SRI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(AN AUTONOMOUS INSTITUTION)
PUDUCHERRY

Department of Electronics and Communication Engineering

ASSIGNMENT-2

Name of the Student	:		**Register No.**	:	
Name of the Subject	:	ANALOG COMMUNICATION – U23ECB402	**Staff in-Charge**	:	R. Gayathri
Year/Sem/Sec	:	II / IV / B	**Due Date**	:	19.02.2026
Max. Marks	:	25	**Marks Obtained**	:	

Course Outcomes:

CO2: Explain Angle Modulation Systems **(K2)**
CO3: Demonstrate Pulse Modulation and Pulse Code Modulation **(K2)**

Knowledge Level: K1–Remember, **K2**–Understand, **K3**–Apply, **K4**–Analyze, **K5**–Evaluate & **K6**-Create

Answer all the questions **Total: 20 Marks**

S.No.	Question	Marks	B.L	CO's
1	Compare Frequency Modulation (FM) and Phase Modulation (PM), and derive the relationship between them using suitable block diagrams.	2	K2	CO2
2	Calculate the frequency deviation Δf and bandwidth using Carson's rule for the FM signal, for the FM signal s(t)=100 cos [2π 5000t+3 sin(2π 200t)].	2	K3	CO2
3	Justify why balanced slope detectors are preferred over single slope detectors in practical FM receivers.	5	K5	CO2
4	Explain the circuit and working of a Foster–Seeley discriminator with neat diagram and waveform.	10	K2	CO2
5	Write the advantages of Delta Modulation over PCM.	1	K2	CO3
6	Let $m(t) = \cos(4\pi \times 10^3\, t)$ be the message signal and $c(t) = 5\cos(2\pi \times 10^6\, t)$ be the carrier signal. The signals are used to generate an FM signal. If the peak frequency deviation of the generated FM signal is three times the transmission bandwidth of the AM signal, determine the coefficient of the term $\cos(2\pi \times 1006 \times 10^3\, t)$ in the FM signal in terms of Bessel functions.	2	K3	CO2
7	A sinusoidal carrier of 20 V amplitude and frequency 5 MHz is frequency modulated by a message signal of amplitude 10 V and frequency 25 kHz. The frequency sensitivity is 12.5 kHz/volt. (i) Find: • Maximum frequency deviation • Modulation index • Bandwidth • Normalized power (ii) What happens to the above parameters if the message amplitude is doubled?	2	K3	CO2
8	Determine the Nyquist sampling rate for the signal: $x(t) = \frac{\sin(200\pi t)\ \mathrm{sinc}(900t)}{\pi t}$	1	K3	CO3

Date of submission		**Signature of the faculty**	