



P.E.S. College of Engineering, Mandya - 571 401
 (An Autonomous Institution affiliated to VTU, Belagavi)
Sixth Semester, B.E. - Electronics and Communication Engineering
Semester End Examination; August - 2023
Principles of Communications Systems

Time: 3 hrs

Max. Marks: 100

Course Outcomes

The Students will be able to:

CO1: Explain the basics of Electronic Communication System.

CO2: Analyse at block level the use of various Digital Communication Techniques and Satellite Communication.

CO3: Describe the concept of Networking and Local Area Networks.

CO4: Explain the importance and working of Cell phone, multiplexing and de multiplexing in electronic communication systems.

CO5: Understand the use and working of wireless technologies.

Note: I) PART - A is compulsory. Two marks for each question.**II) PART - B: Answer any Two sub questions (from a, b, c) for a Maximum of 18 marks from each unit.**

Q. No.	Questions	Marks	BLs	COs	POs
I : PART - A		10			
1 a.	Compare simplex and duplex communication.	2	L1	CO1	PO1
b.	Write the waveforms of phase modulation.	2	L1	CO2	PO2
c.	Describe time division multiplexing.	2	L1	CO4	PO1
d.	Write the frequency spectrum used in satellite communication.	2	L1	CO4	PO1
e.	Define handoff in cellular communication.	2	L1	CO5	PO1
II : PART - B		90			
UNIT - I		18			
2 a.	With a neat block diagrams, discuss the different modulation and demodulation techniques.	9	L2	CO2	PO2
b.	An antenna has an impedance of 40 Ω . An un-modulated AM signal produces a current of 4.8 A. The modulation is 90 percent, calculate; (i) The carrier power, (ii) The total power, and (iii) The sideband power	9	L2	CO2	PO2
c.	With relevant circuit diagrams and waveforms, explain the Amplitude modulation and demodulation.	9	L2	CO2	PO2
UNIT - II		18			
3 a.	Explain the Noise suppression effects of frequency modulation.	9	L3	CO2	PO2
b.	The input to an FM receiver has an S/N of 2.8. The modulating frequency is 1.5 kHz. The maximum permitted deviation is 4 kHz. What are (i) the frequency deviation caused by the noise and (ii) the improved output S/N?	9	L3	CO2	PO2
c.	Explain how preemphasis is used to solve the problem of the interference of high-frequency components by noise.	9	L2	CO2	PO2

UNIT - III**18**

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| 4 a. | Explain the how frequency division multiplexing is used in Telemetry applications. | 9 | L3 | CO4 | PO1 |
| b. | With relevant diagram and waveforms, explain how a time-division multiplexer used to produce pulse-amplitude modulation. | 9 | L3 | CO4 | PO1 |
| c. | Describe how repeaters, transceivers, hubs, bridges, routers, and gateways are used in LANs? | 9 | L2 | CO3 | PO3 |

UNIT - IV**18**

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| 5 a. | Draw a block diagram of the satellite communication system and explain how it works? | 9 | L2 | CO2 | PO1 |
| b. | Draw general block diagram of an earth station and explain. | 9 | L2 | CO2 | PO1 |
| c. | Explain Direct Broadcast Satellite (DBS) receiver with a neat diagram. | 9 | L2 | CO2 | PO1 |

UNIT - V**18**

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| 6 a. | Explain the various components of 2G digital cell phone with a neat block diagram. | 9 | L2 | CO5 | PO1 |
| b. | Describe the various Technicalities of Long Term Evolution (LTE). | 9 | L3 | CO5 | PO1 |
| c. | Write short notes on ZigBee and Mesh Wireless Networks. | 9 | L2 | CO5 | PO1 |

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