C **Reg. No. :** | | | | | | | | | | |

Question Paper Code: U4307

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Professional Elective

Electronics and Communication Engineering

21ECV307-SMART SENSOR NETWORKS

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5x 1 = 5 Marks)

1. WSN is subject to unique set of resource constraints such as_____. CO1-U

   (a) Power (b) Computation (c) Memory (d) All of the above

2. Database system used in wireless sensor networks are_____ CO1-U

   (a) TinyDB (b) SNQL (c) Cougar (d) All of the above

3. SINA is used for_____. CO1-U

   (a) Querying (b) Tasking (c) Event Monitoring (d) All of the above

4. _____technique creates and maintain a data cache to be used for local loss recovery and in-sequence data delivery. CO1-U

   (a) PSFQ (b) ESRT (c) CODA (d) All of the above

5. Bluetooth radio has _____different power consumption modes CO1-U

   (a) Two (b) Four (c) Three (d) Five

PART – B (5 x 3= 15 Marks)

6. Determine the various management plane types in WSN architecture. CO1-U
7. Construct a graphic outlining the problem space for sensor networks. CO3-A
8. Justify the need for sensor nodes to be application-specific. CO1-U
9. Suggest an appropriate application layer protocol that uses attribute-based naming for moving sensor nodes from the N-E to the S-E quadrant. CO2-A
10. Classify the security aspects of the WSN system design. CO1-U

PART – C (5 x 16= 80 Marks)

11.	(a)	Discuss in detail about Wireless sensor network Functionalities.	CO1-U	(16)
		Or		
	(b)	Elaborate a novel management dimension and characterize the Wireless sensor network.	CO1-U	(16)
12.	(a)	Assume a sensor network is installed in the northeastern quadrant of the forest to monitor empty bird nests and tell me every hour if the number of empty nests exceeds a threshold of 10. Create a SQL Query for the above scenario and elaborate it.	CO3-App	(16)
		Or		
	(b)	Compose a TinyDB Query to report the average light and temperature level at sensors near a bird nest where a bird has just been detected.	CO3-App	(16)
13.	(a)	Design a forest fire detection system and also suggest a self-powered node using energy extracted from the environment.	CO4-App	(16)
		Or		
	(b)	Design a forest fire detection system and also suggest a self-powered node using energy extracted from the environment.	CO4-App	(16)
14.	(a)	Analyze Pump Slowly and Fetch Quickly (PSFQ) protocol and illustrate how it outperforms SRM-I in terms of error tolerance, communication overhead and delivery latency.	CO5-Ana	(16)
		Or		
	(b)	Analyze the different Routing Protocols for Battlefield monitoring System.	CO5-Ana	(16)
15.	(a)	Illustrate in detail about sensor network encryption protocol.	CO1-U	(16)
		Or		
	(b)	Reason out why firewalls and honeypots not well suitable for WSN and also discuss some of the security approaches for WSN.	CO1-U	(16)