Microeconomics
HUL 212
Minor Examination, Fall 2022

Instructions: Q.1 and Q.2 are compulsory. Attempt any one from Q.3 and Q.4 and any one from Q.5 and Q.6.

Assume the two-commodity setting as discussed in the class. Unless otherwise stated, assume that X_1 is measured along the horizontal axis and X_2 is measured along the vertical axis. Also note that Marginal rate of substitution is the absolute value of the slope of the indifference curves in this setting.

1. Provide reasoning for each of the following statements explaining why they are True or False:
   - Indifference curves (IC) are downward sloping because the underlying preferences are convex. [2]
   - Each bundle in the budget set costs the consumer the entire amount of money she has. [2]
   - The slope of the budget line reflects *psychological* exchange rate between the two commodities. [2]
   - Strong monotonicity implies monotonicity. [2]
   - Marginal utility is a cardinal concept, but MRS is ordinal. [4]
2. "Indirect utility functions are quasi-convex. This implies that price indifference curves are convex to the origin". Explain the statement analytically. [4+2]
3. Suppose that $u(x_1, x_2) = x_1 x_2 + 10x_2$. Let the prices for X_1 and X_2 be 10 and 30. Assume that the income is 5. Find out the optimal consumption bundle. Explain the intuition behind the solution. [5]

4. Imagine a discount offer on X_1 as follows: up to 2 units, the price per unit is Rs. 5 and if the consumption exceeds 2 units, the price falls to Rs. 3 for every *subsequent* unit. There is no such discount scheme offered for X_2. Derive the budget line for the consumer and draw it. [5]

5. Suppose utility is given by

$$U(x, y) = (x^\delta + y^\delta)^{1/\delta}$$

- Find the indirect utility function. [3]
- Find out the expenditure function and check if it is homogeneous of degree 1 in the goods' prices. [4]

6. (a) You are given the following partial information about a consumer's purchases. He consumes only two goods.

	Year 1		Year 2	
	quantity	price	quantity	price
Good 1	100	100	120	100
Good 2	100	100	?	80

Over what range of quantities of good 2 consumed in year 2 would you conclude:

- That his behaviour is consistent (i.e., in line with the weak axiom)? [2]
- That good 1 is an inferior good (at some price) for this consumer? Assume that the weak axiom is satisfied.[2]

(b) Analytically show that both the commodities cannot be inferior in the two-commodity setting as discussed in the class. [3]