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6.263/16.37  
Problem Set No.5

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**Problem 1: text problem 4.1**

Hint: This problem does not make the infinite node assumption (Slotted Aloha Assumption in lecture node or 6b in [BG, p.276]). Instead, it assumes *no buffering* (6a in [BG, p.276]), meaning that if a node has a packet to transmit, then any packets arriving to the node are dropped. Hence, there can be at most  $m$  (equal to the number of nodes) packets in the system. This hint should be enough to solve this problem. In case this is still unclear, read [BG, pp 277-279].

**Problem 2: text problem 4.4**

Hint: 1. Accepted arrivals are ones that find an empty node upon arrival.

2. Since the number of packets in the system is limited, then the average number of arrivals should be equal to average number of departures.

**Problem 3: text problem 4.7**

**Problem 4: text problem 4.8**

**Problem 5: text problem 4.9**

**Problem 6: text problem 4.12**