QM PGE 207 QUESTION # 14

The Texas Consolidate Electronic Company is contemplating a research and development program encompassing eight research project. The company is constrained from embarking on all project by the number of available management scientists (40) and the budget available for R&D project ($300,000.) further, if project 2 is selected, project 5 must be selected (but not vice versa). Following the resources requirements and the estimated profit for each project:

|  |  |  |  |
| --- | --- | --- | --- |
| PROJECT | EXPENSE ($1,000S) | MANAGEMENT SCIENTISTIC REQUIRED | ESTIMATED PROFIT ($1,000,000s) |
| 1 | $60 | 7 | $.36 |
| 2 | 110 | 9 | .82 |
| 3 | 53 | 8 | .29 |
| 4 | 47 | 4 | .16 |
| 5 | 92 | 7 | .56 |
| 6 | 85 | 6 | .61 |
| 7 | 73 | 8 | .48 |
| 8 | 65 | 5 | .41 |

Formulate the integer programming model for this problem and solve it by using the computer.

Page 212 Question 28:

Corsouth Mortgage Associate is a large home mortgage firm in the Southeast. It has a pool of permanent and temporary computer operators who process mortgage accounts, including posting payments and updating escrow accounts for insurance and taxes. A permanent operator can process 220 accounts per day, and a temporary operator can process 140 accounts per day. An over age, the firm must process and update at least 6,300 accounts daily. The company has 32 computer workstation available. Permanent and temporary operators work 8 hours per day. A permanent operator averages about .4 error per day, whereas a temporary operator averages 0.9 error per day. The company wants to limit errors to 15 per day. A permanent operator is paid $120. Per day, whereas a temporary operator is paid $75.00 per day. Carosouth wants to determine the number of permanent and temporary operators it needs to minimize cost. Formulate and solve an integer programming model for this problem and compare this solution to the non-integer solution.