PRN:		Course Code :	UEC403

Second Year **B. Tech** End Semester Examination Winter 2024

Communication Engineering 000197

Day and Date: Wed 27 NOV 2024 Max Marks: **100**

Time : 02:00PM To 05:00PM Duration: **03** hrs

Instructions: All questions are compulsory.

			Marks	Bloom's Level	CO
Q.1		**Attempt the following**	08	4	1
	a)	Derive Power relations in DSBFC and DSBSC modulation.	08	3	1
	b)	A 400 W carrier is amplitude modulated to a depth of 100%. Calculate the total power in case of AM and DSBSC techniques.			
		OR			
	b)	Explain SSB modulation in detail.	08	2	1
Q.2		**Attempt the following**	08	3	1
	a)	Illustrate AM Receiver with block diagram.	08	2	1
	b)	Describe receiver parameters.			
		OR			
	b)	Describe distortions in diode peak detector.	08	2	1
Q.3		**Attempt any two from the following**	08	2	2
	a)	Explain Frequency Modulation with neat diagram.	08	3	2
	b)	Explain PLL-FM demodulator with block diagram.	08	3	2
	c)	Elaborate the working of Ratio Detector with neat diagram			
Q.4		**Attempt any two from the following**	08	3	3
	a)	Illustrate Delta modulation technique in detail.	08	4	3
	b)	Demonstrate Digital Communication System with block diagram.	08	3	3
	c)	Illustrate ASK,FSK,PSK with waveforms.			
Q.5		**Attempt any Two of the following**	09	4	3
	a)	The generator matrix for a (6,3) linear block code is given below. Evaluate code words of this code for the message words($m_0 m_1 m_2$)= (0,0,0) and (0,0,1).			

$$[G] = \begin{matrix} 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 & 1 & 0 \end{matrix}$$

	b)	For (6,3) linear block code , the received code word is [1 1 1 0 1 1] . Is this code word correct? If not then correct it using syndrome decoding. The coefficient matrix is given by,	09	4	3

$$[P] = \begin{matrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{matrix}$$

	c)	Describe syndrome decoding technique for linear block code.	09	2	3

Backlog

Q.6	**Attempt any Two of the following**				
	a) Consider a source S={ S_1 , S_2 , S_3 }with P ={ ½,1/4,1/4}, Find i)Self information of each message and ii) Entropy of source S.	09	3	4
	b) Calculate the amount of information if probability of occurrences of messages is $P_k = 1$ & $P_k = 1/4$	09	3	4
	c) Describe Lossless channel and deterministic channel.	09	2	4

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Backlog