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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	2
		ii) List out the advantages and disadvantages of Frequency Modulation (FM) over Amplitude Modulation (AM)	5			

Contd... 2

	UNIT - III	**18**			
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**			
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**			
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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