

#### Shri Shankaracharya Institute of Professional Management & Technology Department of Information Technology

Class Test - I Session- Jul - Dec 2022 Month- December

#### Sem- IT 5th, Subject- Artificial Intelligence and Machine Learning, Code- C033511(033)

Time Allowed: 2 hrs Max Marks: 40

Note: - All Questions are compulsory.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
<b>A.</b>	Solve Cryptarithmetic Problem DONALD + GERALD = ROBERT	[8]	Applying	CO1
В.	Solve following 8-puzzle problem using A* algorithm.  Initial State  Goal State  2 8 1  8 4 4 3  7 6 5 7 6 5	[8]	Applying	CO1
C.	What are varous techniques of knowledge represntation. Provide example for each of them.	[8]	Applying	CO2
D.	<ul> <li>a. Yesterday, John hit his little dog.</li> <li>b. While going home I see a frog.</li> <li>c. John wants it but he dosen't realize it.</li> <li>d. John hit Mary by throwing a stick at her.</li> <li>e. John threw a rock at Sam.</li> </ul>	[1] [1] [2] [3] [3]	Analyze	CO2
E.	In what way searching is possible through Hill Climbing? Take example to justify your answer.	[6]	Understanding	CO1

# Shri Shankaracharya Institute of Professional Management & Technology



# Department of Information Technology

CT - I Session- July - Dec2022 Month-December Sem-B.tech IT 5<sup>th</sup>

Subject-Theory of computation Code- C033512(033)

Time Allowed: 2 hrs.

Note: -Solve any five question.

Max Marks: 40

ÖŻ		One	Questions			Ma	Levels of Bloom's taxonomy	COs	
-	1(a) Design an automata for a regular language which is having a and b as input and accept even number of a's.	an au ich is h	automata for s having a and number of a's.	for a and b a a's.	regular as input		Applying	C02	
	1(b) convert above automata to regular expression.	abov	e auton	nata to	regular	-	-		
	Elaborate finite automata as language translator and convert following melay	inite a	utomata vert fo	a as la Ilowing	inguage melay				
	machine to moore machine.	noore n	nachine						
	Present		Next	Next State					
,	State	State	0/P	State	O/P	[6]	Amalaina	5	
7.	15	q,	1	q <sub>2</sub>	0	<u></u>	Smrtidder	3	**********
	<b>q</b> 2	44	1	44	1				
	q3	q <sub>2</sub>	1	q <sub>3</sub>	1				
	42	q <sub>3</sub>	0	q <sub>1</sub>	1				
. 6	Elaborate Closure properties of Regular language with example.	losure p	ropertie pple.	es of Re	gular	8	Understan	C02	
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# Shri Shankaracharya Institute of Professional Management & Technology



**Department of Information Technology** CT – I Session- July – Dec2022 Month–December

Sem-B.tech IT 5<sup>th</sup>

Subject-Theory of computation Code- C033512(033)

Time Allowed: 2 hrs.

Note: -Solve any five question.

Max Marks: 40

							Levels of	
o';		One	Questions			Marks	Bloom's	COs
ż							taxonomy	
<b>i</b>	1(a) Design an automata for a regular language which is having a and b as input and accept even number of a's.	an au ich is h ven nun	automata for s having a and number of a's.	for a and b a a's.	a regular b as input	<b>.</b>	Applying	C02
	1(b) convert above automata to regular expression.	abov	e auton	nata to	regular			
	Elaborate finite automata as language translator and convert following melay	finite a	utomat vert fo	a as la llowing	nguage melay			
	machine to moore machine.	noore n	nachine					
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	State	State	O/P	State	O/P	[6]	Δmhlving	5
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	q <sub>2</sub>	<b>q</b> 4	1	q4	1			
	q3	<b>q</b> 2	1	q3	1			
	q4	q <sub>3</sub>	0	<b>q</b> 1	1			
	-							
3	Elaborate Closure properties of Regular language with example.	losure p th exan	properti nple.	es of Re	gular	[8]	Understan ding	CO2
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S 6 Design finite automata which accepts a and b as input symbol and accepts following language

1. L1= regular language which accept length of n%3

2. L2= regular language accepts odd number of a's Consider the following DFA & Minimize it [8] [8] Applying Applying C01 COI

