

Addis Ababa University
Addis Ababa Institute of Technology
School of Mechanical and Industrial Engineering
Industrial Management and Engineering Economy – Assignment

Submission Date: 10 Nov, 2023 Total mark: 5%

1. Describe the five basic management functions.
2. Briefly explain the functions of an industrial enterprise, and how managers contribute to these functions.
3. Discuss the different types of organizational structures and explain the advantage and disadvantage of each type (use sketches).
4. Discuss briefly productivity and the methods of productivity improvement in manufacturing industries.
5. Explain the 4 types of plant layout used in manufacturing industries, and list the factors that stimulate plant Layout problem.
6. Consider yourself as member of a feasibility study team, which is established to determine the general and specific plant location of an electric cable, cement and spring water-producing companies. Therefore, explain the influencing factors considered on determining the general and specific plant location of the companies. **(N.B. Please choose two companies and explain only for them).**
7. A company manager is demanding to determine what forecast method to use. Based on the following historical data calculate the following forecast and specify which forecasting technique is best for the company.

<i>Month</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>
<i>Actual demand</i>	62	65	67	68	71	73	76	78	78	80	84	85

- a. Calculate the weighed three-month moving average using weights of 0.5, 0.3 and 0.2 accordingly for periods 4-12.
- b. Calculate the single exponential smoothing forecast for period 2-12 using initial forecast of 60 and alpha 0.5.
- c. Calculate the MAD, MSE and MAPE for the forecast made by each technique in period 4-12, which forecasting method do you prefer?

8. For three years the monthly preventive maintenance expenses of an organization vehicles is as given as below, and the vehicles failures rate has seasonal nature. The expected annual preventive cost is 3600 ETB, based on the recorded data, forecast the next year monthly expense in order to verify the monthly budget ahead of time.

Month	Year 1	Year 2	Year 3
January	170	180	195
February	180	205	210
March	205	215	230
April	230	245	280
May	240	265	290
June	315	330	390
July	360	400	420
August	290	335	330
September	240	260	290
October	240	270	295
November	230	255	280
December	195	220	250