Question Paper

Exam Date & Time: 21-Nov-2022 (09:00 AM - 12:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

SEVENTH SEMESTER B.TECH END SEMESTER EXAMINATIONS, NOV 2022
Instrumentation and Control Engg

Wireless Sensor Technology [ICE 4070]

Marks: 50 **Duration: 180 mins.**

A

Answer all the questions.

Instructions to Candidates:
Missing data may be suitably assumed

1)		Explain the correlation of IEEE 802.15.4 with Zigbee protocol. Also, illustrate the significance of IEEE 802.15.4 on Wireless Personal Area Network. [CO3, PO1, PO2, PO3, BL3]	(5)
	A)		
	B)	Compare and analyse the characteristics of single hop and multi-hop networks with an example for each. [CO1, PO1, PO 2, PO6, BL4]	(2)
	C)	Explain the characteristics and structure of transceivers in detail. [CO2, PO1, PO2, PO6, BL3]	(3)
2)		Describe working principle of random-access protocol. Also, distinguish the two types of random-access protocol with the help of a timing diagram. [CO3, PO1, PO2, PO3, BL3]	(5)
	A)		
	B)	Justify the use of providing addresses and names to nodes in a network. also explain the different address allocation techniques. [CO3, PO1, PO2, PO3, BL 4]	(3)
	C)	Illustrate the four crucial points influencing the design of physical layer in WSN. [CO2, PO 1,PO 2,PO 6, BT 4]	(2)
3)		Elaborate the various aspects and options for topology control in WSN with relevant example protocols. [CO 4,PO 1,PO 2,PO 3,BT 3]	(4)
	A)		
	B)	Elaborate the various algorithms of time synchronization. [CO 4,PO1,PO2, PO3,BT 3]	(3)
	C)	Explain the significance of clustering and also explain the algorithm for determining independent sets. [CO4,PO 1,PO 2, PO 3,BT 3]	(3)
4)		Describe the various node level software platforms available for sensor networks. [CO5,PO 1, PO 2, PO 6,BT 3]	(4)
	A)		

	B)	Explain in detail geographic routing in WSN. [CO5,PO 1,PO 2, PO6, BT 3]	(4)
	C)	Differentiate configurations and modules in TinyOS. [CO5, PO 1, PO2, PO6, BT 2]	(2)
5)		Write a short note on (i) Berkley Notes (ii) Programming Challenges. [CO5,PO 1, PO 2, PO 6,BT 1]	(4)
	A)		
	B)	Explain the concept of centric programming and its collaborative groups with relevant examples. [CO5,PO 1, PO 2, PO 6,BT 3]	(4)
	C)	Distinguish the working principles of flat and hierarchical network architecture. [CO 5,PO 1,PO 2, PO6, BT 3]	(2)

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