Q.1	**Attempt any two**			
a)	Show that the relation R on a set N such that R={<x, y> | x + y is even and x and y belongs to N} is reflexive, symmetric and transitive	**7**	L2	
b)	Construct the Hasse diagram for {1,2,3,4,6,8,12,24} and find i) All lower bounds of (8,12) ii)All upper bounds of (6,12) iii) Find GLB and LUB of (4,8,12)	**7**	L2	CO2
c)	Explain the following with example i) Clock Algebra ii)Semigroup and Monoid iii) Homomorphism of Algebraic System	**7**	L1	
Q.2	**Attempt any two**			
a)	Define Equivalence Relation. Prove that every equivalence relation creates a partition on a set.	**7**	L2	
b)	Let Zn denotes set of all integers {0,1,2,...,n-1} and $\odot$ be a binary operation on Zn such that for any a,b $\in$ Z a$\odot$b= the remainder of (a X b) divided by n i) construct the table for the operation $\odot$ for n=4 ii) Show that < Zn, $\odot$> is a semigroup for any n	**7**	L3	CO3

c) Define the composition of the function. Let f:Z→Z be function defined by f(x)=$2x+3$ and g(x)=$3x^2+2$. Find **fog, gof** and **gog** — **7** — L3

Q.3 Attempt any two

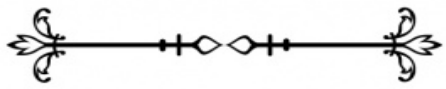
a) Draw the graph of relation R={<1,1>,<1,3>,<2,1>,<2,3>,<2,4>,<3,1>,<3,4>,<4,1>}on set X={1,2,3,4}. Also find the properties of the relation — **6** — L2

b) Let R be the relation represented by a matrix — **6** — L2 — CO2

$$M(R)=\begin{matrix}0&1&1\\1&1&0\\1&0&1\end{matrix}$$

Find R^{-1} and R^2

c) Construct the Composition table for <Z6, X6> and specify the properties of the given system — **6** — L2



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Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

Department of Computer Science and Engineering

S.Y.B.Tech In-Semester Examination-I, September- 2023

Course Name	:	**Data Structures**	Course Code:	**CSE303**
Day & Date	:	Wednesday, 27/09/2023	Max Marks :	**40Marks**
Time	:	9.15AM to 10.45AM		

Instructions:

i. All questions are compulsory

ii. Figures to the right indicate full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL) (**L1- Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**

iii. Assume suitable data if required

Course Outcomes:

CO1: Identify the appropriate data structure for a specific application

CO2: Identify the appropriate sorting and searching algorithms for a given problem size/datasets

			Marks	B. L	CO
Q.1		**Attempt any two**			
	a)	Write a C program to implement Modified Linear Search to search an element ITEM from array DATA.	**7**	**L3**	
	b)	Write a note on Primitive and Non-Primitive Data structures.	**7**	**L2**	CO2
	c)	Explain the Merge Sort Algorithm (For sorting in Descending Order) with a suitable example. Comment on the complexity of the Merge sort	**7**	**L3**	
Q.2		**Attempt any two**			
	a)	List the Algorithm Strategies. Elaborate on anyone with an appropriate example.	**7**	**L1**	
	b)	Define Algorithm. Enlist the Characteristics of Algorithm	**7**	**L1**	CO1
	c)	Enlist all the possible operations that can be performed on any data structure.	**7**	**L2**	
Q.3		**Attempt any two**			
	a)	Write a c program to implement the Bubble Sort algorithm for sorting the array in descending order.	**6**	**L3**	
	b)	Consider the following array DATA: 10, 15, 19, 25, 28, 33, 36, 39, 45, 50 Apply the Binary search algorithm to find the following items and their locations in DATA i. 45 ii. 8	**6**	**L4**	CO2
	c)	Demonstrate the calculation of Best Case and Worst Case complexity of Selection Sort.	**6**	**L4**	

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Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

