Texas A&M UNIVERSITY
Mays Business School

OPERATIONS MANAGEMENT

Quizzes No.2

(Circle only one correct answer).

Q1. Which of the following is not used as symbols in the Process Flowchart?

- a. Decision point
- b. Bottleneck
- c. Buffer or Storage area
- d. Task or operation
- e. Flow

Q2. The flow time is

- a. The value added time received by a unit in a service/production system.
- b. The non-value time received by a unit in a service/production system.
- c. The value added time plus non-value added time received by a unit in a service/production system.
- d. The waiting of unit in the a service/production system.
- e. None of the above

Q3. Facility layout methods use which of the following as an input to the process layout (jobshop) design problem:

- a. A, E, I, O, U, X classification between pairs of departments to be placed
- b. From-to-Chart containing the flows between pairs of departments to be placed
- c. (a) or (b) above
- d. None of the above
- e. Closeness ratings

Q4. The facility layout method which uses the information in From-to-Chart containing the flows between pairs of departments to be placed in a jobshop, provides

- a. Optimal solution
- b. Heuristic solution
- c. Neither optimal nor Heuristic solution

- d. Either optimal or Heuristic solution
- e. None of the above

Q5. Which of the following is not a characteristic of services?

- a. Intangible product
- b. Labor intensive
- c. Service can be inventoried
- d. Non-uniform input to the service system
- e. None of these

Q6. What type of firms finish producing the final products before receiving the actual customer order?

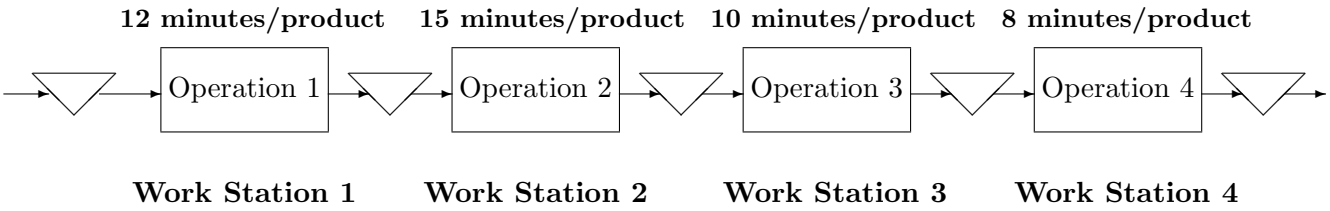
- a. Assemble-to-order firms
- b. Make-to-order firms
- c. Make-to-stock firms
- d. Engineer-to-order firms
- e. None of the above

Q7. What is the type of operation at "Kristen Cookies Case" discussed in the class?

- a. Assemble-to-order
- b. Make-to-order
- c. Make-to-stock
- d. Engineer-to-order
- e. None of the above

Q8. A ticket line for the Minnesota Vikings football team has an average of 100 fans in line to buy tickets and an average time flow rate of 5 fans a minute. What is the average time that a ticket buyer can expect to wait in line?

- a. 5 minutes
- b. 10 minutes
- c. 20 minutes
- d. 100 minutes
- e. 500 minutes



Questions Q9-Q11: A manufacturing shop makes a standard product via a machining process. The manger of the shop wants to analyze the process. Each workstation is assigned one worker and a machine. Each worker performs one operation using the machine in the workstation. The general flow of the process is shown in the figure above with the processing time requirement at each workstation.

Q9. What is the current maximum output (capacity) of the process?

- a. 7.5 units per hour
- b. 6 units per hour
- c. 5 units per hour
- d. 4 units per hour
- e. 3 units per hour

Q10. What is the bottleneck of the process?

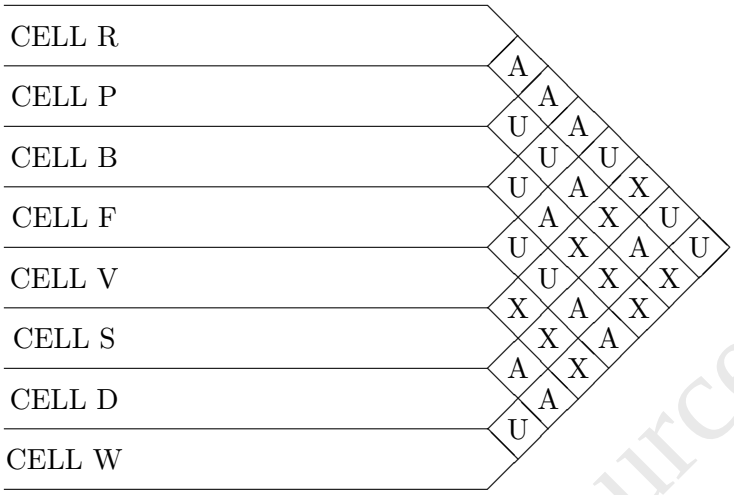
- a. Work Station 1
- b. Work Station 2
- c. Work Station 3
- d. Work Station 4
- e. All Work Stations

Q11. The manger who wishes to increase the capacity of the process, purchases a modern machine for the machining operation at Work Station 2. This action reduces the processing time to 9 minutes per product at Work Station 2. What is the bottleneck of the process?

