

Econ 1101  
Practice Questions about Consumer Theory  
**Solution**

**Question 1:** Sam eats only green eggs and ham. He has an income of \$36. Green eggs have a price of  $P_G = \$2$  and ham has a price of  $P_H = \$6$ . Sam's preferences are represented by the utility function

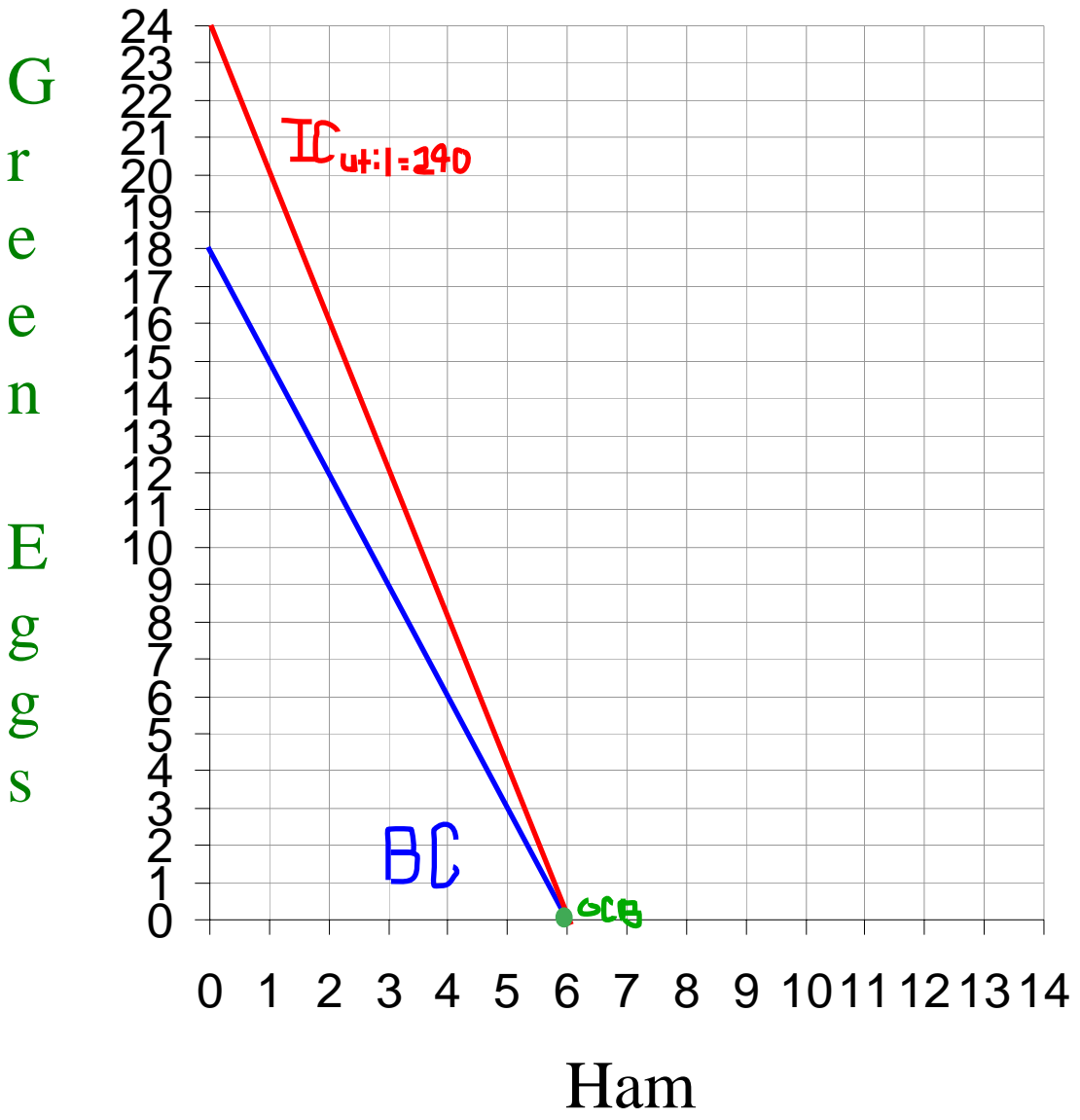
$$\text{Utility} = 10 \cdot Q_G + 40 \cdot Q_H$$

where  $Q_G$  and  $Q_H$  are Sam's consumption of green eggs and ham.

(a) On the graph below, draw in Sam's budget constraint. Put ham on the horizontal axis, which is how the graph is labeled. Label the budget constraint.

(b) Sam has which kind of preferences?

