Total No. of Questions – [3]

Total No. of Printed Pages: 2

G.R. No.	

PAPER CODE	V223-244 (ESE

May 2023 (ENDSEM) EXAM

S.Y. E & TC (SEMESTER - II)

COURSE NAME: Analog and Digital Communication

COURSE CODE: ETUA22204

(PATTERN 2020)

Time: [1Hr] [Max. Marks: 30]

(*) Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **Use of scientific calculator is allowed**
3) **Use suitable data where ever required**

Question No.	Question Description	Marks	CO mapped	Blooms Taxonomy Level
Q.1	a) What are the desirable properties of line codes? How it relates to the transmitted power, bandwidth and error probability with reference to the properties of line codes.	[4]		Understand
	b) Derive the generalized expression for computation of power spectral density of line codes. Include only important steps. As the data is discrete and random form, how we compute and use autocorrelation function in computation of PSD?	[6]	C04	Apply and Analysis
	OR			
	b) Show in time and frequency domain, the power spectral density of Manchester and AMI codes is zero at zero frequency or DC component is zero. Why zero DC component is desirable?	[6]		Understand and apply
Q2	a) Derive the expression for the signal to noise ratio in case of integrate and dump type (baseband) receiver. Interpret and discuss important conclusion.	[4]		Understand and apply
	b) With the help of signal space representation of QPSK, correlate distance between the symbols and probability of error. Compare the bandwidth of with BPSK and justify the difference.	[6]	C05	Understand and Analysis

	OR b) Draw signal space representation and spectrum of 16 PSK and 16 QAM. Compare 16 PSK and 16 QAM with reference to distance between the symbol and bandwidth requirements.	[6]		Apply and Analysis
Q.3	a) Explain the important properties of PN sequence.	[4]	C06	Understand
	b) Draw the block diagram of DS-SS transmitter and plot the output at each block in time and frequency domain. How the spectrum spreading is achieved? Justify your answer.	[6]		Analysis
	OR b) Illustrate with block diagram and spectrum representation, generation of FH-SS technique. How the spectrum spreading is achieved?	[6]		Analysis