

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER – 2025**

PRINCIPLES OF ELECTRONIC COMMUNICATION

[Maximum marks: 75]

[Time: 3 Hours]

PART A

I. Answer all the following questions in one word or one sentence. Each question carries 1 mark

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	The value of modulation index of an AM wave should always be less than or equal to	M1.02	R
2	What is the expression of bandwidth for WBFM?	M1.03	R
3	The condition for under sampling or aliasing is	M2.01	R
4	Name the pulse modulation scheme used to control the speed of a dc motor.	M2.02	R
5	Define directivity of an antenna.	M2.03	R
6	Which circuit is used to boost the higher frequency component of message signal before modulation in FM transmitter?	M3.01	R
7	Define noise.	M3.03	R
8	Define fidelity.	M4.01	R
9	The value of IF in AM receiver is.....	M4.02	R

PART B

II. Answer any eight questions from the following. Each question carries 3 marks.

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	List any three applications of AM.	M1.01	R
2	Find the Nyquist rate of the signal, $s(t) = 5\cos 50\pi t + 20\sin 300\pi t - 10\cos 100\pi t$.	M2.01	U
3	Draw the input and output waveforms of PAM modulator.	M2.02	R
4	Define the following terms: 1. Radiation intensity 2. Antenna gain 3. Antenna efficiency	M2.03	R
5	List any three applications of microstrip antenna.	M2.03	R
6	Draw the block diagram of high level AM transmitter.	M3.01	R

7	Define the following terms: 1. Selectivity 2. Sensitivity	M4.01	R
8	Draw the block diagram of FM receiver.	M4.02	R
9	Describe AGC in radio receivers.	M4.03	U
10	1. Define demodulation. 2. Why diode detector is called as envelope detector?	M4.03	R

PART C

Answer all questions. Each question carries seven marks

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III.	An AM signal in time domain is represented as $s(t) = 20[1 + 0.9\cos 2\pi 10^3 t] \cos 2\pi 10^6 t$. The signal is radiated into free space using antenna having a resistance of 5Ω . Sketch the spectrum and calculate the bandwidth, power and modulation efficiency.	M1.04	A
IV.	OR A 100MHz carrier is frequency modulated by a sinusoidal signal of amplitude 20volts and frequency 100kHz. The frequency sensitivity of the modulator is 25kHz/volt. Determine 1. Frequency deviation 2. Modulation index 3. Bandwidth	M1.04	A
V.	Derive the expression of an FM wave.	M1.03	U
VI.	OR Differentiate AM and FM.	M1.01	U
VII.	Explain the block diagram of PCM system.	M2.02	U
VIII.	OR State sampling theorem and explain its significance.	M2.01	U
IX.	Explain pre-emphasis with circuit diagram and draw its characteristics.	M3.01	U
X.	OR With circuit diagram explain the working of balanced modulator.	M3.02	U
XI.	Explain de-emphasis with circuit diagram and draw its characteristics.	M3.01	U
XII.	OR Summarize various types of noises in communication system.	M3.03	U
XIII.	Explain the factors needed for the choice of IF in receivers. Write the value of IF in FM receiver.	M4.02	U
XIV.	OR With circuit diagram explain the delayed AGC system and draw its characteristics.	M4.03	U
