Shri Shankaracharya Institute of Professional Management & Technology

Department of Information Technology

Class Test – I Session: Jul – Dec, 2021

Sem- 5th **Subject- Design and Analysis of Algorithm**

Time Allowed: 2 hrs Max Marks: 40

Note: - Attempt any 5 Question. All Carry 8 Marks.

Q. N.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	What is asymptotic notation? Explain its different types.	[8]	Remember	CO1
2.	Define Selection sort algorithm and find its time complexity using any example.	[8]	Understand	CO1
3.	Explain master's theorem? Solve the following recurrence relation using master's theorem. 1. $T(n) = 8T(n/2)+n^2$ 2. $T(n) = 2T(n/2)+n$ 3. $T(n) = 4T(n/2)+n^3\log^2 n$	[8]	Remember	CO1
4.	Discuss Red-Black tree and define different condition for inserting an element in it.	[8]	Understand	CO2
5.	Define Heap and Explain heap sort algorithm with example.	[8]	Remember	CO2
6.	Elaborate divide and conquer algorithm for Strassen matrix multiplication with its complexity.	[8]	Remember	CO2
7.	Write Merge sort algorithm and find time complexity using divide and conquer approach.	[8]	Understand	CO2

Shri Shankaracharya Institute of Professional Management & Technology

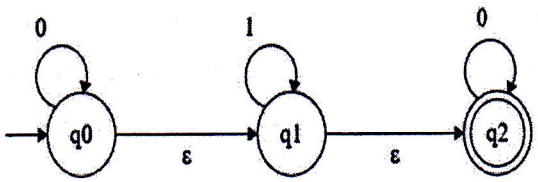
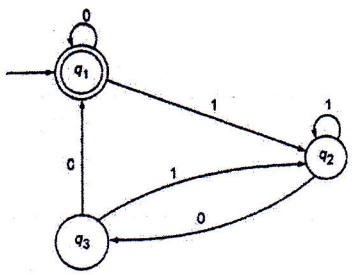
Department of Information Technology

Class Test – I Session- July-Dec, 2021 Month- October

B.Tech-IT, Sem- 5th Subject- Theory of Computation Code- C033512(033))

Time Allowed: 2 hrs Max Marks: 40

Note: - All Questions are compulsory.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
	Section A			
1.	In each part below, draw an MFA accepting the indicating language over {a,b} 1. The language of all strings in which the number of **a's** is even. 2. All the strings in which every **aa** is followed immediately by **b.**	[6]	Apply	CO1
2.	Minimize the given DFA. <table><tr><th rowspan="2">State</th><th colspan="2">Input</th></tr><tr><th>a</th><th>b</th></tr><tr><td>->A</td><td>B</td><td>C</td></tr><tr><td>B</td><td>B</td><td>D</td></tr><tr><td>C</td><td>B</td><td>C</td></tr><tr><td>D</td><td>B</td><td>E</td></tr><tr><td>E*</td><td>B</td><td>C</td></tr></table>	[7]	Apply	CO1
3.	Find the equivalent NFA from the following NFA - ϵ. 	[4]	Apply	CO1
4.	Design FSM to accept decimal numbers are divisible by 3.[3] $\sum$ = { 0,1,2,3,4,5,6,7,8,9}	[3]	Apply	CO1
	Section B			
5.	Write the RE to denote language **L= {$a^n b^m$: (n + m) is even}.**	[5]	Understand	CO2
6.	Design a Moore machine that counts the numbers of occurrence of the sequence **"baa"** in any input string over {a, b}. Convert it to its equivalent Mealy Machine.	[8]	Apply	CO1
7.	DescribeArden's Theorem? Also Find the RE for the given FA using Arden's Equation. 	[7]	Apply	CO1, CO2

Shri Shankaracharya Institute of Professional Management & Technology

Department of Information Technology

Class Test – I Session- Jul – Dec 2021 Month- October

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
	Unit I			
A.	Clarify Cryptarithmetic Problem DONALD + GERALD = ROBERT	[8]	Applying	CO1
B.	Elaborate AO* algorithm with suitable example.	[8]	Applying	CO1
C.	Can you elaborate what do you mean Knowledge? Provide suitable examples.	[8]	Understanding	CO2
D.	In what manner semantic net works?	[8]	Understanding	CO2
E.	In what way searching is possible through Hill Climbing? Take example to justify your answer.	[8]	Understanding	CO1

