



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; July / Aug. - 2022
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			
I a.	List any two advantages of FM over AM.	2	L1	CO1	1
b.	Write the basic Principles of Frequency Modulation.	2	L2	CO4	1
c.	Explain in brief need of multiplexing in communication.	2	L1	CO3	1
d.	Illustrate a satellite orbits.	2	L1	CO2	1
e.	What is frequency reuse?	2	L2	CO5	1
II : PART - B		90			
UNIT - I		18			
1 a.	Define modulation index for AM and sketch the AM signal for three typical conditions.	9	L2	CO1	1
b.	Write the block diagram of a general model of all communication systems and explain.	9	L2	CO1	1
c.	Derive the total power equation in AM signal.	9	L3	CO1	1
UNIT - II		18			
2 a.	Explain a super-heterodyne receiver with block diagram	9	L2	CO2	1
b.	Explain the four basic forms of pulse modulation with waveforms.	9	L2	CO2	1
c. i)	If the highest modulating frequency is 3 kHz and the maximum deviation is 6 kHz, what is the modulation index? And also find the bandwidth for 4 sidebands.	4		L3	CO2
ii)	List out the advantages and disadvantages of Frequency Modulation (FM) over Amplitude Modulation (AM)	5			2

UNIT - III**18**

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|------|---|---|----|-----|---|
| 3 a. | Describe the general block diagram of the PCM system and explain. | 9 | L2 | CO4 | 1 |
| b. | Explain the TDM with neat diagram. | 9 | L3 | CO3 | 1 |
| c. | Describe the T-carrier system with diagram. | 9 | L2 | CO3 | 1 |

UNIT - IV**18**

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|------|--|---|----|-----|---|
| 4 a. | State and explain the Kepler's third law. Support your answer with suitable equation. | 9 | L2 | CO2 | 1 |
| b. | With relevant diagram discuss frequency and polarization plan for a C-band communications satellite. | 9 | L2 | CO2 | 1 |
| c. | Explain with block diagram possible arrangement for a master antenna TV (MATV) system. | 9 | L2 | CO2 | 1 |

UNIT - V**18**

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|------|--|---|----|-----|---|
| 5 a. | Explain the generic 4G LTE smart phone with aid of block diagram. | 9 | L2 | CO3 | 1 |
| b. | Explain 2G digital cell phone system with block diagram. | 9 | L2 | CO5 | 1 |
| c. | Explain the cellular concept and frequency reuse with relevant sketches. | 9 | L2 | CO5 | 1 |

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