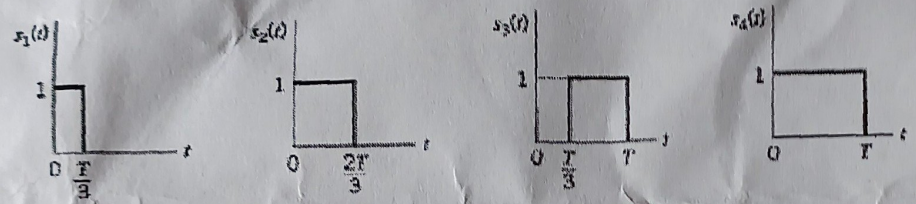
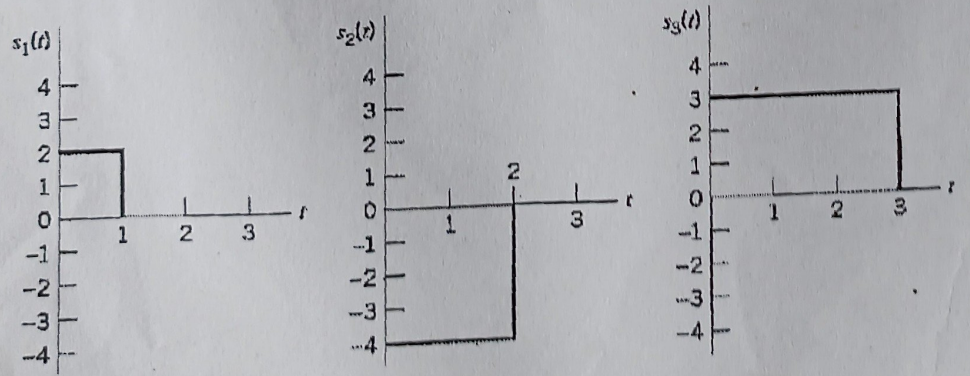
CONTINUOUS INTERNAL EVALUATION- 2

Dept:EC	Sem / Div: VI/A &B	Sub: Digital Communication	S Code: 18EC61
Date:15/06/2022	Time: 9:30-11:00 am	Max Marks: 50	Elective:N

Note: Answer any 2 full questions, choosing one full question from each part.

QN		Questions	Marks	RBT	COs
		PART A			
1	a	The waveforms of four signals $s_1(t)$, $s_2(t)$, $s_3(t)$ and $s_4(t)$ are displayed. a) Using the Gram-Schmidt orthogonalization procedure, find an orthonormal basis for this set of signals. b) Construct the corresponding signal-space diagram. 	10	L3	CO2
	b	Explain the geometric representation of signals and express energy of the signal in terms of the signal vector.	8	L2	CO2
	c	With a neat diagram, explain the generation and detection of QPSK signals.	7	L2	CO3
		OR			
2	a	The waveforms of four signals $s_1(t)$, $s_2(t)$ and $s_3(t)$ are displayed. a) Using the Gram-Schmidt orthogonalization procedure, find an orthonormal basis for this set of signals. b) Construct the corresponding signal-space diagram. 	10	L3	CO2
	b	Explain the BPSK signal with its signal space characterization. With a neat block diagram, explain the generation and detection of BPSK signal.	10	L2	CO3
	c	Derive the expression for mean and variance of correlator output.	5	L2	CO2

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			PART B			
3	a		With the signal space representation of BPSK derive the expression for probability of error.	9	L2	CO3
	b		Explain the matched filter receiver with the relevant mathematical theory.	8	L2	CO3
	c		Explain how to convert continuous AWGN channel into a vector channel.	8	L2	CO2
			OR			
4	a		With neat block diagram explain detector and maximum likelihood decoder of a correlation receiver. Obtain the decision rule for maximum likelihood decoding.	10	L2	CO3
	b		Derive an expression for probability of error of BFSK	9	L2	CO3
	c		Draw the QPSK waveform for the sequence 0 1 1 0 1 0 0 0 showing in-phase and quadrature components.	6	L3	CO2

13/6/22
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