

Place your name on the back of this sheet of paper and nowhere else. Staple your answers on the front of this sheet of paper. Failure to follow these directions will cost you 1 point. Your assignment will be typed, except graphs can be drawn by hand and mathematical equations can be done by hand. Failure to type it will cost you 10 points. If you use double-sided printing or print on the back of scrap paper, I will give you one additional point.

- 1) (35 points) Draw a diagram with a scale and two isoquants and two iso-cost lines which have the wage rate twice the rental rate. Draw an increase in the wage rate so that it is three times the rental rate. Draw both the old and new expansion paths. Explain how you know the wage rate had been twice the rental rate and is now three times the rental rate. Explain why the expansion path moved in the direction it moved.
- 2) (35 points) Draw the long-run ATC/MC diagram and add to it three short-run ATC/MC graphs. Explain why the LRATC is the envelope of the SRATC curves but the LRMC is not the envelope of the SRMC curves.
- 3) (15 points) Suppose the cost of producing 100 small cars by themselves is \$10,000 per car and producing 100 large cars by themselves is \$20,000 per car. If you produce 100 of each size car, the cost is \$14,000 per car, then what is the economy of scope? Show all work and briefly explain what you did. Warning: all costs are per car.
- 4) (15 points) Give me the formula for cost elasticity ( $E_C$ ) of output after we simplified it and the SCI (Scale Economies Index) formula. Explain why a high cost  $E_C$  will cause a low SCI using economics but no mathematics.