B.E. Information Technology Fourth Semester **IT403 - Principles of Communication**

P. P Tim	ages : ie : Th	2 ee Hours * 1 2 3 5 * GUG/W/18/15' Max. Marks :	G /W/18/1571 ⁄Iax. Marks : 80	
	Note	 s: 1. All questions carry marks as indicated. 2. Illustrate your answers wherever necessary with the help of neat sketches. 		
1.	a)	 Explain properties of Fourier transform - i) Duality property ii) Time shifting iii) Frequency shifting iv) Scaling property 	8	
	b)	 Find the Fourier transform of - i) Sin w_ot ii) Cos w_ot iii) Single sided exponential 	8	
		OR		
2.	a)	State & prove sampling theorem.	4	
	b)	Find Fourier transform of rectangular pulse of width 2 μ S & amplitude 1V.	4	
	c)	Write a detailed note on ideal low pass filter. Why it is not physically realizable.	8	
3.	a)	What is modulation ? Explain Amplitude modulation with waveforms & necessary expression.	8	
	b)	Draw & Explain DSB-SC method of modulation with ckt diagram & expression using transistor.	8	
		OR		
4.	a)	What is angle modulation ? Compare FM & PM in brief.	8	
	b)	Derive expression for narrow band FM & wideband FM.	8	
5.	a)	What is noise ? Classify the different noises & explain thermal noise in brief.	8	
	b)	What is S/N ratio ? Define noise figure & derive the relation of noise temperature in terms of noise figure.	8	
		OR		
6.	a)	Derive the expression for equivalent noise resistance for two stage amplifier.	8	
	b)	Derive expression for equivalent noise bandwidth.	8	

7.	a)	Explain PAM with transmitter & receiver. Also draw block diagram & waveform for the same.	8
	b)	Explain concept of quantization ? Also explain PCM system in brief.	8
		OR	
8.	a)	Draw block diagram of DM system & explain with necessary waveform. Also give limitations of DM system.	8
	b)	Explain TDM system with block diagram.	8
9.	a)	Explain ASK with block diagram of transmitter & receiver. Also draw waveforms.	8
	b)	Explain QPSK with block diagram & waveforms.	8
		OR	
10.	a)	 For the binary bit stream 10011011 draw waveforms for following : i) Polar NRZ ii) Unipolar RZ iii) Split phase Manchester iv) Gray Code NRZ 	4
	b)	Write short note on line coding.	4
	c)	Explain M-ary communication system with block diagram.	8
