**Problem A**

Your company is planning the next 5 months of production and you are to develop the high level (aggregate) plan.

The costs are given in the table below.

The marketing department prefers to never allow backorders if possible.

The company’s level strategy keeps your workforce fully utilized while first allowing overtime production
(up to 100 crates per period) and then using your subcontractor (up to 35 crates per period).

Note that one additional employee was added in period 3 to increase regular production.

The forecast is given below.

Warehouse B reports that you have 42 crates to begin with.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Period | 1 | 2 | 3 | 4 | 5 | Totals |
| Forecast (crates) | 700 | 500 | 550 | 600 | 500 | 2,850 |
| Capacity on regular shift | 450 | 450 | 480 | 480 | 480 | 2,340 |
|  |  |  |  |  |  |  |
| Output |  |  |  |  |  |  |
|  Regular | 42 | 30 | 33 | 36 | 30 | 171 |
|  Overtime | 100 | 100 | 100 | 100 | 100 | 500 |
|  Subcontractor | 35 | 35 | 35 | 35 | 35 | 175 |
| Output – Forecast | 177 | 165 | 168 | 171 | 165 | 846 |
|  |  |  |  |  |  |  |
| Inventory |  |  |  |  |  |  |
|  Beginning | 177 | 165 | 168 | 171 | 165 | 846 |
|  Ending | 0 | 0 | 0 | 0 | 0 | 0 |
|  Average | 4 | 3 | 3 | 3 | 3 | 3 |
| Backlog | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  |  |  |  |  |  |
| Costs |  |  |  |  |  |  |
|  Regular @ $310 / crate | $13,020 | $9,300 | $10,230 | $11,160 | $9,300 | $53,010 |
|  Overtime @ $460 / crate | $46,000 | $46,000 | $46,000 | $46,000 | $46,000 | $230,000 |
|  Subcontractor @ $560 / crate | $19,600 | $19,600 | $19,600 | $19,600 | $19,600 | $98,000 |
| Hire / Lay Off @ $150 each | 0 | 0 | 0 | 0 | 0 | 0 |
| Inventory @ $100 / crate | $17,700 | $16,500 | $16,800 | $17,100 | $16,500 | $84,600 |
| Backlog @ $18 / crate | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  |  |  |  |  |  |
| Total Costs: | $96,320 | $91,400 | $92,630 | $93,860 | $91,400 | $465,520 |