

Q1 [2M] Objective Type Questions

- i. What types of traffic flows does RPL support in Low-Power and Lossy Networks?
 - a. Only point-to-point
 - b. Only point-to-multipoint
 - c. Point-to-point, point-to-multipoint, and multipoint-to-point
 - d. None of the above
- ii. What does the 'V' bit in the mesh addressing header indicate?
 - a. The velocity of packet transmission
 - b. Whether the Originator Address is an EUI-64 or a 16-bit address
 - c. The version of the mesh protocol
 - d. The validity of the packet
- iii. What is a key feature of header compression for IPv6 over IEEE 802.15.4?
 - a. It requires a separate context for each flow to be compressed
 - b. It integrates layer 2 with layer 3 compression
 - c. It uses complex algorithms for maximum compression
 - d. It is identical to traditional header compression methods
- iv. How does AODV handle the failure of RREP transmissions due to unidirectional links?
 - a. By increasing the hop count
 - b. By creating a blacklist set for failed next-hop nodes
 - c. By sending multiple RREQs simultaneously
 - d. By automatically switching to a different routing protocol

Q2. [4M] Short Answer Questions

- i. How do RPL nodes use DIO messages in the context of DODAG construction?
- ii. What is the significance of Rank in RPL and how is it used to establish parent-child relationships within a DODAG?
- iii. Describe how AODV handles link breakages in active routes.
- iv. How do destination sequence numbers contribute to the functionality of AODV?

Q3 [9M] Long Answer Questions:

- i. Describe in detail the header compression techniques used in LoWPAN encapsulation for IPv6 over IEEE 802.15.4 networks. Explain how these techniques differ from traditional header compression methods and discuss the reasons for these differences. Include an analysis of how header compression affects packet delivery efficiency in low-power and low-bandwidth networks.
- ii. Compare and contrast the AODV routing protocol with the Dynamic Source Routing (DSR) protocol. Focus on their route discovery mechanisms, route maintenance strategies, and how each protocol handles mobility and link failures in ad hoc networks.
- iii. Discuss the advantages and disadvantages of 'Mesh Under' and 'Route Over' routing in 6LoWPAN networks. How do these routing strategies impact network performance, scalability, and energy efficiency under error prone channel conditions?