



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Eighth Semester, B.E. - Electronics and Communication Engineering

Semester End Examination; July / Aug. - 2022

Advance Wireless Technologies

Time: 3 hrs

Max. Marks: 100

Course Outcomes

The Students will be able to:

CO1 - Apply basic mathematical and Signal Processing knowledge to understand different image processing stages.

CO2 - Analyse images in the partial frequency domain using various methods.

CO3 - Analyse an image through image segmentation, wavelets and multi resolution processing.

CO4 - Apply knowledge of image processing in image restoration, color, morphology processing and your representation and description.

CO5 - Develop algorithm to perform image processing using modern tool in a group and acquire team playing skills.

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.	Write the architecture of the E-UTRAN and explain.	2	L2	CO2	PO2
b.	Explain the concept of reduction in fading by the use of diversity receiver.	2	L1	CO2	PO2
c.	With the help of a neat diagram explain massive machine-type communication and its three access types.	2	L2	CO1	PO1
d.	Write any two principles of high level requirements for 5G architecture.	2	L1	CO3	PO3
e.	Explain flexible uplink and downlink TDD concert for D2D.	2	L2	CO4	PO5
II : PART - B		90			
UNIT - I		18			
1 a.	With the help of a simple diagram, explain the high level architecture of UMTS and GSM.	9	L2	CO1	PO1
b.	Explain the architecture of UMTS terrestrial radio access network.	9	L2	CO1	PO1
c.	Illustrate the overall working of evolved packet core in mobile communication.	9	L3	CO1	PO1
UNIT - II		18			
2 a.	Explain the principles of OFDM and list the properties of OFDM which makes it more popular.	9	L2	CO3	PO3
b.	Illustrate the principles of operation of Beam forming with neat diagram.	9	L2	CO2	PO1
c.	With the help of a neat diagram, explain contention based procedure used in RRC connection establishment.	9	L2	CO2	PO2
UNIT - III		18			
3 a.	Discuss the economy sectors of India where wireless communication plays a very important role.	9	L3	CO3	PO3
b.	Explain the overview of 5G system concept.	9	L2	CO3	PO3

UNIT - IV**18**

- 4 a. Explain the NFV and SDN frameworks for the 5G system architecture. 9 L2 CO4 PO5
- b. Write a short note on the following:
- i) Massive MTC 9 L2 CO4 PO5
- ii) Ultra-reliable MTC
- c. Explain the fundamental techniques for MTC with necessary diagrams. 9 L2 CO4 PO5

UNIT - V**18**

- 5 a. What is Device-to-Device communication? Explain the synchronization and communication in D2D communication of 4G LTE. 9 L2 CO4 PO5
- b. Explain national security and public safety requirements in 3GPP and METIS. 9 L2 CO3 PO3
- c. With a neat sketch, explain the Phantom cell concept of mmw systems. 9 L2 CO2 PO2

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