1. An employee's preference pattern is given by U= XY where X denotes Food and Y denotes Non-food item. Her income in Jan 2023 was 12000 and prices of X and Y were 1 per unit. In March 2023 the price of Food increased to 2 per unit and price of Non-food item increased to 3 per unit.

    A. The employee (who has studied Microeconomics), claims that her expenditure to purchase the January "basket" has increased in March. Consequently she asks for a Dearness Allowance from the employer. Calculate Dearness Allowance according to the Employee.   [2]

    B. The Employer (who also has studied Microeconomics) contends that the employee is overstating the expenses to achieve the level of utility obtained in January. Calculate the Dearness Allowance according to the Employer.   [4]

    C. Clearly state whether you would agree with the employer or employee? Explain using a properly constructed diagram and numerical analysis.   [2]

2. The utility function of an individual is $U = C^\alpha L^{1-\alpha}$ where $1 > \alpha > 0$; L denotes leisure and C denotes consumption of goods. The total endowment of time to be spent on either leisure (L) or labor (H) is T=24 hours. The wage rate is w per hour and unit price of C is 1.
    A. Calculate optimal H for this consumer. Assume that the second order condition is satisfied.   [4]
    B. If wage rate increases, how would the optimal H change for this consumer?   [1]

3. Suppose the government wants to regulate a non-discriminating monopolist. The market demand is characterized by P=a-bQ. The firm has incurred fixed cost F and its Marginal cost function is "U-shaped".

    A. Analyze the *social welfare consequences* of such regulation by using different plausible scenarios as discussed in class. The analysis must be supported by properly constructed diagrams.   [8]

    B. Explain two major problems that the government might encounter while regulating the firm.   [4]

4. In India, currently the sale of transplant organs (eg. kidney) is illegal. There is a huge shortage of transplant organs and several people die every year due to organ failure. According to medical science, a person can survive on just one kidney and the other one can be donated. The objective of this exercise is to analyze and compare the current prevailing policy where organ sale is illegal vs. legalization of sale of organs, keeping the ethical concerns aside. Suppose the estimated demand function for kidneys is 32000-0.4P and supply function is 16000+0.4P

A. Consider Policy1: organ sale is Legally prohibited and enforced ceiling price =0. Calculate Consumer Surplus & Surplus of the donors/Sellers.   [3]

B. Consider Policy2: Suppose organ sale is Legally allowed, thereby removing the price ceiling. Thus a competitive market would prevail directly between the donors/sellers and buyers. Considering Policy 1 as "old" outcome and Policy 2 as "new" outcome, calculate the change in Consumer Surplus, change in Surplus of donors/Sellers & change in Social Welfare.   [4]

C. Using a properly constructed graph, explain whether legalization of organ sales has economic justification.
                    [3]