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Design finite automata which accepts a and b as input symbol and accepts following language  1. L1= regular language which accept length of n%3  2. L2= regular language accepts odd number of a's	Consider the following DFA & Minimize it
[8]	
Applying	Applying
60	COI

SSIPMT

#### Shri Shankaracharya Institute of Professional Management & Technology Department of Information Technology Class Test – I , Month- December

Sem- IT 5<sup>th</sup> Subject- Principles of Communication Systems- C033513(033)

Time Allowed: 2 hrs

Max Marks: 40

Note: -	Attempt any 5 question. All questions carry equal marks.	#6 10		
Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	State and prove sampling theorem for low pass signal	[8]	Understanding	CO3
2.	<ul> <li>i. What do you mean by Quantization?</li> <li>ii. Derive an expression for Mean square value of quantization error for PCM</li> </ul>	[8]	Applying	CO3
3.	Compare: PAM, PDM, PPM	[8]	Understanding	CO3
4.	Explain Delta Modulation along with the waveform and Block diagram. Also explain types of noises in DM.	[8]	Understanding	CO3
5.	Explain DPSK modulation and Demodulation with the help of block diagram and Transmit the data 1011011 using 1 as an arbitrary bit and prove that the transmitted data is same as the received data	[8]	Understanding	CO4
6.	Explain ASK modulation and Demodulation with the help of block diagram and waveform.	[8]	Understanding	CO4

Shri Shankaracharya Institute of Professional Management & Technology

Department of Information Technology

Class Test – I , Month- December

SSIPMT

Sem- IT 5<sup>th</sup> Subject- Principles of Communication Systems- C033513(033)

Time Allowed: 2 hrs

Note: - Attempt any 5 question. All questions carry equal marks.

Max Marks: 40

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Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	State and prove sampling theorem for low pass signal	[8]	Understanding	CO3
2.	<ul><li>iii. What do you mean by Quantization?</li><li>iv. Derive an expression for Mean square value of quantization error for PCM</li></ul>	[8]	Applying	CO3
3.	Compare: PAM, PDM, PPM	[8]	Understanding	CO3
4.	Explain Delta Modulation along with the waveform and Block diagram. Also explain types of noises in DM.	[8]	Understanding	CO3
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#### Shri Shankaracharya Institute of Professional Management & Technology Department of Information Technology



Class Test - I Session - July - Dec 2022 Month - December

Sem- 5<sup>th</sup> (B.Tech IT) Subject- Software Engineering & Project Management

Code- C033514 (033)

Time Allowed: 2 hrs. Max Marks: 40

Note: -All questions are mandatory.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Elaborate the following model related to software development:  1. Spiral Model  2. Prototype Model	[8]	Understanding	CO1
2.	Summarize the goals of Software Engineering & Project Management.	[8]	Understanding	CO1
3.	What is SRS? Describe the proper format and contents of SRS.	[8]	Understanding	CO2
4.	Illustrate the Software Development Life Cycle (SDLC).	[8]	Understanding	CO1
5.	Perform comparative study of various process model in software development	[8]	Applying	CO2

#### Shri Shankaracharya Institute of Professional Management & Technology Department of Information Technology



Class Test – I Session - July – Dec 2022 Month – December

Sem- 5th (B.Tech IT) Subject- Software Engineering & Project Management

Code- C033514 (033)

Time Allowed: 2 hrs. Max Marks: 40

Note: -All questions are mandatory.

Q.N.	Questions are managery.	Marks	Levels of Bloom's taxonomy	COs
1.	Elaborate the following model related to software development:  1. Spiral Model  2. Prototype Model	[8]	Understanding	CO1
2.	Summarize the goals of Software Engineering & Project Management.	[8]	Understanding	CO1
3.	What is SRS? Describe the proper format and contents of SRS.	[8]	Understanding	CO2
4.	Illustrate the Software Development Life Cycle (SDLC).	[8]	Understanding	CO1
5.	Perform comparative study of various process model in software development	[8]	Applying	CO2



### Shri Shankaracharya Institute of Professional Management & Technology, Raipur

Management & Technology, Raipur Department of Information Technology

Class Test – I Session-July – Dec 2022 Month – Dec Sem-5<sup>th</sup> Sem Subject- Design and Analysis of Algorithm Code- C033531(033)

Time Allowed: 2 hrs. Max Marks: 40

Note: -Questions I is mandatory and Attempt any 3 from Question 2, 3, 4 &5.

