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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
Seventh Semester, B.E. - Electronics and Communication Engineering
Semester End Examination; February - 2022
Wireless Sensor Networks and Technology

Time: 3 hrs   *Max. Marks: 100*

Course Outcomes

The Students will be able to:

CO1: Apply fundamentals of Computer communication networks to understand characteristics and architecture of Wireless sensor networks.

CO2: Analyze Communication protocols and controlling mechanisms which can enhance efficiency of Wireless sensor network.

CO3: Analyze and Compare different infrastructure establishment principles on sensor network platform.

CO4: Identify and illustrate the unique constraints, applications and resource fairness in context of wireless sensor networks.

CO5: Simulate Wireless sensor network platforms using modern tools (Network simulators, tiny OS, etc).

<u>*Note:*</u> *I)* **PART - A** *is compulsory.* **Two** *marks for each question.*

  II) **PART - B**: *Answer any* <u>**Two**</u> *sub questions (from a, b, c) for Maximum of* **18 marks** *from each unit.*

Q. No.	Questions	Marks	BLs	COs	POs
	I : PART - A	**10**			
I a.	Define the vision of Ambient intelligence.	2	L1	CO1	PO1
b.	List the spread spectrum communication used in WSN's.	2	L1	CO2	PO2
c.	List the Forward Error Correction (FEC) technique used in WSN.	2	L1	CO3	PO3
d.	What is Geocasting?	2	L1	CO4	PO4
e.	List any four advanced WSN applications.	2	L1	CO5	PO5
	II : PART - B	**90**			
	UNIT - I	**18**			
1 a.	Describe the characteristic requirements in WSN.	9	L2	CO1	PO1
b.	Identify the main sensor node hardware component, and explain all the hardware components.	9	L3	CO1	PO1
c.	Explain the following with respect to WSN's: i) Node Mobility ii) Sink Mobility iii) Event Mobility	9	L2	CO2	PO2
	UNIT - II	**18**			
2 a.	Explain the following physical layer and transceiver design considerations in WSN's: i) Energy usage profile ii) Antenna consideration iii) Dynamic modulation scaling	9	L2	CO2	PO2

b.	Explain the S-MAC protocol for message-passing approach.	9	L2	CO2	PO2
c.	Illustrate the Traffic Adaptive Medium Access Protocol (TRAMA) with explanation.	9	L3	CO2	PO2

UNIT - III	**18**	

3 a.	Explain ARQ techniques in WSN.	9	L2	CO2	PO3
b.	Illustrate the address and name management scheme in WSN.	9	L3	CO2	PO3
c.	Characterize the distributed type assignment of network wide address in WSN.	9	L4	CO2	PO3

UNIT - IV	**18**	

4 a.	Define Clustering. Explain the process of cluster and cluster head formation.	9	L4	CO1	PO3
b.	Explain the different strategies available for multipath unicast routing.	9	L3	CO1	PO3
c.	Explain broadcast and multicast routing scenario in WSN.	9	L2	CO1	PO3

UNIT - V	**18**	

5 a.	Explain the silent features of the following: i) Node-Level simulator-ns2 ii) Tiny GALS	9	L2	CO5	PO4
b.	Write a note on: i) TOSSIM simulator ii)Tiny OS	9	L2	CO5	PO4
c.	Explain the WSN advance application in asset and warehouse management.	9	L2	CO4	PO3

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