

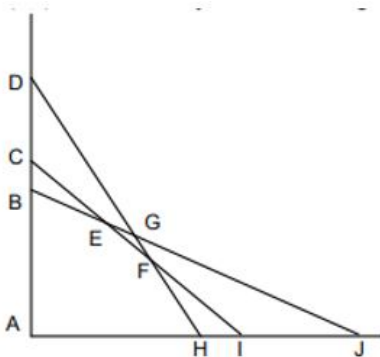
FIT3158 Business decision modelling - S2 2022

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Started on Friday, 5 August 2022, 4:33 PM**State** Finished**Completed on** Friday, 5 August 2022, 4:48 PM**Time taken** 15 mins**Grade** 0.90 out of 1.00 (90%)[Print friendly format](#)**Question 1**

Correct

Mark 0.10 out of 0.10

The following diagram shows the constraints for a LP model. Assume the point (0,0) satisfies constraint (B,J) but does not satisfy constraints (D,H) or (C,I).



Which set of points on this diagram defines the feasible solution space?

- ☒ a. F, G, I, J
- ☐ b. A, D, G, J
- ☐ c. G, E, F
- ☐ d. F, G, H, J



The correct answer is: F, G, I, J

Question 2

Correct

Mark 0.10 out of 0.10

Why is it important to study the graphical method of solving LP problems?

- ☐ a. It is faster than computerized methods.
- ☒ b. To develop an understanding of the linear programming strategy,
- ☐ c. It provides better solutions than computerized methods
- ☐ d. Because lines are easy to draw on paper.



The correct answer is: To develop an understanding of the linear programming strategy,

Question 3

Correct

Mark 0.10 out of 0.10

Which of the following actions on applicable constraints would expand the feasible region of an LP model?

- ☐ a. Adding an additional constraint.
- ☒ b. Loosening the constraints.
- ☐ c. Tightening the constraints.
- ☐ d. Multiplying each constraint by 2.



The correct answer is: Loosening the constraints.

Question 4

Correct

Mark 0.10 out of 0.10

The objective function for a LP model is $6X_1 + 4X_2$. If $X_1 = 20$ and $X_2 = 30$, what is the value of the objective function?

- ☐ a. 0
- ☐ b. 120
- ☐ c. 50
- ☒ d. 240



The correct answer is: 240

Question 5

Correct

Mark 0.10 out of 0.10

A company uses 8 pounds of resource 1 to make each unit of X_1 and 6 pounds of resource 1 to make each unit of X_2 . There are only 300 pounds of resource 1 available. Which of the following constraints reflects the relationship between X_1 , X_2 and resource 1?

- ☒ a. $8X_1 + 6X_2 \leq 300$
- ☐ b. $8X_1 + 6X_2 \geq 300$
- ☐ c. $8X_1 \leq 300$
- ☐ d. $8X_1 + 6X_2 = 300$



The correct answer is: $8 X_1 + 6 X_2 \leq 300$

Question 6

Correct

Mark 0.10 out of 0.10

The constraints $X_1 \geq 0$ and $X_2 \geq 0$ are referred to as

- ☐ a. positivity constraints.
- ☒ b. non-negativity conditions.
- ☐ c. optimality conditions.
- ☐ d. non-positivity constraints.



The correct answer is: non-negativity conditions.

Question 7

Correct

Mark 0.10 out of 0.10

The constraint for resource 1 is $5 X_1 + 4 X_2 \leq 200$. If $X_1 = 20$ and $X_2 = 15$, how much of resource 1 is unused?

- ☐ a. 50
- ☒ b. 40
- ☐ c. 200
- ☐ d. 140



The correct answer is: 40

Question 8

Correct

Mark 0.10 out of 0.10

The constraint for resource 1 is $6 X_1 + 3 X_2 = 300$. If $X_1 = 20$, what is the maximum value for X_2 ?

- ☐ a. 100
- ☒ b. 60
- ☐ c. 180
- ☐ d. 40



The correct answer is: 60

Question 9

Incorrect

Mark 0.00 out of 0.10

The production manager is planning the production schedule for the next quarter and needs to decide how much of each of the 2 products, X_1 and X_2 , to make. The company wants to maximize its profits.

X_1 = number of product 1 to make

X_2 = number of product 2 to make

MAX: $200 X_1 + 150 X_2$

Subject to: $3 X_1 + 6 X_2 \leq 300$ - resource 1

$3 X_1 + 7 X_2 \leq 175$ - resource 2

$X_1, X_2 \geq 0$

How many units of resource 1 are consumed by each unit of product 2 produced?

- ☐ a. 3
- ☒ b. 50
- ☐ c. 300
- ☐ d. 6

✗

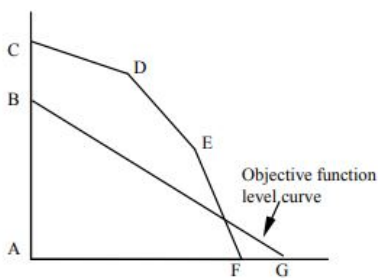
The correct answer is: 6

Question 10

Correct

Mark 0.10 out of 0.10

This graph shows the feasible region (as defined by points ACDEF) and objective function level curve (BG) for a maximization problem. Which point corresponds to the optimal solution to the problem?



- ☒ a. D
- ☐ b. B
- ☐ c. E
- ☐ d. C
- ☐ e. A

✓

The correct answer is: D

◀ In-semester Test: Online Quizzes (Weight 10%)

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