PVP 23

Code: 23EC3403

II B.Tech II Semester–Regular/Supplementary Examinations APRIL 2026

ANALOG COMMUNICATIONS
(ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
4. All parts of Question paper must be answered in one place.

BL – Blooms Level CO – Course Outcome

PART – A

		BL	CO
1.a)	Define modulation.	L1	CO1
b)	Explain the need for modulation in communication systems.	L2	CO1
c)	List the methods of generation of DSBSC waves.	L1	CO2
d)	Recall the time-domain expression of a DSB-SC signal.	L1	CO2
e)	What is the modulation index of FM.	L1	CO3
f)	Distinguish between NBFM and WBFM.	L2	CO3
g)	Define threshold effect in FM.	L1	CO4
h)	What is pre-emphasis?	L1	CO4
i)	State the sampling theorem.	L1	CO5
j)	Define Pulse Width Modulation.	L1	CO5

PART – B

			BL	CO	Max. Marks
		UNIT-I			
2	a)	Illustrate the time domain expression of an AM wave and draw its frequency spectrum.	L3	CO1	5 M
	b)	A carrier of 100W is amplitude modulated to a depth of 0.6. Calculate total transmitted power and sideband power.	L3	CO1	5 M
		OR			
3	a)	Explain the generation of AM using square-law modulator with neat diagram.	L2	CO1	5 M
	b)	A 1 MHz carrier is modulated by a signal $m(t)=2\cos(2\pi\times10^3t)$. If the amplitude of carrier signal Ac=10 V, find the modulation index and bandwidth.	L3	CO1	5 M
		UNIT-II			
4	a)	Analyze the coherent detection of DSB-SC with neat sketches.	L4	CO2	5 M
	b)	A DSB-SC system has carrier frequency 1 MHz and message frequency 5 kHz. Determine bandwidth and sketch spectrum.	L3	CO2	5 M
		OR			
5	a)	Explain generation and envelope detection of VSB signal.	L2	CO2	5 M
	b)	Summarize the SSB generation method with neat sketches.	L2	CO2	5 M

UNIT-III					
6	a)	Explain indirect method of FM generation with block diagram.	L2	CO3	5 M
	b)	A carrier of 20 MHz is FM modulated with the deviation of 75 kHz and modulating frequency 10 kHz. Calculate modulation index and bandwidth.	L3	CO3	5 M
OR					
7	a)	Summarize about PLL as FM detector with neat sketches.	L2	CO3	5 M
	b)	Determine bandwidth of FM signal if the frequency deviation is 100 kHz and modulating frequency is 5 kHz.	L3	CO3	5 M
UNIT-IV					
8	a)	Derive the Figure of merit of AM.	L4	CO4	5 M
	b)	Explain about threshold effect in FM.	L2	CO4	5 M
OR					
9		Derive the expression for the figure of merit of FM receiver.	L4	CO4	10 M
UNIT-V					
10		Summarize the PAM generation and demodulation with block diagram.	L2	CO5	10 M
OR					
11		Explain the generation and demodulation of PWM signals.	L2	CO5	10 M