



Daffodil International University
Department of Electrical and Electronic Engineering, Faculty of Engineering
Mid-Term Examination, Fall – 2025

Course Code: 0714-311
Section: A, B, C
Full Marks: 25

Course Title: Communication Engineering
Level-Term: L2-T2
Date: October 22, 2025

Teacher's Initial: DTF
Time: 1.5 Hours

[Notes: Answer all the following questions]

			Marks
Q1.	What do you mean by SQNR? Prove that for digital transmission is the signal to noise quantization ratio is $(SQNR)_{db} = 1.76 + b \times 6.02$ where b indicates the bit.	CO-1 (C2)	[5]
Q2.	Define modulation index for frequency modulation. Derive the final equation of phase modulation.	CO-2 (C4)	[5]
Q3.	What is Nyquist rate? What causes aliasing effect? How to combat this aliasing effect?	CO-1 (C2)	[4]
Q4.	In an FM system, the frequency deviation is 6 kHz when the audio modulating frequency is 400 Hz and the audio modulating voltage is 3 V. Compute the modulation index. Also, compute the frequency deviation and the modulation index if (i) AF voltage is increased to 6.5 V keeping the modulation frequency unaltered (ii) AF voltage is increased to 8 V while the modulation frequency is reduced to 220 Hz.	CO-2 (C4)	[4]
Q5.	A sinusoidal carrier voltage of frequency 1 MHz is amplitude modulated by a sinusoidal voltage of frequency 10 kHz resulting in maximum and minimum modulated carrier amplitudes of 85 and 75 volts respectively. Calculate (a) the unmodulated carrier amplitude (b) modulation index and (c) amplitude of each sideband.	CO-2 (C4)	[4]
Q6.	The rms value of a radio frequency voltage is 80 volts. After amplitude modulation by a sinusoidal audio voltage, the rms value of the RF voltage becomes 88 volts. Compute the modulation index.	CO-2 (C4)	[3]