INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal, Hyderabad - 500 043

MODEL QUESTION PAPER

M.Tech I Semester End Examinations, January- 2020
Regulations: IARE-R18

WIRELESS SENSOR NETWORKS
(Computer Science and Engineering)

Time: 3 hours   **Max. Marks: 70**

Answer ONE Question from each
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT –I

1	(a)	Describe wireless sensor networks on its applications	**[7M]**
	(b)	Demonstrate cross layer designs with neat diagrams ?	**[7M]**
2	(a)	Draw the sensor network architecture and explain it	**[7M]**
	(b)	Illustrate performance metrics and design factors	**[7M]**

UNIT – II

3	(a)	Discuss network simulator 3 with example.	**[7M]**
	(b)	Explain Sensor Network Simulators.	**[7M]**
4	(a)	Describe the NS-3 core module with example	**[7M]**
	(b)	Discuss simulation with neat architecture	**[7M]**

UNIT – III

5	(a)	Explain the i) Fixed access ii) Random Access	**[7M]**
	(b)	Demonstrate discrete time makov chain definition and its properties	**[7M]**
6	(a)	Illustrate asynchronous duty – cycled with example	**[7M]**
	(b)	Explain X-MAK analysis (Markov Chain)	**[7M]**

UNIT – IV

7	(a)	What is attack? Explain different types of possible attacks.	**[7M]**
	(b)	Explain counter measures with example.	**[7M]**
8	(a)	Discuss static and dynamic key distribution of security.	**[7M]**
	(b)	Demonstrate SPINS: Security Protocols for Sensor Networks.	**[7M]**

UNIT - V

9   (a)   Define protocol and explain types of MANET protocols.   **[7M]**

      (b)   What is routing protocol and describe resource aware routine and geographic routine.   **[7M]**

10   (a)   Explain broadcast and multicast of routing protocols for WSN?   **[7M]**

      (b)   Discuss about the analysis of opportunistic routing(Markv-Chain) advance topics in WSN.   **[7M]**

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COURSE OBJECTIVES:
The course should enable the students to:

I	Architect sensor networks for various application setups.
II	Devise appropriate data dissemination protocols and model links cost.
III	Understandings of the fundamental concepts of wireless sensor networks and have a basic knowledge of the various protocols at various layers.
IV	Evaluate the performance of sensor networks and identify bottlenecks.

COURSE OUTCOMES (COs):

CO 1	Summarize the fundamental knowledge on basics of wireless sensor networks and network simulator tool.
CO 2	Develop programs in network simulator tool for understanding and visualization of different network algorithm.
CO 3	Learn to apply hypotheses and data into actionable predictions.
CO 4	Understand a range of rooting algorithms along with their strengths and weaknesses.

COURSE LEARNING OUTCOMES (CLOs):

BCSB04.01	Understand Fundamental concepts of wireless sensor networks and its applications.
BCSB04.02	Learn about network architecture techniques and find the differences between various types of network architecture.
BCSB04.03	Regain knowledge about the networkhardwareplatforms.
BCSB04.04	Understand network simulators of different types and Explore on core network simulators.
BCSB04.05	Experience in implementation/modification ofmethods of medium access protocols in WSN.
BCSB04.06	Describe duty-cycled Markov chain models and the skill sets needed to be a network analysis.
BCSB04.07	UnderstandtheconceptsofdiscretetimeMarkov chain and its applications.
BCSB04.08	Identify the difference between asynchronous duty-cycled and Markov chain analysis.
BCSB04.09	Understand significance models in WSN.
BCSB04.10	Describe the possible attacks in WSN.
BCSB04.11	Apply basic SPINS concepts forpredictivenetwork performance.
BCSB04.12	Identify the difference between static and dynamic key distribution.
BCSB04.13	Identify common approaches used to routing protocols in MANETS.
BCSB04.14	Create effective results of data centric and geographic routing.
BCSB04.15	Understandtheadvancedtopicsinwirelesssensor networks.

MAPPING OF SEMESTER END EXAMINATION TO COURSE OUTCOMES

SEE Question No			Course Learning Outcomes	Course Outcomes	Blooms Taxonomy Level
1	a	BCSB04.01	Describe wireless sensor networks on its applications	CO 1	Remember
	b	BCSB04.01	Demonstrate cross layer designs with neat diagrams ?	CO 1	Understand
2	a	BCSB04.02	Draw the sensor network architecture and explain it	CO 1	Remember
	b	BCSB04.03	Illustrate performance metrics and design factors	CO 1	Remember
3	a	BCSB04.04	Discuss network simulator 3 with example.	CO 2	Understand
	b	BCSB04.04	Explain Sensor Network Simulators.	CO 2	Understand
4	a	BCSB04.04	Describe the NS-3 core module with example	CO 2	Understand
	b	BCSB04.05	Discuss simulation with neat architecture	CO 2	Understand
5	a	BCSB04.05	Explain the i) Fixed access ii) Random Access	CO 3	Understand
	b	BCSB04.06	Demonstrate discrete time makov chain definition and its properties	CO 3	Understand
6	a	BCSB04.06	Illustrate asynchronous duty – cycled with example	CO 3	Remember
	b	BCSB04.07	Explain X-MAK analysis (Markov Chain)	CO 3	Understand
7	a	BCSB04.10	What is attack? Explain different types of possible attacks.	CO 3	Understand
	b	BCSB04.08	Explain counter measures with example.	CO 3	Understand
8	a	BCSB04.12	Discuss static and dynamic key distribution of security.	CO 4	Understand
	b	BCSB04.11	Demonstrate SPINS: Security Protocols for Sensor Networks.	CO 4	Understand
9	a	BCSB04.13	Define protocol and explain types of MANET protocols.	CO 4	Understand
	b	BCSB04.14	What is routing protocol and describe resource aware routine and geographic routine.	CO 4	Remember
10	a	BCSB04.15	Explain broadcast and multicast of routing protocols for WSN?	CO 4	Understand
	b	BCSB04.15	Discuss about the analysis of opportunistic routing (Markv-Chain) advance topics in WSN.	CO 4	Understand

Signature of Course Coordinator   **HOD, CSE**