b Optimal Solution

In this part, the mathematical model is implemented in python and solved with Gurobi. Coding files are uploaded along with this report.
The optimal solution for the production scheduling problem is as follows:

Minimized Cost: 9646.78 euro
Production Table:

Table 2: Production Table (unit: kg)

Month	18/10 Production	18/8 Production	18/0 Production
1	25.00	10.00	8.09
2	25.00	10.00	65.00
3	0.00	10.00	86.96
4	0.00	10.00	86.96
5	0.00	14.37	85.62
6	50.00	5.63	44.38
7	12.00	10.00	78.00
8	0.00	10.00	80.00
9	10.00	10.00	62.00
10	10.00	10.00	80.00
11	45.00	19.00	36.00
12	99.00	1.00	0.00

Storage Table:

Table 3: Storage Table (unit: kg)

Month	18/10 Storage	18/8 Storage	18/0 Storage
1	0.00	0.00	3.09
2	0.00	0.00	48.09
3	0.00	0.00	55.04
4	0.00	0.00	117.00
5	0.00	4.37	152.62
6	0.00	0.00	72.00
7	0.00	0.00	0.00
8	0.00	0.00	0.00
9	0.00	0.00	22.00
10	0.00	0.00	67.00
11	0.00	9.00	100.00
12	0.00	0.00	0.00

Supplier Procurement Table:

Table 4: Supplier Procurement Table for Product 18/10 (unit: kg)

Month	From A	From B	From C	From D	From E
1	9.01	5.81	0.00	10.17	0.00
2	9.01	5.81	0.00	10.17	0.00
3	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00
6	18.02	11.63	0.00	20.35	0.00
7	4.33	2.79	0.00	4.88	0.00
8	0.00	0.00	0.00	0.00	0.00
9	3.60	2.33	0.00	4.07	0.00
10	3.60	2.33	0.00	4.07	0.00
11	16.22	10.47	0.00	18.31	0.00
12	35.69	23.02	0.00	40.29	0.00

Table 5: Supplier Procurement Table for Product 18/8 (unit: kg)

Month	From A	From B	From C	From D	From E
1	4.88	1.86	0.00	3.26	0.00
2	4.88	1.86	0.00	3.26	0.00
3	3.04	2.09	4.87	0.00	0.00
4	3.04	2.09	4.87	0.00	0.00
5	4.37	3.00	7.00	0.00	0.00
6	2.75	1.05	0.00	1.83	0.00
7	4.88	1.86	0.00	3.26	0.00
8	4.88	1.86	0.00	3.26	0.00
9	4.88	1.86	0.00	3.26	0.00
10	4.88	1.86	0.00	3.26	0.00
11	9.28	3.53	0.00	6.19	0.00
12	0.49	0.19	0.00	0.33	0.00

Table 6: Supplier Procurement Table for Product 18/0 (unit: kg)

Month	From A	From B	From C	From D	From E
1	8.09	0.00	0.00	0.00	0.00
2	65.00	0.00	0.00	0.00	0.00
3	86.96	0.00	0.00	0.00	0.00
4	86.96	0.00	0.00	0.00	0.00
5	85.62	0.00	0.00	0.00	0.00
6	44.38	0.00	0.00	0.00	0.00
7	78.00	0.00	0.00	0.00	0.00
8	80.00	0.00	0.00	0.00	0.00
9	62.00	0.00	0.00	0.00	0.00
10	80.00	0.00	0.00	0.00	0.00
11	36.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00

The optimal solution achieved a minimized cost of 9646.78 euro, along with a comprehensive production plan, inventory plan, and supplier procurement plan for each product. However, further verification and sensitivity analysis of the model are necessary for additional validation.