MIG

**SAVE THIS FILE AS: U6Review2**

**Unit 6 Review 2** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. TopTen Recording Studios is considering funding recording projects with four different artists over the next three years. The studio has allocated $12 million per year to cover the expenses of the new projects. The artists, necessary expenditures per year, and the expected profit from their projects are given in the table below. Which projects should be selected to maximize the expected total profit? What would be the total profit?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Artist | Expenditures (Millions of $ Per Year) | | | Profit (Millions of $) |
| Year 1 | Year 2 | Year 3 |
| Rambling Lou | 3 | 2 | 6 | 32 |
| Rita Rivera | 5 | 5 | 1 | 19 |
| Nightrider | 6 | 5 | 10 | 33 |
| SoozieQT | 3 | 8 | 1 | 23 |
| Available Funds Per Year | 12 | 12 | 12 |  |

1. A certain firm specializes in recommending oil stock portfolios. However, to become a client you must adhere to the firm’s constraints. They are as follows:

* At least two Texas oil firms must be in portfolio:
* No more than one investment can be made in foreign oil.
* Exactly one of two California oil stocks must be purchased.

Using the table below, determine the recommended stocks that should be invested in to maximize annual return on investment if a client has $3 million available for investments.

|  |  |  |
| --- | --- | --- |
| Company Name | Expected Annual Return | Cost for Block of Shares |
| Texas Oil A | $50,000 | $480,000 |
| Texas Oil B | $120,000 | $1,000,000 |
| Texas Oil C | $110,000 | $700,000 |
| Foreign Oil A | $80,000 | $540,000 |
| Foreign Oil B | $90,000 | $680,000 |
| California Oil A | $40,000 | $510,000 |
| California Oil B | $75,000 | $900,000 |

1. Which investments should be purchased in order to maximize the annual return?
2. What would the maximum profit be?
3. Joanne Mankowski has three sons: Brad, Mike, and Paul. She is getting tired of doing the housework by herself, and she wants her sons’ cooperation in keeping the house clean. She offered them payment if they share the housework. She determined four types of tasks that are doable for her sons indicated below. . If Joanne, will only allow each of her sons up to 2 jobs how should she assign each son to a task so that the assignment generates the least cost to her? What would that total cost be?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ($) | | Bid | | | |
| Dish Washing | Vacuuming | Dusting | Trash |
| Son | Brad | 6 | 11 | 7 | 5 |
| Mike | 9 | 13 | 9 | 7 |
| Paul | 7 | 14 | 10 | 10 |

1. Mr. Summit has four projects, one each in marketing, product development, logistics, and finance. He has chosen four employees with good leadership skills, Ahmad, John, Julia, and Subhash. Now, it is time to assign the right person to the right project. First, he developed a test for each project and asked the four employees to answer all of the questions. He wants to assign the leaders to the tasks so that the total number of mistakes on the test will be the minimum possible. The number of mistakes each employee made on the test is displayed in the table below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| (# of mistakes) | | Projects | | | |
| Marketing | Product Development | Logistics | Finance |
| Employee | Ahmad | 1 | 2 | 3 | 3 |
| John | 4 | 4 | 3 | 4 |
| Julia | 1 | 2 | 1 | 3 |
| Surmed | 4 | 2 | 2 | 2 |

1. The VogueTech Customer Service provides 24-hour online technical support. There are three 8-hour shifts and thirteen representatives. Five representatives will be assigned to the morning shift, five will be assigned to the afternoon shift, and 3 will be assigned to the night shift. The manager wants to assign them according to their preferences. The table below shows the shift preferences of each representative. “5” indicates the most preferred and “1” indicates the least preferred.

Assign them according to their preferences.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| (rankings) | | **REPRESENTATIVES** | | | | | | | | | | | | |
| **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** | **J** | **K** | **L** | **M** |
| **SHIFTS** | 6 a.m. – 2 p.m. | 3 | 2 | 4 | 4 | 3 | 5 | 3 | 5 | 2 | 2 | 1 | 5 | 5 |
| 2 p.m. – 10 p.m. | 5 | 4 | 1 | 4 | 1 | 5 | 4 | 5 | 1 | 2 | 4 | 4 | 1 |
| 10 p.m. – 6 a.m. | 1 | 2 | 4 | 4 | 4 | 4 | 3 | 2 | 1 | 4 | 1 | 5 | 5 |