Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 7001

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024
Eighth Semester
Electronics and Communication Engineering
U19ECE16 – WIRELESS SENSOR NETWORKS
(Regulation 2019)

Time: Three Hours Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Name the components utilized in the wireless sensor nodes.	2	K1	CO1
2.	Define the figure of merit in WSN transmission control.	2	K1	CO1
3.	Which MAC protocol is employed for WSN?	2	K2	CO2
4.	Write about the utilization of wake-up radio concepts.	2	K1	CO2
5.	List the network security requirements.	2	K1	CO3
6.	Define a black hole attack.	2	K1	CO3
7.	List the applications of sensor networks.	2	K1	CO4
8.	Define the term clustering.	2	K1	CO4
9.	What are Berkeley Motes?	2	K1	CO5
10.	Define nesC.	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Describe in detail the hardware components and single node architecture of the WSN.	13	K1	CO1
		(OR)			
	b)	Elaborate on the optimization goals and achieved figures of merit in WSN, including a list of factors used for optimizing the wireless sensor network.	13	K2	CO1
12.	a)	Provide an overview of the S-MAC protocol for wireless sensor networks, incorporating neat diagrams to illustrate the key concepts.	13	K2	CO2
		(OR)			
	b)	Explain the IEEE 802.14 MAC protocol in detail, using a clear illustration.	13	K2	CO2
13.	a)	Briefly discuss the network security requirements, and outline the issues and challenges involved in security provisioning.	13	K2	CO3
		(OR)			
	b)	Clarify how secure routing functions in SPINS, and detail the reliability requirements within sensor networks.	13	K3	CO3
14.	a)	Explore and provide a detailed discussion on the challenges faced by wireless sensor networks.	13	K2	CO4
		(OR)			
	b)	Compare and contrast mobile ad-hoc networks with sensor networks, highlighting their key differences and similarities.	13	K3	CO4
15.	a)	Examine and elaborate on the programming challenges specific to sensor networks in detail.	13	K3	CO5
		(OR)			
	b)	Write short notes about the following: i. TOSSIM ii. COOJA	13	K2	CO5

PART – C

(1 x 15 = 15Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Perform a comprehensive analysis of MAC protocols' performance in the context of wireless sensor networks and provide a full duty cycle estimation.	15	K5	CO2
		(OR)			
	b)	Identify and investigate the problems and difficulties that arise with transport layer protocols, then provide workable and appropriate ways to resolve them.	15	K5	CO2