Shri Shankaracharya Institute of Professional Management & Technology, Raipur (C.G)

Department of Electronics and Telecommunication Engineering

Class Test – I Session- Jan. – July, 2023 Month- April

Sem- ET&T 6th Sem Subject- AIML - C000629(028)

Time Allowed: 2 hrs. Max Marks: 40

*Note: - **Attempt all questions.***

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	What is Machine Learning and what are its tools?	[4]	Remembering	CO1
2.	Differentiate, Supervised learning and Un-Supervised Learning?	[4]	Remembering	CO1
3.	Explain, how are Bayesian network implemented?	[4]	Understanding	CO1
4.	Define the following: ML-model, Probabilistic Model, Regression, Perceptron, classification, kernel, and Hyperplane.	[5]	Remembering	CO1
5.	Compare K-NN and SVM?	[5]	Remembering	CO1
6.	How supervised learning works?	[5]	Understanding	CO1
7.	What are the types of Machine Learning? Explain them.	[5]	Understanding	CO1
8.	Explain with algorithm: A. Decision Tree B. SVM C. Neural network and its types	[8]	Understanding	CO1

Shri Shankaracharya Institute of Professional Management & Technology, Raipur

Department of Electronics and Telecommunication Engineering

Class Test – I , Month- April 2023

Sem- ET&T 6th Subject- VLSI Design C028611(028)

Time Allowed: 2 hrs Max Marks: 40

OTE : (1) Attempt any Five Questions.
(2) Attempt question in serial order.

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Write a program for N bit SISO & PIPO universal Register	[8]	Apply	
2.	Write a program for (16X1) Multiplexer using generate system.	[8]	Apply	
3.	Write a program using clk'event	[8]	Apply	
4.	Write a program for 4-bit Full adder	[8]	Apply	
5.	Write a program representing different types of programming style.	[8]	Apply	
6.	Explain the use of HDL in Embedded system design.	[8]	Understanding	

Shri Shankaracharya Institute of Professional Management & Technology, Raipur

Department of Electronics and Telecommunication Engineering

Class Test – I , Month- April 2023

Sem- ET&T 6th Subject- VLSI Design C028611(028)

Time Allowed: 2 hrs Max Marks: 40

NOTE : (1) Attempt any Five Questions.
(2) Attempt question in serial order.

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Write a program for N bit SISO & PIPO universal Register	[8]	Apply	
2.	Write a program for (16X1) Multiplexer using generate system.	[8]	Apply	
3.	Write a program using clk'event	[8]	Apply	
4.	Write a program for 4-bit Full adder	[8]	Apply	
5.	Write a program representing different types of programming style.	[8]	Apply	
6.	Explain the use of HDL in Embedded system design.	[8]	Understanding	

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics & Telecommunication

Class Test – I Session- Jan june 2023 Month- April

Sem- ET&T 6th Subject- Antennas & Wave Propagation Code- C028612(28)

Time Allowed: 2 hrs Max Marks: 40

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

Q.NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Define Waveguides? Explain Different types of Waveguide.	[8]	Understanding	CO1
2.	What are the Modes of Propagation in Waveguide?	[8]	Understanding	CO1
3.	Derive the Wave Equation for Two Parallel Plate Waveguides.	[8]	Apply	CO1
4.	Explain Ground wave, Sky wave & Space wave Communication.	[8]	Understanding	CO2
5.	What are the Limitation of Transmission line? How it overcome by waveguide	[8]	Understanding Apply	CO1

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics & Telecommunication

Class Test – I Session- Jan june 2022 Month- April

Sem- ET&T 6th Subject- Antennas & Wave Propagation Code- C028612(28)

Time Allowed: 2 hrs Max Marks: 40

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

Q.NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Define Waveguides? Explain Different types of Waveguide.	[8]	Understanding	CO1
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Shri Shankaracharya Institute of Professional Management & Technology

Department of Electronics and Telecommuncation

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Class Test – I Session- Jan.– June 2023 Month- April

Sem- ET 6th Subject- Information Theory and Coding C028631(28)

