

Roll No. Industrial Engineering Applications & Mgmt  
 Total No. of Questions: 5

Total No. of Printed Pages: 3

Maximum Marks: 30

Duration (hrs.) : 2 Hours

Note: Q1 is compulsory and solve any TWO from the remaining questions.

**Q1 – 10 Marks (Compulsory)**

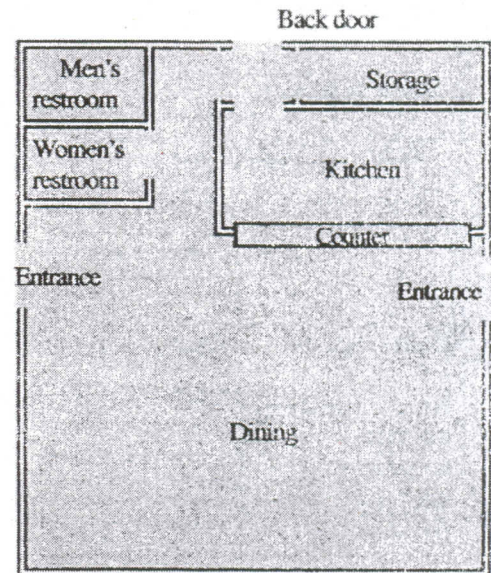
**Case:**

Soteriou looks up from cleaning the floor—the lights are on. This means that the power has finally been hooked up, and soon his restaurant will reopen here in its new location.

Soteriou's Souvlaki is typical of many of the small dining establishments scattered around the perimeter of the university. Specializing in Greek cuisine—souvlaki (lamb kabobs), gyros, tiropita (cheese-filled pastries), and baklava (a honey and pistachio nut dessert)—the restaurant has been very popular with the student body.

The operations are similar to those of most fast-food restaurants. Customers enter and queue near the register to place their orders and pay. Food is prepared and given to the customer over the main counter. Drinks are self-serve, and the tables are bused by the customers as they leave. The kitchen is normally run by Soteriou with help from an assistant working the cash register.

Until recently, Soteriou's had been located in a local food court, but earthquake damage, space constraints, and deteriorating sanitary conditions prompted him to move the restaurant to these new quarters. The new facility is a small, free-standing building, formerly a hamburger joint. Although the previous owners have removed all equipment and tables, the large fixed service counter remains, physically marking out the kitchen and dining areas. (see accompanying figure)



Aware of students' growing health consciousness (and possibly a little heady with the extra floor space in the new building), Soteriou has decided to add a self-service salad bar to the new restaurant. The salad bar will be much like those in other restaurants, but with a more Mediterranean flair.

The new kitchen does not appear to be much larger than the old one, though it is narrower. To prepare his Greek specialties in this new kitchen, Soteriou will need a grill/oven, a storage refrigerator, a preparation table (with hot and cold bins for the condiments, side dishes, and pita bread), a vertical spit broiler for the gyros meat, and a display case to hold the tiropitas, baklava, and cups for the selfserve drink machines.

The new dining area will include smoking and nonsmoking seating, the salad bar, self-serve

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drink machines, and an area for the register queues. Of course, the location of the cash register will be important to both the kitchen and dining area layouts.

Leaning against the mop handle, Soteriou looks around the clean, empty floor. Eager to open the new location, he has already ordered all the necessary equipment, but where will he put it? Unfortunately, the equipment will be arriving tomorrow morning. Once it is placed by the delivery crew, it will be hard for Soteriou and his assistant to rearrange it by themselves.

	<b>Grill</b>	<b>Prep. Table</b>	<b>Refrigerator</b>	<b>Vertical broiler</b>	<b>Display case</b>
<b>Cash register</b>	Undesirable	Absolutely necessary	Undesirable	Unimportant	Absolutely necessary
<b>Grill</b>		Absolutely necessary	Absolutely necessary	Unimportant	Very important
<b>Prep. Table</b>			Important	Absolutely necessary	Unimportant
<b>Refrigerator</b>				Unimportant	Undesirable
<b>Vertical broiler</b>					Unimportant

**Table 1. The Kitchen**

	<b>No smoking section</b>	<b>Smoking section</b>	<b>Drinks</b>	<b>Salad bar</b>	<b>Waiting area</b>
<b>Cash register</b>	Unimportant	Unimportant	Important	Important	Absolutely necessary
<b>No smoking section</b>		Undesirable	Very important	Very important	Unimportant
<b>Smoking section</b>			Important	Important	Unimportant
<b>Drinks</b>				Unimportant	Unimportant
<b>Salad bar</b>					

**Table 2. The Dining Area**

Read the above case and answer the following questions (each question carries 2 marks):

1. What processes do you need to plan for?
2. Show how the flow of customers will flow through current and proposed layouts.
3. Show how food items will flow through your proposed kitchen layout.
4. What is (are) your proposed layout(s)? Be sure to add the processes to the diagram of the restaurant.
5. What are the advantages & disadvantages of the proposed layout(s)?



**Attempt Any Two from the Remaining Four Questions**

Q2 (a) Explain in detail the evolution of Industrial Engineering. (5 Marks)

(b) Define Industrial Engineering and write a brief note on scope of Industrial Engineering. (5 Marks)

(c) List and explain any five Industrial Engineering Standards. (5 Marks)

*Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks*

Q3 (a) Explain different models of Productivity and how productivity is different from performance? (5 Marks)

(b) What is Product and Process layout? Also highlight its merits and demerits. (5 Marks)

(c) Explain the meaning and significance of plant location. How will you decide the location of a mini steel plant in India? (5 Marks)

*Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks*

Q4 (a) What is PMTS? What does a PMTS consist of? (5 Marks)

(b) List and explain commonly used PMTS systems. (5 Marks)

(c) What is Ergonomics? Highlight few of its application domains. (5 Marks)

*Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks*

Q5 (a) What is white collar productivity? (5 Marks)

(b) How is Organisation and Methods applied? (5 Marks)

(c) Explain Work study with the help of an example. (5 Marks)

*Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks*