



K. K. Wagh Institute of Engineering Education & Research, Nashik
(An Autonomous Institute From A.Y. 2022-23)

InSem Examination-II Summer 2025	
Exam Seat No.:	
Academic Year: 2024-2025	Semester: VI
Class: TY	Program: B.Tech
Branch Code: ELE	Pattern: 2022
Name of Course: Communication Systems	Course Code: ELE223017
Max. Marks: 30	Duration: 1.15 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains ____ page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last column indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

Marks CO

Question No. 1

- 1 a) Why is communication important in electrical systems? (7) CO1

(3 marks)

Explain the Analog Communication system with block diagram (4 marks)

Question No. 2

- 2 a) a) Explain the working principle of an Analog-to-Digital Converter (ADC). (8) CO1

(4 marks)

(4 marks)

- b) Check whether the given signal is periodic or not (4 Marks)

$$x[n] = e^{j(\pi/4)n}$$

OR

- 2 b) Prove the time shifting property of the Fourier Transform. (8) CO1

(4 marks)

d) Determine even and odd components of

(4 Marks)

$$x(t) = e^{jt}$$

Question No. 3

3 a) Define noise and differentiate between internal and external

(7) CO 2

noise. (4 marks)

Analyze the noise in the communication system when resistors are in series and in parallel.

(4 marks)

Question No. 4

4 a) Determine the energy spectrum density of a discrete time signal

(8) CO 2

(4Marks)

$$x[n] = a^n u(n) \text{ for } -1 < a < 1$$

Determine the Power Spectral Density of a stationary random process $x(t)$ with auto co-relation function

(4 Marks)

$$R_{xx}(t) = \frac{1}{2a} e^{-|t|}$$

OR

4 b) Determine the energy and the power of the given signal

(8

(8) CO 2

Marks)

$$x(t) = tu(t)$$

..... End of question paper.....