Department of Computer Science and Engineering

S.Y.B.Tech In-Semester Examination-II, October- 2023

Course Name : **Data Structures** Course Code: **CSE303**

Day & Date : **Wednesday, 28/10/2023** Max Marks : **40Marks**

Time : **9.15 to 10.45AM**

Instructions:

i. All questions are compulsory

ii. Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL) **(L1- Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**

iii. Assume suitable data if required

		Marks	B. L	CO
Q.1	**Attempt any two**			
a)	Convert the following Infix expression to Postfix expression using Stack. (Write each step of conversion) A + B * (C – D) \ E * F	**7**	**L5**	
b)	Consider the following stack of city names: STACK: London, Berlin, Rome, Paris, _____, _____ Examine the stack contents as the following operations take place: 1. PUSH(STACK, Athens) 2. POP(STACK, ITEM) 3. POP(STACK, ITEM) 4. PUSH(STACK, Madrid) 5. PUSH(STACK, Moscow) 6. POP(STACK, ITEM)	**7**	**L3**	CO3 CO4
c)	Write a C Program to implement the following operations of Linear Queue using Array: 1. Enqueue 2. Dequeue	**7**	**L3**	
Q.2	**Attempt any two**			
a)	Consider the following instance of circular queue of length 4 Queue: 10 | 20 | 30 | Apply the following operations on the above circular queue, elaborate the state of queue at each step: 1. Enqueue 40 2. Enqueue 50 3. Dequeue 4. Dequeue 5. Enqueue 60 6. Enqueue 70 7. Enqueue 80	**7**	**L3**	CO3 CO4

b)	Evaluate the given postfix expression p: 5, 6, 2, +, *, 12, 4, /, -	**7**	**L5**	
c)	Write a C program to implement following operations on Stack using Array: 1. Push 2. Pop	**7**	**L3**	
Q.3	**Attempt any two**			
a)	List and Explain the Types of Queue with appropriate Diagrams	**6**	**L1**	
b)	Consider the following instance of Linear queue of length 4 10 | 20 | 30 | Front Rear Apply the following operations on the above Linear queue, elaborate the state of queue at each step: 1. Dequeue 2. Dequeue 3. Dequeue 4. Dequeue 5. Enqueue 60 6. Enqueue 70	**6**	**L3**	CO3 CO4
c)	Illustrate the Algorithm for Implementation of following operations on Circular Queue. a. Enqueue b. Dequeue	**6**	**L2**	

Roll No.	

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

Department of Computer Science and Engineering

S.Y.B.Tech In-Semester Examination-I, September- 2023

Course Name :	**Digital System and Microprocessor**	Course Code:	**CSE-305**
Day & Date :	Saturday, 30/09/2023	Max Marks :	40Marks
Time :	9:30 am to 10:45 am		

Instructions:

i. All questions are compulsory

ii. Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL)

(**L1- Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**

iii. Use of non-programmable calculator is allowed iv. Assume suitable data if required

Course Outcome's are:

CO1-Realize the combinational logic circuits by using various logical blocks

CO 2- Apply different simplification tools for Boolean functions and design the logic circuits

CO3 -.Understand the architecture of the 8086 processor and to use the tools for programming

CO4 -Apply the assembly language programs to develop and execute the different application

		Marks	B.L	CO
Q.1	**Attempt any two**			
a)	Perform the following Conversions. A. Hexadecimal to Decimal CAFÉ.24 and A69.8 B. Binary to Octal and Hex 1011100.11 and 11110000	**7**	**L3**	**CO1.**
b)	State and Prove Demargon's Theorem.	**7**	**L2**	
c)	Simplify the expression $A[B + \bar{C}(\overline{AB} \mid A\bar{C})]$	**7**	**L3**	
Q.2	**Attempt any two**			
a)	Design a logic circuit that has three input A,B, and C , and whose OUTPUT will be HIGH only when a majority of inputs are HIGH.	**7**	**L3**	**CO2**
b)	Simply using K-Map Y(A,B,C,D) =∑(1,3,4,5,6,7,12,15)	**7**	**L4**	
c)	What is Parity? Explain Even parity generator and checker.	**7**	**L1**	
Q.3	**Attempt any two**			
a)	List the universal gates .Why it is called as universal gates and explain any one	**6**	**L2**	**CO1**
b)	Describe the single variable theorems	**6**	**L1**	
c)	Explain the Exclusive- OR and Exclusive NOR Gate with Timing diagrams.	**6**	**L1**	

