The daily sales and revenue of a tech company are given in the excel sheet. The various products sold by the company include phones, cameras, watches, laptops, and headphones.

1. What type of distributions can be used to summarize the sales of phones, laptops, and the revenue of the company? **(10)**

2. Which product contributes the most to the company's revenue? **(10)**

3. Identify the 2 products that have the highest and lowest sales respectively with a 95% confidence level? **(10)**

4. Develop a regression model to forecast the daily revenue of the company using the seasonal pattern. **(10)**

5. Develop a regression model to forecast the daily revenue of the company using the independent sales data without the seasonal pattern. Compare the results from models in questions 4 and 5. **(10)**

6. Using simulation, identify the average demand for each product. **(10)**

7. Due to the supply chain shortage, only 100 phones and 20 cameras can be sold per day. At least 30 laptops, 50 watches, and 50 headphones must be sold due to excess inventory. How many units of each of the products should be sold for the company to have a revenue of 15000 on February 1st, 2022? **(10)**

8. In the above problem, assuming the revenue is given by the following equation, how many units of each of the products should be sold for the company to have a revenue of 20000 on February 1st, 2022? **(10)**

$$\text{Revenue} = t\times 30 + P^{4} + C^{3} + L\times 10 + W^{0.5} + H\times 12$$

(Where, t= time, P =phone, C = camera, L = laptop, W = watch and H = headphone)

9. On observing the market trends, the company decides to plan and prepare for inflation. The disaster management team came up with the following sales figures for multiple scenarios. The company looks at the following decisions – **(1)** build a new warehouse, **(2)** increase current warehouse capacity, and **(3)** no change. Which decisions would the company take in each of the optimistic,

conservative, and minmax approaches? The revenue projects in each scenario are as given in the table below. **(10)**

	High impact	Medium impact	No impact
New warehouse	71400	215500	264700
Increase capacity	94750	140000	152000
No change	103450	95000	88500

10. Based on the probability estimates for the impact of inflation, evaluate the best decision based on the Expected Value approach in each of the 3 scenarios. **(10)**

	Scenario 1	Scenario 2	Scenario 3
High impact	0.7	0.8	0.5
Medium impact	0.2	0.1	0.1
Low impact	0.1	0.1	0.4