1. Green Eggs and Ham are Perfect Substitutes
2. Green Eggs and Ham are consumed in fixed proportions
3. Sam's indifference curves feature diminishing marginal rate of substitution (MRS) between green eggs and ham.



c) At these prices:

Utility per dollar spent on green eggs is  utils (Fill in a whole number. Let's use util as the unit).  $10 \text{ utils, per unit, } \$2 \text{ per unit, Thus util per dollar is } 10/2 = 5 \text{ utils per dollar.}$

Utility per dollar spent on ham is  utils.  $40 \text{ utils per unit, } \$6 \text{ per unit. } 40/6 = 6.66 \text{ (or 7 in this case).}$

(d) Sam's optimal consumption bundle is  green eggs and Fill in the Blank

04  ham.  $\text{We know consumer consumes all ham (no green eggs) since ham yields higher utility per dollar.}$

(e) Illustrate the optimal consumption bundle on the graph and draw Sam's indifference curve through this point. Label the indifference curve.

(f) Sam's marginal rate of substitution (the value of one more ham in terms of green eggs) is

green eggs.  $\text{MRS is absolute value of slope of the IC. We can see slope is } (24-0)/(0-6) = -4. \text{ Absolute value is } 4.$

(g) The absolute value of the slope of the budget constraint (the opportunity cost of one more ham in terms of green eggs) is  green eggs for one more ham.

$\text{Slope of BC is } (18-0)/(0-6) = -3. \text{ Absolute value is } 3.$

Question 2: (Points 20)

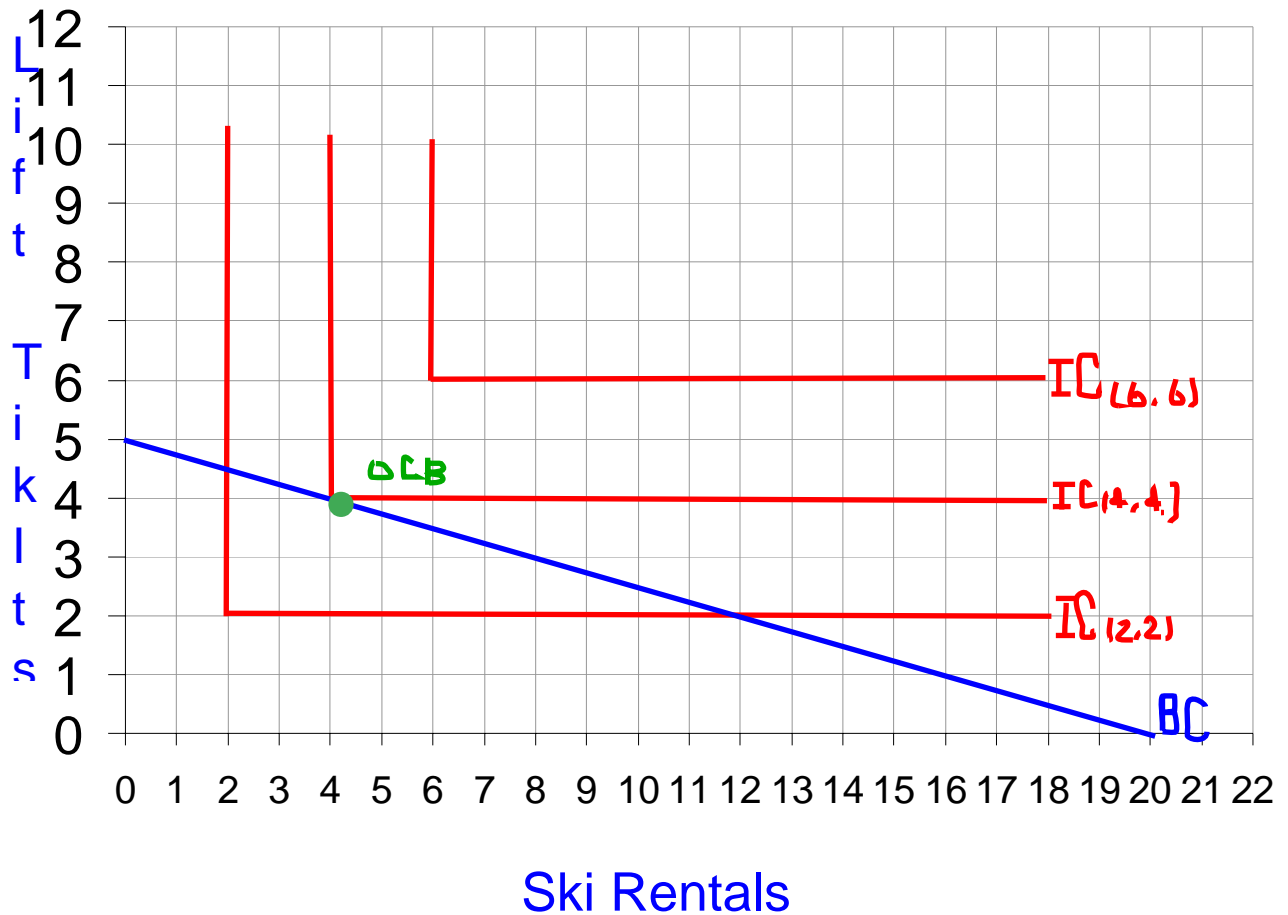
Jill loves skiing and wants to go as often as she can afford to. For each day she skis, she needs to rent skis and buy a lift pass. Ski rentals are \$10 a day and lift passes are \$40 a day. She has \$200 to spend on skiing this winter.