Roll No	

Tatyasaheb Kore Institute of Engineering & Technology, Warananagar
(An Autonomous Institute)
S.Y. B. Tech(Sem-I), In Semester Examination – II, November 2022

Subject Code:-CS-L-305 **Subjects: Digital System and Microprocessor**

Day and Date: Saturday, 19/11/2022 **Marks:** 40

Time : 9:00 am to 10:30 am

Instructions: i) Use of non-programmable calculator is allowed.
ii) Figures to the right indicate full marks.
iii)All Questions are Compulsory

				Marks	Unit No	CO	PO
Q.1	**Attempt any 2 from the following questions.**						
	a)	Perform the following operations using 8 bits form. i. Subtract +21 from -13 ii. Add +9 to +8		7	1	1	1,2
	b)	Draw and Explain the CPU Architecture of 8086		7	1	1	1
	c)	Write the procedure for BCD Addition and Perform same i. 147+380 ii. 74+23		7	2	1	1,3
Q.2	**Attempt any 2 from the following questions.**						
	a)	Perform the following operations using 8 bits i. 1011 X 1011 ii. Divide 111111 by 1001		7	1	2	2,3
	b)	Write a note on real mode memory and list the advantages of Segmentation.		7	2	1	2
	c)	Perform the Hexadecimal addition and subtraction. i. 3E91+2F93 ii. 91B - 6F2		7	2	1	1,3
Q.3		**Attempt any 2 from the following questions.**					
	a)	Draw and Explain the FLAG Registers of 8086		6	1	1	1,2
	b)	Draw and Explain the 2 bit Ripple up Counters (Asynchronous counters.)		6	2	2	2,3
	c)	Calculate the Physical address following address i. DS=2F00H and SI=3AB0H ii. CS=3D50H and IP=2FFAH		6	1	1	1,2

Roll No.	

SWVSM'S

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

Department of Computer Science and Engineering

S.Y.B.Tech In-Semester Examination-II, October- 2023

Course Name : **Digital System and Microprocessor** Course Code: **CSE-305**

Day & Date : Tuesday, 31/10/2023 Max Marks : 40Marks

Time : 9:15 am to 10:45 am

Instructions:

i. All questions are compulsory

ii. Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL)
(**L1- Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**

iii. Use of non-programmable calculator is allowed iv. Assume suitable data if required

Course Outcome's are:

CO1-Realize the combinational logic circuits by using various logical blocks

CO 2- Apply different simplification tools for Boolean functions and design the logic circuits

CO3 -.Understand the architecture of the 8086 processor and to use the tools for programming

CO4 - Apply the assembly language programs to develop and execute the different application.

		Marks	B.L	CO
Q.1	**Attempt any two**			**CO3.**
a)	What is Microcomputer? Draw and Explain the Architecture of typical microcomputer.	**7**	**L3**	
b)	Describe 8086 CPU architecture.	**7**	**L2**	
c)	Calculate the physical address for the following i. DS=5F00H and SI=3CB0H ii. CS=4D00H and IP=2FF0H	**7**	**L3**	
Q.2	**Attempt any two**			**CO2**
a)	Perform the Hexadecimal addition and subtraction A. ACE+EBA B. ACE-651	**7**	**L3**	
b)	Perform the following operations using 2's complement 8 bits form. i Subtract - 46 from -15 ii. Add +30 to -24	**7**	**L4**	
c)	Perform BCD Addition i. 542+625 ii. 2875+1089	**7**	**L3**	
Q.3	**Attempt any two**			**CO3**
a)	Draw and Explain the FLAG Registers of 8086	**6**	**L2**	
b)	What is Shift Register? Draw and explain SISO.	**6**	**L2**	
c)	Enlist the difference between Asynchronous and synchronous counter	**6**	**L2**	

Roll No.	

