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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 - 2023

Advanced 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**			
1 a.	What are the functions of mobile equipment in wireless communication system?	2	L1	CO1	PO1
b.	Write a block diagram of operation of Alamouti's technique for open loop transmit diversity in multiple antenna techniques.	2	L1	CO2	PO2
c.	List any two generic 5G services.	2	L1	CO3	PO3
d.	Write any two mMTC requirements considered important for 5G technologies.	2	L1	CO3	PO3
e.	List any two mode selection forms are considered in D2D communication system.	2	L1	CO4	PO5
	II : PART - B	**90**			
	UNIT - I	**18**			
2 a.	With the help of simple diagram, explain the architecture of the UMTS terrestrial radio access network.	9	L3	CO1	PO1
b.	Illustrate the overall working of evolved packet core in mobile communication showing its components.	9	L2	CO1	PO1
c.	Explain the mobile originated SDF of establishment with a neat procedure diagram.	9	L2	CO2	PO2
	UNIT - II	**18**			
3 a.	Explain the principles of OFDM and list the properties of OFDM which makes it more popular.	9	L2	CO1	PO1
b.	Illustrate the principles of operation of Beamforming with neat diagram.	9	L2	CO2	PO2

c.	With the help of procedure diagram, explain non-contention based procedure used during a handover process.	9	L2	CO2	PO2
	UNIT - III	**18**			
4 a.	Discuss the economic sectors of India where wireless communication plays a very important role.	9	L3	CO3	PO3
b.	Illustrate the wide range of expansion of the 5G requirements with a neat spider diagram.	9	L2	CO3	PO3
c.	Describe the 5G concept, showing the three generic 5G services and the four main enablers.	9	L2	CO5	PO3
	UNIT - IV	**18**			
5 a.	State and explain the high-level design principles for the 5G architecture.	9	L2	CO3	PO3
b.	Briefly explain ultra-reliable MTC of 5G technology and list out reliability impairement to achieve Ultra-high reliability.	9	L2	CO5	PO4
c.	Explain the following technology components features of massive MTC: i) Low device complexity ii) Coverage extension iii) Service flexibility	9	L2	CO5	PO4
	UNIT - V	**18**			
6 a.	Explain the synchronization and communication in D2D communication of 4G LTE.	9	L2	CO4	PO5
b.	With a neat procedure diagram, explain multi-operator D2D discovery.	9	L2	CO4	PO5
c.	Write a note on the following: i) Phantom cell ii) Terminal specific serving cluster	9	L2	CO4	PO5

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