Shri Shankaracharya Institute of Professional Management & Technology

Department of Information Technology

Class Test – I Session- Jul – Dec 2021 Month- October

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
	Unit I			
A.	Clarify Cryptarithmetic Problem DONALD + GERALD = ROBERT	[8]	Applying	CO1
B.	Elaborate AO* algorithm with suitable example.	[8]	Applying	CO1
C.	Can you elaborate what do you mean Knowledge? Provide suitable examples.	[8]	Understanding	CO2
D.	In what manner semantic net works?	[8]	Understanding	CO2
E.	In what way searching is possible through Hill Climbing? Take example to justify your answer.	[8]	Understanding	CO1

Shri Shankaracharya Institute of Professional Management & Technology

Department of Computer Science & Engineering

Class Test – I Session- July-Dec, 2021 Month-October

Semester- IT 5TH Subject- Software Engineering & Project Management **Code-**C033514(033)

Time Allowed: 2 hrs Max Marks: 40

Note: -2 Marks questions are compulsory .Answer any 6 questions with 6 Marks each.

Q.N.	Questions	Marks	Levels of Bloom's Taxonomy	COs
1.	What are the two principles of Software Engineering?	[2]	Understand	CO1
2.	Name different Elicitation Techniques.	[2]	Understand	CO2
3.	What is SDLC? Explains all the steps involved in SDLC.	[6]	Understand	CO1
4.	Describe the Generic Process Framework activities.	[6]	Understand	CO1
5.	What are the three categories of software Myths? Explain them.	[6]	Understand	CO1
6.	A software team needs to create a toy model of a project again and again until it is approved by the customer, what is the name of the SDLC Model they will follow? Explain the model along with a diagram.	[6]	Apply	CO2
7.	Describe Functional and Non-Functional Requirements.	[6]	Understand	CO2
8.	Explain the process of Requirement Elicitation.	[6]	Understand	CO2
9.	What do we call the document that is prepared at the end of Requirement Gathering phase? List the properties of this document and what are important contents of this document.	[6]	Apply	CO2

Shri Shankaracharya Institute of Professional Management & Technology

Department of Electronics and Telecommunication Engineering

Class Test – I Session- July – Dec, 2021 Month- October

Sem- IT 5th Subject- Principles of Communication Systems- C033513(033)

Time Allowed: 2 hrs Max Marks: 40

Note: - ***Attempt Both the question.Each Question has 4 parts. Part a is compulsory. Attempt any 2 out of b,c and d.***

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1				
a.	Define Modulation Index. Also write the formula of modulation index. List 2 main reason for modulating the signal	4	Understanding	CO1
b.	How SSB is transmitted and received ? Explain with the help of block diagram. Also list its advantages and disadvantages.	8	Understanding	CO1
c.	A modulating signal $10\sin(2\pi \times 10^3 t)$ is used to modulate carrier signal $20\sin(27\pi \times 10^4)t$. Find. (i) Modulation index (ii) Percentage modulation (iii) Frequencies of sideband components and their amplitudes. (iv) Band width of modulated signal.	8	Understanding	CO1
d.	Compare DSB FC, DSB SC, SSB and VSB on the basis of following parameters i) Bandwidth ii) Applications iii) Carrier suppression iv) Frequency Spectrum v) Power saving vi) Sideband Supression vii) Transmission Efficiency	8	Apply	CO1
2				
a.	Define and Classify Noise. Write a short note on i) Shot Noise ii) Flicker Noise	4	Understanding	CO1
b.	With the aid of block diagram obtain FM with the help of PM and PM with the help of FM.Write the difference between PM and FM.	8	Understanding	CO2
c.	Explain the Indirect method of generation of FM with the help of a block diagram.Give an example to illustrate the generation FM using Armstrong method	8	Understanding	CO2
d.	A 107.6 MHz carrier signal is frequency modulated by a 7kHz sine wave . The resultant FM signal has a frequency deviation of 50 kHz. Determine the modulation index, carrier swing, Highest and Lowest Frequency of the FM wave.Write Standard Equation of i) DSB-FC ii) DSB-SC iii) SSB- SC iv) FM v) PM	8	Apply	CO2