Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 120009

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025
Fifth Semester
Biomedical Engineering
U23BM512 – COMMUNICATION IN HEALTHCARE
(Regulation 2023)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Define modulation index in FM.	2	K1	CO1
2.	List two disadvantages of DSBSC modulation.	2	K1	CO1
3.	Define: Narrowband noise.	2	K2	CO2
4.	What is meant by partition noise?	2	K2	CO2
5.	Define aliasing in digital communication.	2	K2	CO3
6.	List any two advantages of PCM.	2	K2	CO3
7.	State the meaning of pulse shaping.	2	K2	CO4
8.	List the advantages of bipolar coding.	2	K2	CO4
9.	What is meant by coherent detection?	2	K1	CO5
10.	Define DPSK.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Describe about AM and FM transmitters in terms of complexity, efficiency, and fidelity.	13	K2	CO1
		(OR)			
	b)	Describe the working principle of an SSB transmitter.	13	K1	CO1
12.	a)	Examine the different sources of noise and evaluate their effects on receivers.	13	K4	CO2
		(OR)			
	b)	Derive the relationship between noise factor and noise temperature.	13	K4	CO2
13.	a)	Describe low-pass sampling and signal reconstruction techniques.	13	K3	CO3
		(OR)			
	b)	Explain the process of companding and evaluate its significance in speech communication.	13	K4	CO3
14.	a)	Explain Inter-Symbol Interference (ISI) and suggest methods to reduce it.	13	K4	CO4
		(OR)			
	b)	Compare and evaluate different line codes in terms of bandwidth, power efficiency, and error performance.	13	K4	CO4
15.	a)	Explain Quadrature Amplitude Modulation (QAM) in detail with block diagram and constellation diagram.	13	K3	CO5
		(OR)			
	b)	Compare and evaluate ASK, FSK, PSK and DPSK in terms of bandwidth, error rate, and complexity.	13	K5	CO5

PART – C

(1 x 15 = 15Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	A hospital radio communication system needs reliable FM transmission for patient monitoring. Explain the generation and demodulation process of FM, and evaluate why FM is more suitable than AM in this application.	15	K2	CO1
		(OR)			
	b)	A remote healthcare monitoring device is installed in a rural area with poor communication infrastructure. Evaluate the role of noise figure and SNR in ensuring reliable signal reception, and propose solutions to improve performance.	15	K4	CO2