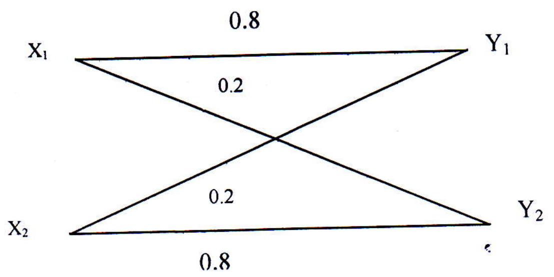
Time Allowed: 2 hrs Max Marks: 40

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

<table>
<tr><th>Q. NO.</th><th>Questions</th><th>Marks</th><th>Levels of Bloom's taxonomy</th><th>Cos</th></tr>
<tr><td>1</td><td>Consider a telegraph source having two symbols dot (.) and dash (-). The dot duration is 0.2 second and dash duration is three times of dot duration. The probability of occurrence of dots is twice that of dash and the time between symbols is 0.2 second. Calculate the information rate of telegraph source</td><td>[8]</td><td>Apply</td><td>CO1</td></tr>
<tr><td>2.</td><td>Construct a Huffman coding tree for the following message and also its calculate code efficiency.
<table>
<tr><td>Message</td><td>M1</td><td>M2</td><td>M3</td><td>M4</td><td>M5</td><td>M6</td><td>M7</td><td>M8</td><td>M9</td><td>M10</td></tr>
<tr><td>Probability</td><td>0.2</td><td>0.18</td><td>0.12</td><td>0.1</td><td>0.1</td><td>0.08</td><td>0.06</td><td>0.06</td><td>0.06</td><td>0.4</td></tr>
</table></td><td>[8]</td><td>Apply</td><td>CO1</td></tr>
<tr><td>3.</td><td>Apply the Shannon-fano coding procedure for the following message ensemble and determine the average length and efficiency of the code system
<table>
<tr><td>Message</td><td>M1</td><td>M2</td><td>M3</td><td>M4</td><td>M5</td></tr>
<tr><td>Probability</td><td>0.3</td><td>0.1</td><td>0.4</td><td>0.08</td><td>0.12</td></tr>
</table></td><td>[8]</td><td>Apply</td><td>CO1</td></tr>
<tr><td>4.</td><td>. The channel matrix is given by

$$P(X,Y) = \begin{bmatrix} 2/3 & 1/3 \\ 1/10 & 9/10 \end{bmatrix}$$

Determine H(X), H(X/Y), H(Y/X) and mutual information I(X;Y).</td><td>[8]</td><td>Apply</td><td>CO2</td></tr>
<tr><td>5.</td><td>Find the mutual information and channel capacity of the channel shown in figure below Given : $p(x_1)=0.6$, $p(x_2)=0.4$. Calcuate H(X), H(Y), H(Y/X) and I(X;Y)


</td><td>[8]</td><td>Apply</td><td>CO2</td></tr>
<tr><td>6.</td><td>A channel has a BW of 5KHz and a signal to noise power is 63. Determine the BW needed if the S/N power ratio is reduced to 31. What will be the signal power required if the channel bandwidth is reduced to 3KHz?</td><td>[8]</td><td>Apply</td><td>CO2</td></tr>
</table>

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I Session- Jan. – June, 2023 Month- April
Sem- ET&T 6th Subject- Digital Signal Processing - C028613(028)
Time Allowed: 2 hrs Max Marks: 40

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

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	For the given sequence x(n) = {1, 2, 3, 4, 4, 3, 1} and N = 8, find X(K) using DIT FFT algorithm	[8]	Apply	CO1
2.	Compute linear and circular convolution of the two sequences $x_1(n)$ = {1,1,2,2} and $x_2(n)$ = {1,2,3,4}	[8]	Apply	CO1
3.	Explain DFT and DTFT. Explain property of descrete fourier series with apropreate example.	[8]	Apply	CO1
4.	Find the response of FIR filter with impulse response h(n) = {1,2,4} to the input sequence x(n) = {1,2} using periodic convolution.	[8]	Apply	CO1
5.	Determine the derect Form I and II realizations for a third order IIR transfer function. $H(z) = \frac{0.28z^2+0.319z+0.04}{0.5z^3+0.3z^2+0.17z-0.2}$	[8]	Apply	CO2
6.	Develop DIT FFT algorithms for decomposing the DFT for N=6 and draw the flow diagrams for (a) N=2.3 and (b) N=3.2.	[8]	Understading	CO2
7.	(a) Find the DTFT of the following finite duration sequence of length L $x(n) = \begin{Bmatrix} A, & for\ 0 \le n \le L-1 \\ 0, & otherwise \end{Bmatrix}$ (b) Also, find the inverse DTFT to verify x(n) for L=3 and A=1V.	[8]	Apply	CO2