

Code: 20EC3402

**II B.Tech - II Semester – Regular / Supplementary Examinations  
MAY - 2024**

**COMMUNICATION THEORY  
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
<b>UNIT-I</b>					
1	a)	Analyze the working of Costas Loop with neat sketches.	L4	CO4	7 M
	b)	Distinguish between various AM methods.	L4	CO4	7 M
<b>OR</b>					
2	a)	Analyze the principle of operation of super heterodyne receiver.	L4	CO4	8 M
	b)	Summarize the working of switching modulator.	L2	CO1	6 M
<b>UNIT-II</b>					
3	a)	Outline about single tone modulation of FM with expressions.	L2	CO2	7 M
	b)	Summarize about FM radio broadcasting with neat sketches.	L2	CO2	7 M
<b>OR</b>					

4	a)	Explain about PLL used in FM demodulation.	L2	CO2	7 M
	b)	Summarize about FM Stereo multiplexing with neat sketches.	L2	CO2	7 M
<b>UNIT-III</b>					
5	a)	State some useful classifications of random processes.	L2	CO4	7 M
	b)	Auto-correlation function of an ergodic stationary random process with no periodic component is given as $25+4/(1+6\tau^2)$ . Find the variance and mean of the process.	L4	CO4	7 M
<b>OR</b>					
6	a)	State and prove the properties of auto-correlation function.	L2	CO4	7 M
	b)	A random process is given as $X(t) = A\cos(\omega_0 t + \Theta)$ where $\Theta$ is a uniformly distributed random variable on $(0, \pi/2)$ . Find whether $X(t)$ is wide sense stationary or not.	L4	CO4	7 M
<b>UNIT-IV</b>					
7	a)	Explain about noise performance in FM receiver.	L2	CO4	7 M
	b)	Distinguish between AM and FM in terms of noise factors.	L4	CO4	7 M
<b>OR</b>					
8	a)	Summarize about pre-emphasis and de-emphasis.	L2	CO4	7 M
	b)	Analyze the noise performance in SSB receiver.	L4	CO4	7 M

<b>UNIT-V</b>					
9	a)	Explain about various types of sampling with neat sketches.	L2	CO3	7 M
	b)	Summarize about the generation of PAM.	L2	CO3	7 M
<b>OR</b>					
10	a)	Outline about uniform and non-uniform quantization methods.	L2	CO3	6 M
	b)	Analyze the working principle of TDM with neat sketches.	L4	CO3	8 M