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

Department of Computer Science and Engineering

S.Y.B.Tech In-Semester Examination-I, September- 2023

Course Name : Mathematics for Computer Science Course Code: CSE301

Day & Date : **Monday, 25 September 2023** Max Marks : 40Marks

Time : **9:15 am to 10:45 am**

Instructions:

i. All questions are compulsory

ii. Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL) (**L1- Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**

iii. Use of non-programmable calculator is allowed

Course Outcome's: CO1-Describe and interpret the statistical data numerically by using statistical methods.
CO2-Solve basic problems in probability theory, including problems involving the binomial, Poisson, and normal distributions
CO3-Define fuzzy sets using linguistic words and represent these sets by membership functions, convexity, Normality, support, etc.
CO4-Find roots of algebraic and transcendental equations using numerical methods.

		Marks	B.L	CO
Q.1	**Attempt any two**			
a)	Find mean, median and mode of the following distribution	**7**	**L2**	**CO1**

Age in Years	0 -10	10-20	20-30	30-40	40-50	50-60	60-70
No. of persons	10	12	14	20	14	12	10

b) Using method of grouping, find the mode of the following frequency distribution **7** **L3**

Marks	0 -10	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	15	25	52	56	78	80	70

c) Find the mean deviation from mean for the following data **7** **L2**

x	0	1	2	3	4	5	6	7	8	9	10	11	12
f	15	16	21	10	17	8	4	2	1	2	2	0	2

Q.2 **Attempt any two**

a) Followings are scores of two batsman A and B in a series of innings. Find out who is more consistent. **7** **L4**

A	18	16	15	12	10	5	2
B	10	12	14	32	29	11	3

b) Find Karl Pearson's coefficient of correlation between x and y **7** **L2**

x	10	12	14	15	16	17	18	10	14	15
y	17	16	15	12	10	9	8	15	13	12

c) the following data obtain the two regression equations **7** **L2**

x	6	2	10	4	8
y	9	11	5	8	7

Q.3 Attempt any two

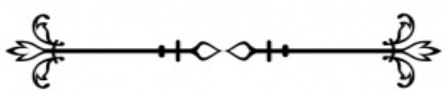
a) Find Coefficient of correlation from the following information **6** **L2**
$n = 10, \Sigma x = 140, \Sigma y = 150, \Sigma(x-10)^2 = 180,\ \Sigma(y-15)^2 = 215,$ and $\Sigma(x-10)(y-15) = 60$

b) Explain how correlation can be studied with the help of Scatter diagram method? **6** **L1** **CO1**

c) From the data given below **6** **L2**

	Series x	Series y
Mean	36	85
Standard Deviation	11	8

If correlation coefficient between y and x is 0.66, calculate the value of x if y = 75 using appropriate line of regression.



Seat No.	

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

F.Y.B.Tech.(All Branches) (Sem-II)

End Semester Examination, July- 2023

Course Name : (Enter Course Name) Course Code: CSE 401

Day & Date : **Monday, 3-Jul-2023** Max Marks : 60 Marks

Time : **10:00 am to 12:00 pm**

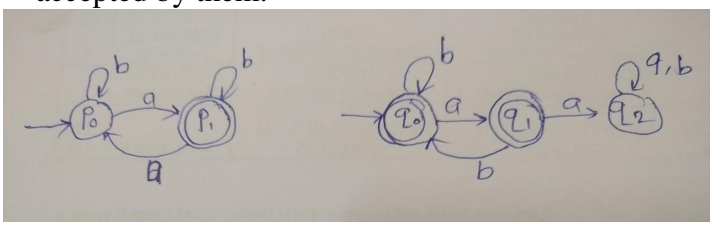
Instructions: a) All questions are compulsory

b) Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL) **(L1-Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**

c) Use of non-programmable calculator is allowed

d) Assume suitable data if required.

