Roll No.: _

Amrita Vishwa Vidyapeetham

Amrita School of Engineering, Coimbatore

B.Tech Mid-Term Examinations – February 2025

Fourth Semester

Computer and Communication Engineering

23CCE214 Communication Theory

Duration: Two hours Maximum: 50 Marks

Course Outcomes (COs):

CO	Course Outcomes
CO01	Ability to understand the principles of analog modulation and demodulation techniques
CO02	Ability to analyze the performance of different analog modulation techniques
CO03	Able to understand the concepts of random processes
CO04	Able to analyze the effect of noise in analog communication systems

Answer all questions

Part A $4 \times 6 = 24$ marks

1) Explain coherent demodulation of AM signals. [6][CO01][BTL 2]
2) Give a detailed profile of the filter characteristics in VSB AM. [6][CO01][BTL 2]
3) An FM signal is represented by $12 \sin (6 \times 10^8 t + 5 \sin 1250 t)$. Determine the carrier frequency and frequency deviation. [6][CO02][BTL 3]
4) Strike a comparison between AM and FM analog modulation techniques. [6][CO01,CO02][BTL 2]

Part B $2 \times 13 = 24$ marks

5) An AM bandpass signal is generated with $m(t) = \beta \sin(2\pi f_m t)$ and $c(t) = Ac\sqrt{2} \cos(2\pi f_c t)$. Determine and plot all these waveforms in both time and frequency domains. Also determine the AM output power. [13][CO01][BTL 3]
6) Explain the analytical model for angle modulation. [13][CO02][BTL 2]

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Course Outcome /Bloom's Taxonomy Level (BTL) Mark Distribution Table

CO	Marks	BTL	Marks
CO01	28	BTL 1	
CO02	22	BTL 2	31
CO03		BTL 3	19
CO04		BTL 4	
		BTL 5	
		BTL 6	