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		5.	4.	ω	.5	r		Q.N.
	Unit-II	Define recurrence relation? Solve the following recurrence relation by using recursion tree method $T(n) = 2T(\frac{n}{2}) + n^2$	List the characteristics of algorithm. Solve the following recurrence relation by using substitution method $T(n) = T(\left\lfloor \frac{n}{2} \right\rfloor) + 1$	Define asymptotic notation? Illustrate its different type with example.	Solve the recurrence relation by using State master theorem and solve the given problem using master theorem $T(n) = 4T(\frac{n}{2}) + n$	Write about time complexity of an algorithm.	Unit-I	Questions
		[6]	[6]	[6]	<u> </u>	[2]		Marks
		Applying	Applying	Understand	Applying	Understand		Levels of Bloom's taxonomy
600		CO1	COI	C01	COI	COI		COs



### Shri Shankaracharya Institute of Professional Management & Technology, Raipur

Department of Information Technology

Class Test - I Session-July - Dec 2022 Month - Dec

Sem- 5th Sem Subject- Design and Analysis of Algorithm Code- C033531(033)
Time Allowed: 2 hrs. Max Marks: 40

Note: -Questions I is mandatory and Attempt any 3 from Question 2, 3, 4 &5.

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1.		5.	4.	3.		•		.2
Describe divide and conquer strategy?	Unit-II	Define recurrence relation? Solve the following recurrence relation by using recursion tree method $T(n) = 2T(\frac{n}{2}) + n^2$	List the characteristics of algorithm. Solve the following recurrence relation by using substitution method $T(n) = T(\left\lfloor \frac{n}{2} \right\rfloor) + 1$	Define asymptotic notation? Illustrate its different type with example.	Solve the recurrence relation by using State master theorem and solve the given problem using master theorem $T(n) = 4T(\frac{n}{2}) + n$	Write about time complexity of an algorithm.	Unit-I	Questions
[2]		[6]	[6]	[6]	[6]	[2]	may a desirable de la companya de la	Marks
Understand	The state of the s	Applying	Applying	Understand	Applying	Understand	The second secon	Levels of Bloom's taxonomy
1 CO2		COI	CO <sub>1</sub>	601	CO1	CO1		COs

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cos	C02	C02	C02	C002
Levels of Bloom's taxonomy	Applying	Applying	Applying	Applying
Marks	[9]	[9]	9	[9]
Questions	Use Strassen's algorithm to compute the matrix multiplication $\begin{bmatrix} 1 & 3 \\ 7 & 5 \end{bmatrix} \begin{bmatrix} 6 & 8 \\ 4 & 2 \end{bmatrix}$	Apply the Heap-Sort on the array A={5, 13, 2, 25, 7, 17, 20, 8, 4}	Draw the red-black tree resulting from inserting the numbers 5, 10, 15, 25, 20 and 30 into an initially empty red-black tree.	Apply the Quick-Sort technique on the following list: $A = \{4, 5, 1, 7, 8, 9, 2, 88\}$
Q.N.	5	3.	4	5.

---- Best of Luck ----

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O.N.	Questions	Marks	Bloom's taxonomy	cos	annual Martin and Antonion of Participations
7	Use Strassen's algorithm to compute the matrix multiplication $\begin{bmatrix} 1 & 3 \\ 7 & 5 \end{bmatrix} \begin{bmatrix} 6 & 8 \\ 4 & 2 \end{bmatrix}$	[9]	Applying	C02	AND RESIDENCE AND ADDRESS OF THE PROPERTY OF T
, w	Apply the Heap-Sort on the array A={5, 13, 2, 25, 7, 17, 20, 8, 4}	[9]	Applying	CO2	
4	Draw the red-black tree resulting from inserting the numbers 5, 10, 15, 25, 20 and 30 into an initially empty red-black tree.	[9]	Applying	CO2	
5.	Apply the Quick-Sort technique on the following list:  A= {4, 5, 1, 7, 8, 9, 2, 88}	9	Applying	CO2	

--- Best of Luck ---