<table>
<tr><th></th><th></th><th>Marks</th><th>B.L</th><th>CO</th></tr>
<tr><td>Q.1</td><td>Attempt any two</td><td>12</td><td></td><td></td></tr>
<tr><td>a)</td><td>Find regular expression for following language over input {0, 1}
i) Language of all string with 00 as substring.
ii) Language of all string ending with ‘100’
iii) Language of all strings that starting and end with different symbol.</td><td>6</td><td>L3</td><td></td></tr>
<tr><td>b)</td><td>NFA with state 1-5 and input alphabet {a,b} has following transition table.
a) Draw Transition diagram
b) Calculate d*(1,abb)
<table>
<tr><th>q</th><th>d(q, a)</th><th>d(q, b)</th></tr>
<tr><td>→ 1</td><td>{2,3}</td><td>{1, 2}</td></tr>
<tr><td>2</td><td>{3}</td><td>{3}</td></tr>
<tr><td>3</td><td>{4}</td><td>{4}</td></tr>
<tr><td>4</td><td>{5}</td><td>{ ϕ }</td></tr>
<tr><td>5(final state)</td><td>{ ϕ }</td><td>{5}</td></tr>
</table></td><td>6</td><td>L3</td><td></td></tr>
<tr><td>c)</td><td>With Neat labeled diagram, define NFA and NFA- Λ with example</td><td>6</td><td>L2</td><td></td></tr>
<tr><td>Q.2</td><td>Attempt any two</td><td>12</td><td></td><td></td></tr>
<tr><td>a)</td><td>Find context free languages associated with following CFG</td><td>6</td><td>L3</td><td></td></tr>
<tr><td></td><td>i. S→aA|bB| Λ
A→bS|aBB
B→aS|bAA
ii. s→aSa|bSb| Λ</td><td>6</td><td></td><td></td></tr>
<tr><td>b)</td><td>Define Push Down Automata with an example.</td><td>6</td><td>L2</td><td></td></tr>
<tr><td>c)</td><td>Construct PDA for language L={W|$n_a(W)=n_b(W)$</td><td>6</td><td>L3</td><td></td></tr>
<tr><td>Q.3</td><td>Attempt any two</td><td>12</td><td></td><td></td></tr>
<tr><td>a)</td><td>Identify Non context free languages
i. $a^nb^na^nb^n$
ii. L={x | x belongs to WW^R} where W^R is reverse of W.
iii. $a^nb^na^m$ where m<n</td><td>6</td><td>L3</td><td></td></tr>
</table>

b)	Construct Top down PDA for Balanced strings of Brackets	**6**	**L3**	
c)	Define following terms i. Parsing ii. Bottom up parser iii. Regular Grammar	**6**	**L2**	
Q.4	**Attempt any two**	**12**		
a)	Draw Turing machine for language of Palindromes.	**6**	**L3**	
b)	With neat labeled diagram, Define Turing Machine with an example.	**6**	**L3**	
c)	Write Short note on Multi- tape Turing Machine	**6**	**L2**	
Q.5	**Attempt any two**	**12**		
a)	Construct DFA for union of following two DFA's. Also find language accepted by them. 	**6**	**L3**	
b)	Find Context free grammar for following languages i. $a^{2n}b^n$ ii. a*b* iii. ab*	**6**	**L3**	
c)	Describe language represented by following regular expression i. b(a+b)* ii. (b+ab)* iii. (a+b)*a	**6**	**L3**	
d)	Give recursive definitions for the following language. i)Language of odd length palindrome. ii) Language of all stings that ends with 10 or 11.	**6**	**L3**	

Seat No.	

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

S.Y.B.Tech.(Comp. Sci. and Engg.) (Sem-II)

End Semester Examination, July- 2023

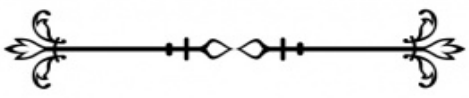
Course Name : Operating Systems Course Code: CSE404

Day & Date : **Tuesday, 11-Jul-2023** Max Marks 60 Marks

Time : **10:00 am to 12:00 pm**

Instructions:
a) All questions are compulsory
b) Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL)
(L1-Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)
c) Use of non-programmable calculator is allowed
d) Assume suitable data if required.

