

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)



B. Tech (Sixth Semester - Regular) Examinations, April 2026

23BEEPC36003– Communication Engineering

(Electrical and Electronics Engineering)

Time: 3 hrs

Maximum: 60 Marks

Answer ALL questions
(The figures in the right-hand margin indicate marks)

PART – A

(2 x 5 = 10 Marks)

Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. Define and explain the concept of Signal-to-Noise Ratio in communication systems.	CO1	K1
b. Explain Carson's Rule and its application in estimating bandwidth of FM signals.	CO2	K2
c. Describe and explain the Sampling Theorem and its significance in signal processing.	CO3	K2
d. Define aliasing error and explain its causes and effects in signal sampling.	CO4	K2
e. Explain bending loss in optical fibers and classify its different types.	CO6	K2

PART – B

(10 x 5 = 50 Marks)

Answer **ALL** the questions

	Marks	CO #	Blooms Level
2. a. Illustrate and interpret the functional blocks of a communication system using a neat diagram.	5	CO1	K2
b. Examine different types of noise sources and analyze their impact on system performance.	5	CO1	K4
(OR)			
c. Compare low-level and high-level AM generation techniques highlighting efficiency and complexity.	5	CO2	K4
d. Describe construction and working of envelope detector.	5	CO2	K2
3.a. Explain DSB-SC generation using balance modulator method with suitable diagram.	5	CO2	K2
b. Analyze coherent detection method and its necessity in suppressed carrier systems.	5	CO3	K4
(OR)			
c. Explain SSB-SC generation using frequency discrimination method with suitable diagram	5	CO3	K2
d. Compare AM, DSB-SC techniques based on efficiency and bandwidth.	5	CO2	K4
4.a. Analyse Indirect method of FM generation using suitable diagram.	5	CO3	K4
b. Establish relationship between FM and PM using mathematical expressions.	5	CO4	K3
(OR)			
c. Examine PLL and analyze its applications in communication systems.	5	CO3	K4
d. Analyze narrowband and wideband FM and compare their bandwidth requirements.	5	CO3	K4
5.a. Analyze PAM, PWM, and PPM techniques and compare their characteristics.	5	CO5	K4
b. Examine PCM process and interpret quantization noise effects.	5	CO4	K4

(OR)

c. Analyze ASK, FSK, and PSK techniques in digital communication systems.	5	CO5	K4
d. Evaluate multiplexing techniques such as TDM and FDM in communication systems.	5	CO4	K5
6.a. Define Critical angle, Acceptance angle and TIR in an optical fiber	5	CO6	K1
b. Write a short note on dispersion in optical communication. [5]	5	CO6	K2

(OR)

c. A step index optical fiber has a core refractive index of 1.48 and cladding refractive index = 1.46 and a core radius of 100 μ m. Calculate NA, Acceptance angle and Critical angle. [5]	5	CO6	K3
d. Evaluate microwave components such as isolators and circulators.	5	CO5	K5

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