



Daffodil International University
Department of Electrical and Electronic Engineering
Faculty of Engineering
Term Final Examination, Spring – 2025

Course Code: 0714-311
 Section: A,B,C,D
 Full Marks: 40

Course Title: Communication Engineering
 Level-Term: L2-T2
 Exam Date: June 28, 2025

Teacher's Initial: FHT
 Time: 2 Hours

CO's represents one of the learning outcomes of the course.
Figures on the right hand side indicate marks allocated for that question.
Answer all Questions

- Q1. (a) Sketch DSB signal $\phi_{AM}(t)$ for modulation indices of $\mu = 0.5$ and 1, when $m(t) = B \cos \omega_{mt}$. This case is referred to as tone modulation because the modulating signal is a pure sinusoid (or tone). CO2, 4
C2

- (b) Explain the details of rectifier detection of AM demodulation. CO2, 4
C2

- Q2. (a) Sketch FM and PM wave for the modulating signal $m(t)$ shown in following Fig.1. The constant k_f and k_p are $2\pi \times 10^5$ and 10π respectively, and the carrier frequency is 100 MHz. CO2, 5
C3

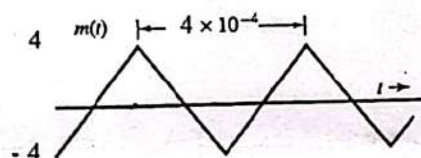


Fig.1

- (b) An FM signal has a frequency deviation of 5 kHz and a modulating frequency of 1 kHz. Calculate the modulation index and comment on whether the modulation is narrowband or wideband. CO2, 3
C3

- Q3. (a) Define pulse amplitude modulation (PAM). Illustrate with an example how an analog signal is converted into a digital signal using PCM. 6

- (b) Classify the sampling technique. 2

- Q4. (a) Determine the peak frequency deviation of a BFSK signal with a mark frequency of 51 kHz and space frequency of 55 kHz, input bit rate of 2 kbps. 2

- (b) Determine the baud necessary to pass a 10 kbps binary signal using amplitude shift keying. 2

- (c) Given the data signal 010011101101 and a sinusoidal carrier, sketch the corresponding ASK, FSK, and BPSK signals. 4

- Q5. (a) Explain the mechanism behind Frequency Division Multiplexing (FDM) that allows multiple signals to share a communication channel and be individually recovered. 5

- (b) Describe the process of asynchronous TDM and how it differs from synchronous TDM. 3