SIDDHARTH GROUP OF INSTITUTIONS:: PUTTUR
(AUTONOMOUS)
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Subject with Code: WIRELESS SENSOR NETWORKS (19EC4008)

Course & Branch: M.Tech – VLSI

Regulation: R19

Year & Sem: I-M.Tech. & II-Sem.

UNIT –I
INTRODUCTION

1	(a) Relate sensor network with Ad-hoc network.	[L3][CO1]	[05M]
	(b) Discuss single node architecture.	[L2][CO1]	[05M]
2	Explain the various challenges and potential applications of wireless sensor networks.	[L2][CO1]	[10M]
3	(a) With neat diagram, explain sensor network architecture.	[L2][CO1]	[05M]
	(b) What are the various challenges of WSN?	[L1][CO1]	[05M]
4	Illustrate in detail about the various hardware components and their composition into a functioning node of WSN.	[L4][CO3]	[10M]
5	(a) Explain how sensor networks are deployed for various applications.	[L3][CO1]	[05M]
	(b) Discuss the characteristic of WSN.	[L2][CO1]	[05M]
6	(a) Discuss the advantages of WSN.	[L2][CO1]	[05M]
	(b) Mention the applications of WSN.	[L2][CO1]	[05M]
7	(a) Explain the various buses used in WSN.	[L2][CO3]	[05M]
	(b) compare SPI and I2C bus.	[L3][CO3]	[05M]
8	Differentiate between sensor network and MANETS.	[L4][CO1]	[10M]
9	Explain the functions and responsibilities of the various layers of WSN.	[L2][CO1]	[10M]
10	Discuss the design principles for wireless sensor network	[L4][CO1]	[10M]

UNIT –II

HARDWARE

1	(a) Discuss the architecture of MICA mote with a neat diagram.	[L2][CO4]	[05M]
	(b) Highlight the specifications of MICA mote.	[L3][CO4]	[05M]
2	Discuss in detail the functional block diagram of MICAZ mote.	[L2][CO4]	[10M]
3	a) Write short notes on the BTnode.	[L3][CO4]	[05M]
	b) Highlight the key specifications of Sun Spot.	[L3][CO4]	[05M]
4	Discuss in detail the simplified architecture of TinyOS.	[L2][CO4]	[10M]
5	(a) Explain in detail about the Imote2 with its architecture.	[L2][CO4]	[05M]
	(b) Discuss the specifications of Imote2.	[L2][CO4]	[05M]
6	(a) Explain in detail the OS architecture of MANTIS.	[L2][CO4]	[05M]
	(b) Explain the concept of multithreading.	[L2][CO4]	[05M]
7	(a) Tabulate and compare the various OS employed in WSN.	[L4][CO4]	[05M]
	b) Summarize the experimental platform OS NS-2	[L3][CO4]	[05M]
8	Explain in detail the programming tools used in WSN.	[L3][CO4]	[10M]
9	Discuss how partitioning of programs is carried out in Contiki OS.	[L2][CO4]	[10M]
10	Highlight the various issues with OS in WSN.	[L3][CO4]	[10M]

UNIT –III

Overview of Sensor Network Protocols

1	a) Discuss in detail the wireless channel and communication fundamentals of physical layer.	[L2][CO2]	[05M]
	b) Elaborate the physical layer and transceiver design considerations	[L5][CO2]	[05M]
2	a) Illustrate the classification of MAC protocols.	[L3][CO2]	[05M]
	b) Discuss the performance requirements for the MAC layer.	[L2][CO2]	[05M]
3	a) Summarize the contention-based MAC protocols.	[L2][CO2]	[05M]
	b) Discuss in detail the various schedule-based Mac protocols.	[L2][CO2]	[05M]
4	a) Discuss the design constraints of a Routing Protocol.	[L2][CO2]	[05M]
	b) Classify the Routing Protocols employed in WSN.	[L3][CO2]	[05M]
5	Discuss in detail the operation of any two routing protocols used in WSN.	[L2][CO2]	[10M]
6	a) List the various node discovery protocols available in wireless sensor networks.	[L1][CO2]	[05M]
	b) Discuss in detail any two node discovery protocols.	[L2][CO2]	[05M]
7	a) Explain multi hop protocols with relevant diagrams.	[L2][CO2]	[05M]
	b) Discuss the various cluster-based protocols in detail.	[L2][CO2]	[05M]
8	a) List out the fundamentals of IEEE 802.15.4	[L1][CO2]	[05M]
	b) Discuss about the concept behind Bluetooth	[L2][CO2]	[05M]
9	a) Explain the concept behind the BLE (Bluetooth Low Energy).	[L2][CO2]	[05M]
	b) Explain the working of Ultra-Wide band (UWB).	[L2][CO2]	[05M]
10	a) Elaborate the architecture of Bluetooth.	[L4][CO2]	[05M]
	b) Discuss the characteristics of UWB.	[L2][CO2]	[05M]

