Dr. Maureen Becker, the head administrator at Jefferson County Regional Hospital, must determine a schedule for nurses to make sure there are enough of them on duty throughout the day. During the day, the demand for nurses varies. Maureen has broken the day in to twelve 2- hour periods. The slowest time of the day encompasses the three periods from 12:00 A.M. to 6:00 A.M., which beginning at midnight; require a minimum of 30, 20, and 40 nurses, respectively. The demand for nurses steadily increases during the next four daytime periods. Beginning with the 6:00 A.M.- 8:00 A.M. period, a minimum of 50, 60, 80, and 80 nurses are required for these four periods, respectively. After 2:00 P.M. the demand for nurses decreases during the afternoon and evening hours. For the five 2-hour periods beginning at 2:00 P.M. and ending midnight, 70, 70, 60, 50, and 50 nurses are required, respectively. A nurse reports for duty at the beginning of one of the 2-hour periods and works 8 consecutive hours (which is required in the nurses’ contract). Dr. Becker wants to determine a nursing schedule that will meet the hospital’s minimum requirement throughout the day while using the minimum number of nurses.

1. Formulate a linear programming model for this problem.
2. b. Solve the model by using the computer.

Linear Programming with spreadsheet to Include excel spreadsheet with LP, and sensitivity report .

Head administrator at Jefferson County Regional Hospital

a. Formulate a linear programming model for this problem.

b. Solve the model by using the computer.

I need excel file with LP max and sensitivity report for excel using excel QM

Step-by-step on how to input data in QM solver to obtain LP max and sensitivity

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Maureen Becker, Jefferson County Regional Hospital Scheduling** | | | | | |  |  |
|  |  |  |  |  |  |  |  |
|  | **Let Xi = number of nurses that begin their 8 hour shift in period I (I = 1,2,3,4, …., 12)** | | | | | |  |
|  | **period 1** | **12:00AM -- 2:00Am** | |  |  |  |  |
|  | **period 2** | **2:00AM -- 4:00 AM etc** | | |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  | **# of Nurses** |  | **Minimum # of** |
|  | **DV** |  |  | **Period** | **working** |  | **Nurses** |
|  | x1 |  |  | 1 |  | >= | 30 |
|  | x2 |  |  | 2 |  | >= | 20 |
|  | x3 |  |  | 3 |  | >= | 40 |
|  | x4 |  |  | 4 |  | >= | 50 |
|  | x5 |  |  | 5 |  | >= | 60 |
|  | x6 |  |  | 6 |  | >= | 80 |
|  | x7 |  |  | 7 |  | >= | 80 |
|  | x8 |  |  | 8 |  | >= | 70 |
|  | x9 |  |  | 9 |  | >= | 70 |
|  | x10 |  |  | 10 |  | >= | 60 |
|  | x11 |  |  | 11 |  | >= | 50 |
|  | x12 |  |  | 12 |  | >= | 50 |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Objective Function | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |