23ELU413N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(Fourth Semester)

Branch - **ELECTRONICS**

ELECTRONIC COMMUNICATION -I

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Which of the following is an analog modulation technique? a) PCM b) AM c) DPCM d) Delta Modulation	K1	CO1
	2	If percentage modulation is 70%, relate it to the modulation index (μ). a) 0.7 b) 7.0 c) 0.07 d) 0.2	K2	CO1
2	3	Find the bandwidth required for Single Sideband Suppressed Carrier (SSB-SC). a) 2fm b) 3fm c) fm d) Zero	K1	CO2
	4	Relate the bandwidth requirement of SSB with that of conventional AM. a) Bandwidth of SSB = 2 × Bandwidth of AM b) Bandwidth of SSB = Same as AM c) Bandwidth of SSB = Half of AM d) Bandwidth of SSB = Zero	K2	CO2
3	5	What is the modulation index in Phase Modulation (PM) proportional to? a) Frequency deviation b) Phase deviation c) Amplitude of modulating signal d) Carrier amplitude	K1	CO2
	6	Classify de-emphasis as which type of filter? a) Band-stop filter b) High-pass filter c) Band-pass filter d) Low-pass filter	K2	CO3
4	7	How is receiver sensitivity commonly expressed? a) bandwidth in Hz b) Local oscillator frequency c) IF frequency in kHz d) Minimum detectable signal (MDS) in dBm for a given SNR	K1	CO4
	8	Show what happens if the PLL loop bandwidth is too wide. a) Improved noise rejection b) Excessive noise passes through c) Distortion is eliminated d) Demodulator stops tracking	K2	CO4
5	9	Recall which sampling theorem applies to PAM signals. a) Shannon's theorem b) Nyquist theorem c) Carson's rule d) Modulation theorem	K1	CO4
	10	Rephrase the working principle of PSK in one line. a) Varies carrier phase according to digital bits b) Varies carrier frequency to carry data c) Varies pulse amplitude to carry data d) Eliminates the carrier completely	K2	CO4

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Classify the electromagnetic spectrum into different regions and state one application of each.	K2	CO1
		(OR)		
	11.b.	Rephrase the working principle of sky wave communication in your own words.		
2	12.a.	Apply the concept of Single Sideband (SSB) modulation and explain its power distribution.	K3	CO2
		(OR)		
	12.b.	Construct the expression for an SSB signal using the phase shift principle and explain its working.		
3	13.a.	Develop a step-by-step explanation of how simple FM generator produces a frequency-modulated wave.	K3	CO3
		(OR)		
	13.b.	Utilize the PLL FM transmitter concept in practical communication systems and explain its applications.		
4	14.a.	Analyze with the help of expressions how image frequency affects selectivity of a receiver.	K4	CO4
		(OR)		
	14.b.	With a neat block diagram, categorize the functions of each block in an FM receiver.		
5	15.a.	Analyze how different coding techniques improve noise immunity	K4	CO4
		(OR)		
	15.b.	Test for understanding of the block diagram of a delta modulator and explain each block.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Examine the block diagram of an AM transmitter and explain the function of each block.	K4	CO1
2	17	Classify the different methods of SSB demodulation and explain each.	K4	CO2
3	18	Analyze how pre-emphasis improves the signal-to-noise ratio in FM systems.	K4	CO3
4	19	Draw and explain each block diagram of a superheterodyne receiver and its applications.	K5	CO4
5	20	Explain the operation of a Sample and Hold Circuit and show its block diagram.	K5	CO4

Z-Z-Z END