(a) In the graph below, draw in Jill's budget constraint for the number of ski rental days and the number of lift pass days. One bundle of (1 rental, 1 lift) costs \$50. Consumer can afford 4 such bundles. OCB is (4 rental, 4 lift).

(b) Jill's optimal consumption bundle is  ski rentals and  lift tickets.

(c) Illustrate her optimal consumption bundle and draw Jill's indifference curve through it.

(d) Draw her indifference curve through  $Q_{\text{Rental}} = 2, Q_{\text{Lift}} = 2$  and another one through  $Q_{\text{Rental}} = 6, Q_{\text{Lift}} = 6$



Q3 \_\_\_\_\_(Points: 20)

Question 3. Frodo eats lembas bread and wine. His indifference curves are illustrated in the next page below. Suppose the prices of lembas bread and wine are and  $P_L = \$5$  and  $P_W = \$10$ .

(a) Suppose Frodo has an income of \$40. Draw in Frodo's budget constraint and label it "BC(I=40)". (Put lembas bread on the horizontal axis, as illustrated.)

(b) The slope (in absolute value) of the budget constraint is  wine for one more lembas bread. (Note: use a decimal answer. For example, use .1 or .2 or .5 or .7, etc.)

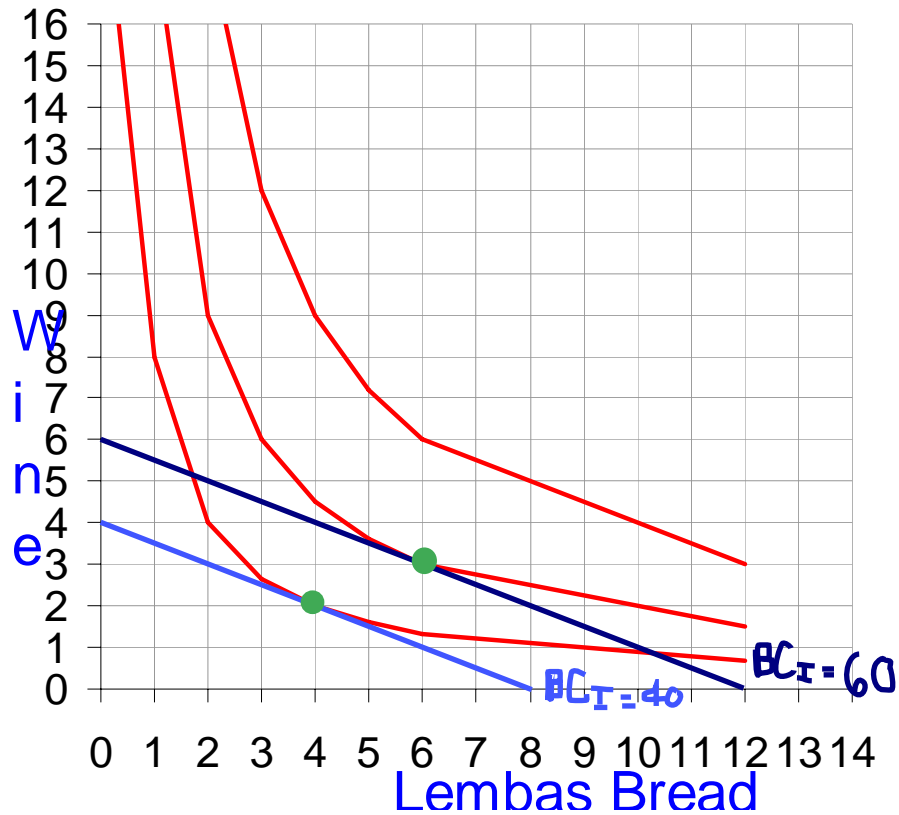
(c) At this income, Frodo's optimal consumption bundle is  lembas bread units and  wine units.

(d) The marginal rate of substitution at the optimal consumption bundle is  wine for one more lembas bread. (Again use decimals, e.g. .1 or .2 or .5, etc.)

*With this type of IC, at the OCB the abs. value of slope of the IC (MRS) is same as abs. value slope of BC.*

(e) Suppose prices remain the same but Frodo's income increases to \$60. Illustrate the new

budget constraint. The new optimal consumption is  lembas bread units and  wine units.



Q3 \_\_\_ F (Points 5)

(f) From comparing (c) and (e), we can tell that wine is a normal good and lembas bread is an inferior good.

True or **False** (Circle one) As income increases from \$40 to \$60 consumption of both goods increases. Thus, both goods are normal.

Q3 \_\_\_ g (Bonus) (Points 2)

If there are only two goods that Frodo consumes, wine and lembas bread, then it is still possible for both goods to be inferior. That is, it could happen that when Frodo's income doubles, he consumes less of both goods.

True or **False** (Circle one)