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Bengaluru

Mid Term Examinations - October 2026

Date: 09/10/2026 **Time:** 02:00 PM - 03:30 PM

Course Code: CSN2504 **Course Name:** Wireless Sensor Networks

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	44	46

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Define an Ad hoc Network and give one real-time example.	2	CO1	BT2
2	List the five core elements of the basic sensor network architecture.	2	CO1	BT1
3	What is the exposed terminal problem in wireless MAC protocols?	2	CO2	BT2
4	State the relation between frequency and wavelength of a radio wave (write the formula).	2	CO2	BT1
5	List any four types of noise that affect wireless signal propagation.	2	CO2	BT1

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Explain the key characteristics and the network characteristics/challenges of Wireless Sensor Networks with suitable real-time examples.	10	CO1	BT2
7	Explain the Category 1 WSN applications — Sensor and Robots, Reconfigurable Sensor Networks, and Highway Monitoring — describing their working principle and key challenges.	10	CO1	BT2

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	Explain Habitat Monitoring in WSN — basic concept, parameters monitored, working process and applications.	10	CO1	BT2
9	With a neat diagram, explain the architecture and working of a cellular network, and differentiate it from an ad hoc network.	10	CO1	BT4

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
10	Derive the relation between frequency and wavelength of a radio wave, and hence calculate the wavelength of radio signals transmitted at (i) 900 MHz (GSM) and (ii) 5 GHz (Wi-Fi 802.11ac).	10	CO2	BT3
11	Classify wireless networks based on their range (PAN, LAN, MAN, WAN) and explain the working of Bluetooth (piconet/scatternet) and ZigBee (IEEE 802.15.4) technologies.	10	CO2	BT2

PART E: Answer Any 1 Following Questions. 10 M

PTO (Please Turn Over)

Q.N.	Questions	M	CO	BT
12	Explain the fundamentals of Medium Access Control, including why wireless MAC is hard, and describe the hidden terminal and exposed terminal problems with the help of diagrams.	10	CO2	BT2
13	Discuss the five key issues in designing MAC protocols for ad hoc networks: bandwidth efficiency, QoS support, synchronization, error-prone broadcast channel, and mobility of nodes.	10	CO2	BT4