**Wireless Multimedia System**

**Quiz 5 (15 min)**

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**(Maximum Throughput Limit**) The IEEE 802.11 protocol family provides up to 54-Mbps data rate, whereas the industry is seeking higher data rates. Recent papers (IEEE communication letter 2002) show that a theoretical throughput upper limit and a theoretical delay lower limit exist for the IEEE 802.11 protocols. The existence of such limits indicates that by simply increasing the data rate without reducing overhead, the enhanced performance, in terms of throughput and delay, is bounded even when the data rate goes into infinitely high. Can you explain why? Do you have solutions for the problem (4 points).

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