Problem Set #2 (Data Communications)

Department: _____

Student ID: _____

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Consider Section IV of [1].

1. Express the probability p in terms of τ and n. Then, explain the expression.

2. Express the probability P_{tr} in terms of τ and n. Then, explain the expression.

3. Express the probability P_s in terms of τ and n. Then, explain the expression.

4. Express the normalized system throughput S in terms of P_{tr}, P_s, $E[P]$, T_s, T_c, and σ. Then, explain the expression and the terms.

5. Express the average time T_s^{bas} in terms of $E[P]$, H, SIFS, DIFS, ACK, and δ. Then, explain the expression and the terms.

6. Express the average time T_c^{bas} in terms of $E[P^*]$, H, DIFS, and δ. Then, explain the expression and the terms.

References:

[1] G. Bianchi, "Performance analysis of the IEEE 802.11 distributed coordination function," *IEEE Journal on Selected Areas in Communications*, vol. 18, no. 3, pp. 535–547, 2000. (https://doi.org/10.1109/49.840210)