BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: B.TECH. **SEMESTER: VII**
BRANCH: ECE **SESSION: MO/2022**

SUBJECT: EC449 WIRELESS SENSOR NETWORKS

TIME: 2 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 25.
2. Candidates attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

				CO	BL
Q1	(a)	Write the characteristics of mobile ad-hoc networks.	[2]	CO1	1
Q1	(b)	Discuss three basic Radio propagation mechanisms.	[3]	CO1	2
Q2	(a)	Create a table and compare short range wireless network standards (i.e. Bluetooth, Zigbee and UWB) in terms of frequency range, modulation, maximum data rate, and access mechanism.	[2]	CO1	2
Q2	(b)	List the design challenges and applications of ad-hoc network. Draw the architecture of mobile ad-hoc network and explain in brief.	[3]	CO1	1,2,3
Q3	(a)	Compare traditional networks and Wireless sensor Networks.	[2]	CO2	2
Q3	(b)	Draw the Hardware architecture of a sensor node and explain the functionality of each components.	[3]	CO2	1,2
Q4	(a)	What are the factors that affects the design of WSNs?	[2]	CO2	2
Q4	(b)	What is the significance of data relaying and aggregation in WSNs? Discuss any two data relaying and aggregation strategies.	[3]	CO2	2,3
Q5	(a)	Compare contention based and contention free MAC protocols in WSNs.	[2]	CO3	4
Q5	(b)	Why IEEE802.11 MAC protocol is not suitable for WSNs? How SMAC protocol reduces the energy consumption from all sources of energy inefficiency?	[3]	CO3	2,4

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