

Student Name:

Student ID:

**IE 472 – Operations of Manufacturing Systems**  
**Extra Mid Term 10<sup>th</sup> May 2011**

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Question 1:

With the information in the following table compute planned order releases using Wagner-Whitin algorithm.

t	1	2	3	4	5	6	7	8	9	10
D <sub>t</sub>	40	100	20	100	100	20	40	80	40	60
c <sub>t</sub>	20	20	20	20	20	20	20	20	20	20
A <sub>t</sub>	200	200	200	200	200	200	200	200	200	200
h <sub>t</sub>	2	2	2	2	2	2	2	2	2	2



Question 2:

Compute the station capacity for each station in parts per hour of incase of the following situations

1. A station with three machines operating in parallel with 20 minutes average process time at each station
2. Four station line with multiple machines, where station 1, 2, 3 and 4 have 2, 6, 10, and 3 machines respectively. The average process time with station 1, 2, 3 and 4 are 10, 24, 40 and 18 respectively.

Question 3:

A binder shop runs with two stations, where station 1 punches hole in pages and station 2 does the binding. On average the station 1 can process 15,000 pages per hour, while station 2 can process at the rate of 10,000 pages per hour. If the binder shop owner receives work of 8000 page per hour compute the following

1. If there is no rejection of work by any station compute the following
  - a. Bottleneck rate
  - b. WIP
2. If there is rejection of 10% work by station 1 compute the following
  - a. Bottleneck rate
  - b. WIP