Ref No: Ex/PG/DMC/T/129A/2024

M. Tech. Distributed & Mobile Computing 2nd Sem. Exam. , 2024

SUBJECT: Wireless Sensor Networks

Time: Three hours | Full Marks: 100

Answer any five questions.

1. a) Explain the different components of a sensor node.
b) What are the different operational states of a sensor node?
c) What do you mean by lifetime of a sensor node?
d) What are the design issues of wireless sensor networks?

(5+5+5+5=20)

2. a) Why MAC protocols are important to implement in WSN?
b) Explain the operation of S-MAC protocol and TRAMA protocol. What are the basic difference between these two protocols?

(4+14+2=20)

3. a) What are the different approaches to design load-balanced energy efficient routing in WSN?
b) Describe Greedy Perimeter Stateless Routing (GPSR) protocol.
c) Explain briefly Directed Diffusion routing protocol.

(4+8+8=20)

4. Give an overview of Tiny-OS architecture. Briefly discuss the Tiny-OS memory model. What motivates the event-based execution in Tiny-OS? How event-based design improves the low-power consumption of a mote?

(5+5+5+5=20)

5. a) "A good sensor deployment should consider both coverage and connectivity" Explain the statement.
b) What is 'coverage hole'? State some repair policies of coverage hole.
c) Explain k-barrier coverage problem.
d) What is the difference between maximum breach path and maximal support path?

(5+5+5+5=20)

6. a) What are the distance estimation techniques in sensor localization?
b) Describe tri-lateration technique with example.
c) What are the differences between Range-based and range-free localisation techniques? Describe one Range-based locaization approach.

(4+8+(4+4)=20)

7. Write short notes on following : (5X4=20)
a) Voronoi Diagram
b) Sleep-scheduling
c) Coherent-based Routing
d) Target coverage