

Exam

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) In 2005, the UAE population was approximately 3 millions people. Assuming the population is growing at a rate of 1.5% compounded annually. Approximately, what will the UAE population in 2010? (5 points) 1) _____

2) If you pay \$5,500 for a simple interest note that will be worth \$6,000 in 21 months, what annual simple interest rate will you earn? (5 points) 2) _____

3) Assume that the price per unit p of a certain item to the consumer is given by the equation $p = 35 - .10x$, where x is the number of units in demand. The price per unit from the supplier is given by the equation $p = .2x + 20$, where x is the number of units supplied. Find the equilibrium point. What is the revenue on selling 100 units? (6 points) 3) _____

4) a) A small company that makes hand-sewn leather shoes has fixed costs of \$320 a day (i.e. 320 dollars when number of units is zero) and total costs of \$1200 per day at an output of 20 pairs of shoes per day. Assume that total cost C is linearly related to output x . Find an equation of the line relating output to cost. Write the final answer in the form $C = mx + b$. (8 points) 4) _____

b) If the price demand is $p = -0.2x + 844$, how many makes hand-sewn leather shoes should be sold so that the profit is maximum? What is the maximum profit?(6 points)

5) How many months will it take until an account will have \$3,500, if \$2,500 is invested now at 5% compounded monthly?(5 points) 5) _____

6) You deposit \$130 each month into a savings account that pays 6% compounded monthly. How much interest will you have earned after 8 years? (8 points) 6) _____

7) A \$7,000 debt is to be amortized in 15 equal monthly payments at 3% interest per month on the unpaid balance. What is the unpaid balance after the second payment? (7 points) 7) _____

8) Formulate the dual problem for the linear programming problem (DO NOT SOLVE IT)(10 points) 8) _____

Minimize $C = 4x_1 + 7x_2$

subject to $x_1 + x_2 \geq 5$

$x_1 + 2x_2 \leq 18$

$3x_1 + x_2 \geq 8$

$x_1, x_2 \geq 0$

9) Solve the following linear programming problem by determining the feasible region on the graph below and testing the corner points: (10 points) 9) _____

Minimize $C = x_1 + 6x_2$

Subject to $3x_1 + 4x_2 \geq 36$

$2x_1 + x_2 \leq 1, x_2$

$x_1 + x_2 \geq 0$

10) Solve the following linear programming problem using the simplex method:

$$\text{Maximize } P = x_1 - x_2$$

$$\text{subject to } x_1 + x_2 \leq 4$$

$$2x_1 + 7x_2 \leq 14$$

$$x_1, x_2 \geq 0$$

10) _____

11) How many ways can a committee of 5 Democrats and 2 Republicans be selected from a state legislature that contains 11 Democrats and 10 Republicans? (2 points)

11) _____

12) How many nine-digit ZIP code numbers are possible if the first digit cannot be a four and adjacent digits cannot be the same (note that each digit is a number between 0 and 9)?(2 points) 12) _____

13) A committee of 6 people is chosen from a group of 6 men and 5 women. What is the probability that the committee will consist of 4 men and 2 women?(2 points) 13) _____

14) A survey of 100 students at a large university found that 80 students played tennis, 43 played basketball, and 35 played both tennis and basketball. If a student is selected at random, what is the probability that the student plays neither tennis nor basketball?(2 points) 14) _____

15) A shipment of 28 compact disc players contains 4 that are defective. If 7 players from this shipment are selected at random and tested. 15) _____

a) what is the probability that at least one defective player will be found?(2 points)

B)What is the probability that exactly three defective players will be found?(2 points)

C) What is the probability that at least one nondefective player will be found?(2 points)

16) Two groups of people were asked their preference in television programs from among three new programs. The results are shown in the table below.

16) _____

Group of People	Television Program		
	X	Y	Z
A	25	15	40
B	20	60	50

a) What is the probability that a person selected at random will be from Group A or prefer program X?(2 points)

b) What is the probability that a person selected at random will be from Group B and prefer program Z?(2 points)

17) From a group of 10 people, in how many ways can we choose a chairperson, vice-chairperson, treasurer, and secretary, assuming one person cannot hold more than one position?(2 points)

17) _____