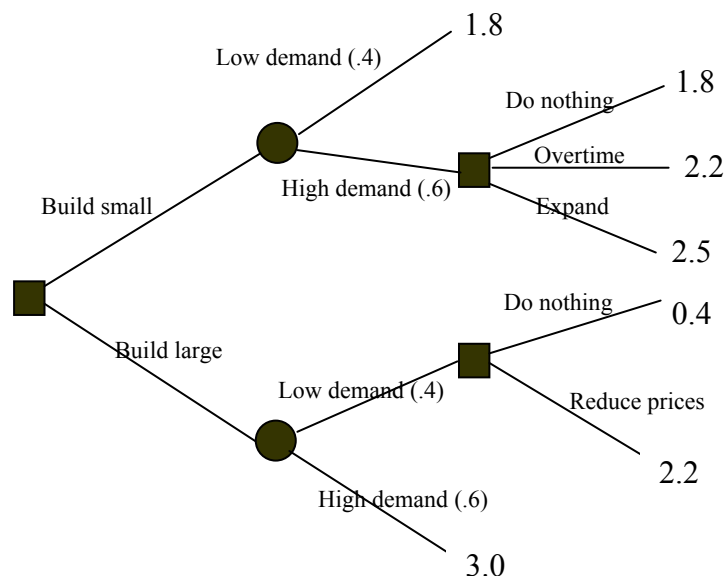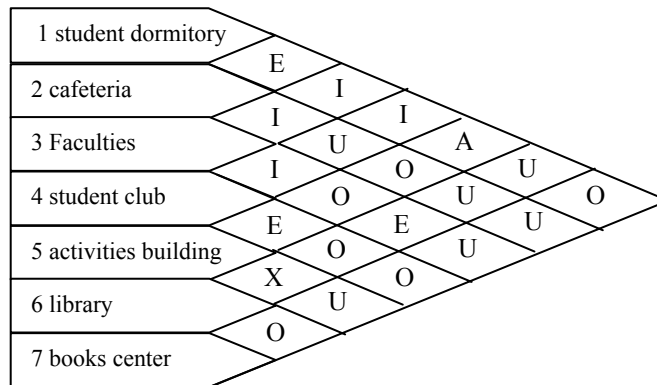4. The details of work elements for hot-water vacuum flask assembly are as follow:

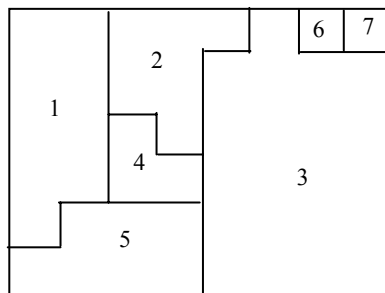| work element	precedence element	minute
a	-	0.2
b	a	0.2
c	-	0.8
d	c	0.6
e	b	0.3
f	d,e	1.0
g	f	0.4
h	g	0.3

    a. **(2 pts.)** If a worker himself does all work elements, how many flasks will be assembled per 7 working hours a day?

    b. **(2 pts.)** How many finished flasks per 7 hours when increase workers to four?

    c. **(2 pts.)** If the required daily capacity is 350 flasks, balance the line using the ranked positional weight method. After that calculates the line efficiency.

5. **(4 pts.)** Comparing with process layout, the cellular layout is more effective in such cases as shorter throughput time, easier to control the production, and lower setup task. Describe the detail for each case. The answer should not exceed 6 lines.

6. A large bakery buys sugar in 50-kilo bags. The bakery uses an average of 672 bags a year. Preparing an order and receiving a shipment of sugar involves a cost of 120 Baht per order. Annual carrying costs are 400 Baht per bag.

    a. **(1 pts.)** Determine the economic order quantity.

    b. **(1 pts.)** What is the average number of bags on hand?

    c. **(1 pts.)** How many orders per year will there be?

    d. **(1 pts.)** Compute the total cost of ordering and carrying sugar.

7. **(4 pts.)** Analyze the decision tree below and determine which alternative (build small or build large) should be chosen in order to maximize expected monetary value.
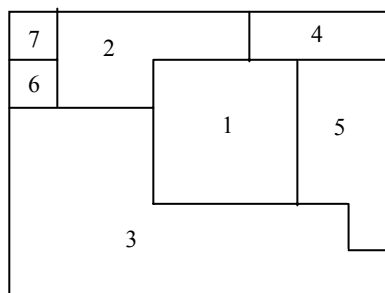
1. **(3 pts.)** Write the diagram of component of movie-media (VCD/DVD) rental shop when customers are specified as "INPUT" component.

2. **(3 pts.)** Give me the *real cases* (may be 2 or 3 cases) about the **global business competitiveness**. Your answer should not exceed 10 lines.

3. **(6 pts.)** The activity relationship chart of a university which will be construct soon is as follows :

Analyze the layouts (A and B) shown below. Which layout should be chosen in order to maximize the interrelationship?

A

B

PRINCE OF SONGKLA UNIVERSITY

FACULTY OF ENGINEERING

Midterm Examination : Semester I   **Academic Year** : 2003

Date : August 3, 2003   **Time** : 1:30 - 4:30 PM

Subject : 226 - 383 Production and Operations Management   **Room** :

Read the following commands carefully:

1. Only an A4 sheet of paper is allowed to be led into examination room.
2. Such communicative equipments as Personal Digital Assistant (PDA), pager, and mobile telephone are <u>not</u> allowed.
3. Dictionaries and handheld calculator are allowed.
4. There are 7 problems, write your answers to exam book with easily to read handwriting. All problems need to be answered. More books are available if require.

Prepared by: *Asst. Prof. Charoen Jaitwijitra*