		Marks	B.L	CO
Q.1	**Attempt any two (6 marks each)**	**12**		
a)	Define System Calls? Explain different types of system calls		**L1**	**1**
b)	Compare between different multi-threading models		**L2**	**2**
c)	Illustrate the working of Round Robin scheduling algorithm		**L2**	**2**
Q.2	**Attempt any two (6 marks each)**	**12**		
a)	Explain Readers-Writers problem in detail		**L2**	**3**
b)	What are the necessary conditions for deadlock to occur in the system? Explain any three.		**L1**	**3**
c)	Explain Peterson solution for the critical section		**L2**	**3**
Q.3	**Attempt any two (6 marks each)**	**12**		
a)	Write a note on paging		**L1**	**4**
b)	Explain concept of segmentation in detail		**L2**	**4**
c)	Demonstrate the working of optimal page replacement algorithm		**L2**	**4**
Q.4	**Attempt any two (6 marks each)**	**12**		
a)	What is DMA? Explain in detail		**L1**	**5**
b)	Draw and explain structure of I/O stream		**L1**	**5**
c)	Explain the concept of polling		**L2**	**5**
Q.5	**Attempt any two (6 marks each)**	**12**		
a)	Explain Banker's algorithm.		**L2**	**3**
b)	Discuss about I/O Hardware		**L2**	**5**
c)	Differentiate between Internal and external fragmentation with example		**L2**	**4**
d)	Explain multilevel feedback queue scheduling		**L2**	**3**



Seat No.	

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

(An Autonomous Institute, Affiliated to Shivaji University, Kolhapur)

S.Y.B.Tech.(Comp. Sci. and Engg.) (Sem-IV)

End Semester Examination, July- 2023

Course Name : (Software Engineering) Course Code: CSE-405

Day & Date : **Thursday, 13-Jul-2023** Max Marks : 60 Marks

Time : **10:00 am to 12:00 pm**

Instructions: a) All questions are compulsory

b) Figures to the right indicates full marks, Course Outcome (CO) & Bloom's Taxonomy Level (BL) **(L1-Remembering, L2- Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 - Creating)**

c) Use of non-programmable calculator is allowed

d) Assume suitable data if required.

		Marks	B.L	CO
Q.1	**Attempt any two**	**12**		
a)	Explain waterfall model in detail	**6**	**L3**	**1**
b)	Explain the need of SRS document in detail	**6**	**L3**	**2**
c)	Explain Extreme Programming and Agile Processes	**6**	**L3**	**1**
Q.2	**Attempt any two**	**12**		
a)	Describe COCOMO model in detail.	**6**	**L3**	**3**
b)	Explain function-oriented design concepts with structure chart	**6**	**L3**	**4**
c)	What is Project Planning? Explain the different activities perform in project planning	**6**	**L4**	**3**
Q.3	**Attempt any two**	**12**		
a)	State best programming practices and guidelines that is to be followed by the programmer during implementation process	**6**	**L5**	**5**
b)	Explain Black Box testing? What different approaches are used to design black box test cases	**6**	**L3**	**5**
c)	Define Code Review? Explain Types of Code Review	**6**	**L5**	**5**
Q.4	**Attempt any two**	**12**		
a)	Draw and explain SEI Capability maturity model with proper example.	**6**	**L6**	**4**
b)	Define importance of software quality? Explain ISO 9000 standard in details	**6**	**L5**	**5**
c)	Explain the Software Reliability Matrices in details.	**6**	**L3**	**5**
Q.5	**Attempt any two**	**12**		
a)	Draw Sequence Diagram for Hotel Management System. Show sequence diagram for Manager who is responsible for allocating the rooms to travelers and collecting rent. Also show the sequence diagram for cook and waiter in the Hotel. Use either interaction frames or show each possibility using different diagram.	**6**	**L6**	**3**
		6	**L5**	**3**

b)	Project size of 400 KLOC is to be developed. calculate the effort and development time required to develop the project in organic, semidetached and embedded mode.			
c)	Discuss Role and Responsibility of project Manager	**6**	**L2**	**2**
d)	Compared between Coupling and Cohesion	**6**	**L2**	**4**