EEP 100 MIDTERM EXAM

Questions marked (**T,F,U**) should be answered "True," "False," or "Uncertain," and your answer should be briefly justified. Note that points will be awarded based only on your reasoning, not on the answer itself, even if correct.

(1) (**T,F,U**) The price elasticity of the Marshallian demand function will always be greater than the price elasticity of the Hicksian demand function, because while the change in the Hicksian demand measures only the substitution effect from a price change, the change in Marshallian demand is equal to the substitution effect plus an income effect.

(2) (**T,F,U**) Consider an economy with only two goods, wine and beer. For a person with income y who isn't fond of alcohol (but who nonetheless prefers more to less), both goods may be inferior.

(3) (**T,F,U**) Suppose that a person has a utility function $U(C, L)$ where C is an inferior good and where L is leisure. Time worked is $(1 - L)$, and the person earns a wage of w for every hour she works. *Holding utility constant*, an increase in the wage may lead to a decrease in consumption of C, since an increase in income may lead the person to take more leisure.

(4) (**T,F,U**) The utility function $U(x) = -1/x$ doesn't yield a valid set of demands; since it's negative, it violates the axiom of nonsatiation.

(5) (**T,F,U**) If income elasticities are equal for all goods, then all Marshallian demand functions must be downward sloping.

(6) (**T,F,U**) In the early 1940s, Columbia Records decided to dramatically reduce the price of classical records. Total expenditures on classical records promptly increased. We can conclude that classical records were a superior good.

(7) For consumer behavior, we normally assume the following properties:
 a) Transitivity
 b) Non-satiation (more is better)
 c) Differentiability
 d) Completeness
 e) Quasi-concavity
   For each of the indifference maps shown below, indicate which assumptions about behaviour are violated. (Some maps may violate more than one assumption.) Briefly justify your answer.

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(8) Suppose that a typical poor household in the U.S. spends $10,000 on either food (F) or clothing (C). Moreover, this typical household's utility is given by $U(F, C) = \frac{\log(F)}{4} + \frac{3\log(C)}{4}$. The market price of food is $10 per unit, while the price of clothing is $20 per unit.

a) How much of this household's income will be spent on food?

b) The federal government decides to increase poor households' level of utility by subsidizing food. If the government allows poor households to purchase food at half the market price (the other half being paid by the government), how many more units of food will be purchased?

c) How much of the increase in food purchases will be due to an income effect?

d) How much will this program cost the government per participating household?

e) The government could also increase the household's utility to the same level by giving them additional income directly. How large a cash transfer would be required to do this, in the absence of a food subsidy?

(9) Houthakker and Taylor, using U.S. data over the period 1929–1970, estimate that a one percent increase in gasoline prices results in a 0.2% decrease in average demand. Supposing this estimate to be valid for the present day,

a) By what proportion would gas prices have to increase to result in a 10 per cent decrease in average demand?

Suppose now that in fact there are equal numbers of two different kinds of people, those who use lots of gasoline, and those who use only half as much. Suppose that the first group has a price elasticity of gasoline demand of 0.1.

b) If gas prices were to increase by 10 per cent, by what proportion would the average gasoline demand decrease for each group?

Extra Credit: The UN is presently sending a convoy of trucks laden with wheat to Herat, Afghanistan to relieve the famine in that area. However, the convoy can't carry enough grain to feed everyone in Herat. What do you think would be a good way to distribute the grain (Be succinct, and try to use economic reasoning)?