

# Shri Shankaracharya Institute of Professional Management & Technology

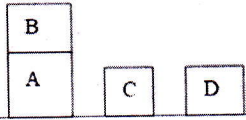
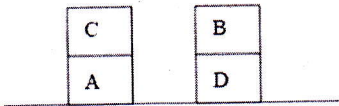
## Department of Information Technology

Class Test – II Session- July – Dec 2022 Month – January 2023

**Sem- IT 5<sup>th</sup> Subject-Artificial Intelligence and Machine Learning Code- C033511(033)**

Time Allowed: 2 hrs. Max Marks: 40

*Note:- Question 1, 2 and 3 are compulsory. Solve any two from Question 4, 5 and 6. Each question carries equal marks.*

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Derive top-down and bottom-up parse tree for the following sentence: "The small tree shades the new house by the stream"	[8]	Applying	CO3
2.	Draw the ATN structure of the following sentence and also show the representation in ATN: "The ball was kicked by the man."	[8]	Applying	CO3
3.	Solve the block world problem given below using goal stack planning. Initial State:  Goal State: 	[8]	Applying	CO3
4.	What is Bayesian Decision Theory?	[8]	Understand	CO4
5.	What is probably approximately correct learning?	[8]	Understand	CO4
6.	What is regression? Also enlighten different types of regression.	[8]	Understand	CO4

# Shri Shankaracharya Institute of Professional Management & Technology

## Department of Information Technology

Class Test – II 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.	Describe software Cost Estimation techniques.	[8]	Understanding	CO4
2.	Compare Verification and Validation in Software Engineering.	[8]	Understanding	CO3
3.	Summarize the given topics: 1. Component Level Design 2. Effective Modular Design	[8]	Understanding	CO3
4.	A project size of 200 KLOC is to be developed. Software development team has average experience on similar type of projects. The project schedule is not very tight. Calculate the Effort, development time, average staff size, and productivity of the project.	[8]	Applying	CO4
5.	Illustrate the importance of Project Scheduling.	[8]	Understanding	CO4

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## Department of Information Technology

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

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

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Time Allowed: 2 hrs. Max Marks: 40

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**Shri Shankaracharya Institute of Professional Management & Technology**  
**Department of Information Technology**  
**Class Test – II Session- Jul-Dec, 2022 Month-January**  
**Sem- 5<sup>th</sup> Subject- Theory of computation**  
**Time Allowed: 2 hrs Max Marks: 40**

*Note: - Attempt any 5 questions.*

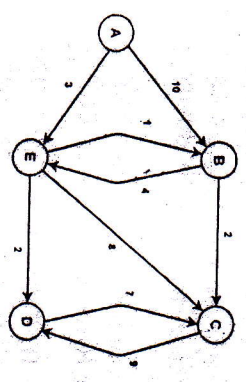
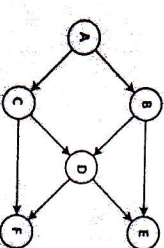
Q. N.	Questions	Marks	Levels of Bloom's taxonomy	COs
A.	Elaborate Chomsky hierarchy of grammar.	[8]	Understanding	CO3
B.	Elaborate Closure properties of regular languages.	[8]	Understanding	CO2
C.	Consider the grammar- $S \rightarrow bB / aA$ $A \rightarrow b / bS / aAA$ $B \rightarrow a / aS / bBB$ For the string $w = bbaababa$ , find- 1. Leftmost derivation 2. Rightmost derivation	[8]	Applying	CO2
D.	Elaborate Ambiguity in grammar with example.	[8]	Understanding	CO3
E.	Consider the given CFG $G_1$ and convert it to CNF. $S \rightarrow ASB$ $A \rightarrow aAS a \epsilon$ $B \rightarrow SbS A bb$	[8]	Applying	CO3
F.	Elaborate how push down automata accepts language .	[8]	Applying	CO4
G	Check whether language of the following grammar is finite or not- $S \rightarrow AB / a$ $A \rightarrow BC / b$ $B \rightarrow CC / c$	[8]	Applying	CO3



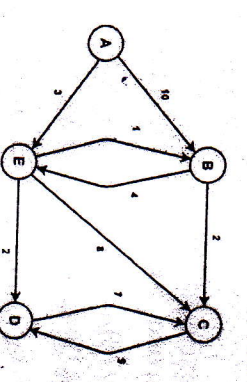
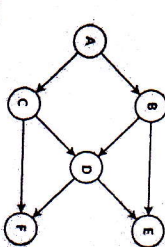
Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
<b>Unit-I</b>				
1.	Describe Huffman algorithm using suitable example Find longest common subsequence for the following two sequence:	[4]	Applying	CO3
2.	X: A B C B D A B Y: B D C A B A Consider the problem with their respective weight and value as I = <11, 12, 13> W = <5, 4, 3> and V = <6, 5, 4>	[8]	Applying	CO3
3.	The knapsack has the maximum capacity W = 7. Find out maximum possible value. Find the minimum spanning tree using Prim's algorithm	[8]	Applying	CO3
4.		[8]	Applying	CO3



Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
<b>Unit-III</b>				
1.	Describe Huffman algorithm using suitable example Find longest common subsequence for the following two sequence:	[4]	Applying	CO3
2.	X: A B C B D A B Y: B D C A B A Consider the problem with their respective weight and value as I = <11, 12, 13> W = <5, 4, 3> and V = <6, 5, 4>	[8]	Applying	CO3
3.	The knapsack has the maximum capacity W = 7. Find out maximum possible value. Find the minimum spanning tree using Prim's algorithm	[8]	Applying	CO3
4.		[8]	Applying	CO3

Questions		Marks	Levels of Bloom's taxonomy	COs
Unit-IV				
1.	Describe Breadth First Search using suitable example.  Generalized the concept of Dijkstra algorithm and print the sequence of extracted node for the given graph.	[4]	Applying	CO4
2.		[8]	Applying	CO4
3.	Find the topological sort of the following graph.  	[8]	Applying	CO4
4.	Express the Travelling Salesman problem using suitable example.	[8]	Applying	CO4

----- Best of Luck -----

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----- Best of Luck -----

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Note: - Attempt any 5 questions

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1	How SSB is transmitted and received ? Explain with the help of block diagram. Also list its advantages and disadvantages.	8	Understanding	CO1
2	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
3	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
4	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
5.	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
6.	(i) 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.  (ii) Write Standard Equation of i) DSB-FC ii) DSB-SC iii) SSB- SC iv) FM v) PM	8	Apply	CO2