

**R13**

Code No: 118AA

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech IV Year II Semester Examinations, April - 2018**

**AD-HOC AND SENSOR NETWORKS**

(Common to CSE, IT)

Time: 3 hours

Max. Marks: 75

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A**

(25 Marks)

- 1.a) What is Personal Area Networking? [2]
- b) Specify the importance of energy conservation protocols in Ad hoc sensor networks. [3]
- c) List four categories of Multicast routing protocols. [2]
- d) How does the Hidden Terminal Problem affect TCP over multi-hop MANETs? [3]
- e) What is the role of cluster head in Wireless Sensor Clustering network? [2]
- f) Specify the difference between Flat-based and Hierarchical-based routing in WSNs. [3]
- g) How key management is done for securing WSNs? [2]
- h) Illustrate the network programming challenges. [3]
- i) What is concurrency and Atomicity in network programming language? [2]
- j) Briefly explain component interface in nesC code. [3]

**PART - B**

(50 Marks)

- 2.a) Explain the major challenges to be addressed by Ad hoc networks.
- b) Illustrate differences between Associative-based routing and QoS Routing. [5+5]

**OR**

3. Explain Proactive, reactive and hybrid routing approaches of routing in MANETs with suitable example routing protocol in each category. [10]

4. Describe in detail about MAC layer impact and Network layer impact on TCP. [10]

**OR**

5. Explain the working principle of
  - a) Voronoi Diagram based Geo-casting
  - b) Mesh based Geo-cast Routing protocol. [5+5]

6. Describe in detail about Sensor-MAC protocol and its design trade-offs for energy consumption. [10]

**OR**

7. Explain the operation of the following WSN routing algorithms
  - a) Cluster Based Routing Protocol (CBRP)
  - b) Threshold-sensitive Energy Efficient Network Protocol (TEEN). [5+5]

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8. Describe in detail the IDS Architecture for Ad hoc and Sensor networks with neat sketch.

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9. Explain the functionality of the following Secure routing protocols.

- a) ARIADNE
- b) SEAD.

[5+5]

10. Describe TinyOS with details of "Field Monitor" application and Timer component interfacing.

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11. Explain NS-2 simulator with its sensor network extensions. Compare Ns-2 simulator with its counter parts.

[10]

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