Final Exam

- Wednesday, March 20: 9:30 - 11:20 am
  (in this room?)
  you can use the entire time (~2 hrs.)
- Comprehensive
- Closed book and closed notes
- Two, 8.5" x 11", sheets (both sides) allowed

- One prepared already for mid-term
- One for material covered since mid-term
- Both quantitative + qualitative questions
- Pencils, eraser, + a (functional) calculator

- No scheduled office hrs. next week
  → send me an email with your times
  → M, T
(b) No

C would need to dropped a level (see above) to make it conform to low-level coding.

(c) \# of C's needed for 25 P

\[
= 25 \times 4 + (25 \times 3 - 10) \times 4 \\
= 100 + 260 = \boxed{360}
\]

\# of additional C's needed = 360 - 10

=350

(4) a) LFL

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Inv. carrying cost = 0
Set up cost = 5 \times 135 = 675
TC (total cost) = 0 + 675 = $675

EOQ

\[ E = 180 \Rightarrow \text{Annual demand} = \frac{180 \times 12}{6} = 360 \]

\[ EOQ = \sqrt{\frac{2DS}{C}} = \sqrt{\frac{2 \times 360 \times 135}{1.65 \times 12}} = 70.06 \times 70 \]

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Inv. carrying cost = (45 + 10 + 60 + 40) \times 1.65 = $255.75
Set up cost = 3 \times 135 = $405
\[ TC = 405 + 255.75 = $660.75 \]

(b) Use EOQ

\[ \therefore TC_{EOQ} < TC_{LFL} \]
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**EOQ with an EOQ of 1400**

(a) 700
(b) 1400
(c) 100
(d) 1400 for week 3
(e) 0 for week 4
Manufacturing Resource Planning (MRP-II)

MRP (MRP-I or "little" MRP)
→ Assumes a realistic MPS, and that orders released to purchasing or mfg. will be obtained on time.

Not necessarily true!
- What if the vendor has problems with parts supply?
- What if mfg. has equipment problems?
- What if the MPS cannot be realized?

⇒ We need answers to all of these questions (as quickly as possible) in a mfg. environment in order to successfully realize these plans.

MRP-II (a terminology coined by Oliver Wight in the late 70's) is really a feedback/closed loop system to adjust the MPS based on conditions monitored in the purchasing/production environment.
(6) (i) F
  (ii) F
  (iii) T
  (iv) F
  (v) T

\[ \frac{25}{4} \text{ ft}^3/\text{min} \]
\[ \downarrow \]
\[ 15 \text{ ft}^3/\text{min} \]

\[ \text{Inflow accumulation rate} \]
\[ = (25 - 15) \]
\[ = 10 \text{ ft}^3/\text{min} \]

\[ \Rightarrow P > d \]