- a. Work Station 1
- b. Work Station 2
- c. Work Station 3
- d. Work Station 4
- e. All Work Stations

Q12. The activity relationship chart for ABC machine shop is shown in the figure below. Which one of the following arrangement of the eight departments in a 2×4 grid is best.

A: Absolutely necessary
E: Especially important
I: Important
O: Ordinary important
U: Unimportant
X: Undesirable



- a.

B	R	F	W
V	P	D	S

- b.

F	R	B	W
V	P	D	S

- c.

B	R	F	W
D	P	V	S

- d.

B	D	F	W
V	P	R	S

- e.

B	R	F	W
V	D	P	S

Q13. In a peak period, the average time a patient spends in emergency room (ER) of a hospital is 3 hours and receives on average the total value-added treatment time of 18 minutes. What is flow time efficiency of the ER in the peak period?

- a. 1%
- b. 10%
- c. 18%
- d. 25%
- e. 100%

Questions Q14-25: (Questions are based on the case study discussed in the class. Activity times are modified.) Kristen and her roommate are in the business of baking custom cookies. As soon as she receives an order by campus e-mail system, Kristen washes the bowl and mixes dough according to the customer's order-activities that take a total of 7 minutes. She then spoons the dough onto a tray that holds 1 dozen cookies (3 minutes). Her roommate then takes 1 minute to set the oven and place the tray in it. Cookies are baked in the oven for 11 minutes and allowed to cool outside for 6 minutes. The roommate then boxes the cookies (3 minutes) and collects payment from the customer (1 minute).

- Draw a flow chart for the process described here and answer the following questions. Assume no waiting over the course of the process as there is enough demand.
- Assume that each order consists of dozen cookies. Assume that the mixing bowl can accommodate dough for 1 dozen cookies at a time, and the oven can accommodate only 1 tray of 1 dozen cookies at a time.
- Kristen has done a market study and found out that she can sell $8 each dozen of cookies. Her operating time is 4 hours in the evening of a day.
- Kristen landlord pays for all the electricity. The variable costs are the cost of the ingredients (estimated to be $1.2/dozen) and the cost of the box, $0.4/box.

Q14. What is the capacity of the process?

- a. 3 dozen cookies per hour
- b. 4 dozen cookies per hour
- c. 5 dozen cookies per hour
- d. 6 dozen cookies per hour
- e. 8 dozen cookies per hour

Q15. What is the percentage capacity utilization of Kristen?

- a. 40%
- b. 60%
- c. 83%

- d. 90%
- e. 100%

Q16. What is the percentage capacity utilization of Roommate?

- a. 42%
- b. 60%
- c. 80%
- d. 90%
- e. 100%

Q17. What is the percentage capacity utilization of Oven?

- a. 40%
- b. 60%
- c. 80%
- d. 92%
- e. 100%

Q18. Which is the bottleneck of the process?

- a. Roommate
- b. Kristen
- c. Oven
- d. Cooling operation
- e. Pay operation.

Q19. What is the throughput of the process?

- a. 18 dozen cookies per day
- b. 20 dozen cookies per day
- c. 22 dozen cookies per day
- d. 24 dozen cookies per day
- e. 30 dozen cookies per day

Q20. What is the flow time of the process?

- a. 8 minutes
- b. 10 minutes

- c. 26 minutes
- d. 32 minutes
- e. 35 minutes

Q21. What is the cycle time of the process?

- a. 12 minutes
- b. 10 minutes
- c. 26 minutes
- d. 32 minutes
- e. 35 minutes

Q22. What is the revenue made per hour during the productive duration (or during the steady state operation) of the process?

- a. $6 per hour
- b. $12 per hour
- c. $20 per hour
- d. $25 per hour
- e. $40 per hour

Q23. What is the profit made per hour during the productive duration?

- a. $5 per hour
- b. $10 per hour
- c. $17 per hour
- d. $32 per hour
- e. $40 per hour

Q24. Which is the bottleneck of the process if Kristen do it alone without the help of the Roommate?

- a. Roommate
- b. Kristen
- c. Oven
- d. Cooling operation
- e. Pay operation.

Q25. What is the capacity of the process if Kristen do it alone without the help of the Room Mate?

- a. 3 dozen cookies per hour
- b. 4 dozen cookies per hour
- c. 5 dozen cookies per hour
- d. 6 dozen cookies per hour
- e. 8 dozen cookies per hour