UNIT –IV

Data Dissemination and Processing

1	a) Explain data dissemination in wireless sensor networks.	[L3][CO4]	[05M]
	b) Discuss the two-step process employed in data dissemination.	[L3][CO4]	[05M]
2	a) Elaborate the three main challenges of data dissemination	[L3][CO4]	[05M]
	b) Summarize the design goals and solutions of data dissemination	[L3][CO4]	[05M]
3	Summarize the data dissemination protocols used in sensor networks	[L3][CO4]	[10M]
4	a) Explain reverse path forwarding	[L3][CO4]	[05M]
	b) write a note on Declarative routing protocol	[L3][CO4]	[05M]
5	a) Discuss the Directed diffusion protocol and its variants.	[L3][CO4]	[05M]
	b) Explain the Resilient multipath directed diffusion protocol	[L3][CO4]	[05M]
6	a) Discuss the approach used in Sender appointed protocol	[L3][CO4]	[05M]
	b) Elaborate the Receiver decided protocols	[L3][CO4]	[05M]
7	a) Explain the Fundamentals of cost field approach.	[L3][CO4]	[05M]
	b) What are the two ways a node makes forwarding decisions?	[L3][CO4]	[05M]
8	a) Explain the need for Query processing.	[L3][CO4]	[05M]
	b) Elaborate the concept behind TinyDB Query processing.	[L3][CO4]	[05M]
9	a) Discuss about Query processing scheduling and optimization	[L3][CO4]	[05M]
	b) Discuss the Centralized approach in data storage.	[L3][CO4]	[05M]
10	a) Explain the concept of In network storage.	[L3][CO4]	[05M]
	b) Summarize the properties while designing a sensor database.	[L3][CO4]	[05M]

UNIT –V

Specialized Features

1	a) What are the goals for localization algorithm.	[L1][CO5]	[05M]
	b) Summarize the techniques exists for determining localization	[L1][CO5]	[05M]
2	a) Discuss the ways to obtain pairwise distance measurement.	[L1][CO5]	[05M]
	b) Explain reference point centroid scheme	[L1][CO5]	[05M]
3	a) What are the deployment objectives of a wireless sensor network?	[L1][CO5]	[05M]
	b) Classify the various sensor node deployment carried out in WSN.	[L1][CO5]	[05M]
4	a) Define fault and classify it?	[L1][CO5]	[05M]
	b) Summarize the various fault tolerance techniques used in wsn	[L1][CO5]	[05M]
5	a) Analyze the challenges and issues for connectivity and coverage in wsn.	[L1][CO6]	[05M]
	b) Discuss the classification of deployment techniques in wsn	[L1][CO5]	[05M]
6	a) Illustrate the concept of s-web.	[L1][CO5]	[05M]
	b) Discuss how clustering is carried out in s-web.	[L1][CO5]	[05M]
7	a) Summarize how routing is carried out in s-web	[L1][CO5]	[05M]
	b) What are the performance evaluation metrics used in s-web?	[L1][CO5]	[05M]
8	a) Examine the Design issues and challenges in the design of sensor grid	[L1][CO6]	[05M]
	b) Discuss about the Sensor grid architecture and its design	[L1][CO6]	[05M]
9	a) Highlight the Challenges and research issues for wsn	[L1][CO5]	[05M]
	b) Explain the concept behind Distributed beamforming for wsn	[L1][CO6]	[05M]
10	a) Highlight the implementation of cognitive radio in WSN	[L1][CO6]	[05M]
	b) Explain Wavelet technology for context aware and reconfigurable WSN	[L1][CO6]	[05M]

Prepared by:

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