Warwick University   Prof. Francesco Squintani

Department of Economics

Sample Midterm Exam
EC9D3 Advanced Microeconomics

In each question, you are given a number of statements. Only one of the statements is true.

1. Amy likes chocolate and spinach. Given any two bundles x, y of these two goods, she strictly prefers x as long as it contains more chocolate than y. If x, y have the same amount of chocolate, she strictly prefers the bundle that has more spinach.

   (i) Her preferences satisfy all four axioms of consumer choice (completeness, transitivity, continuity, and strict monotonicity).

   (ii) There are two distinct consumption bundles x, y such that Amy is indifferent between x and y.

   (iii) Her preferences satisfy all axioms except for continuity. TRUE.

   (iv) Her preferences can be represented by a utility function.

2. Chen has a Cobb-Douglas utility function over wine and beer and she faces fixed prices for these goods and a fixed income.

   (i) Her Marshallian demands for all goods are homogeneous of degree zero in prices.

   (ii) Her Marshallian demands for all goods are homogeneous of degree zero in income.

   (iii) All goods are Hicksian substitutes. TRUE.

   (iv) All goods are Hicksian complements.

3. Davinder can consume two goods, X and Y. If the prices of goods X and Y are 1 and 2, Davinder chooses bundle $(1, 3)$, where 1 is the consumption of X and 3 the consumption of Y. If the prices of goods X and Y are 2 and 1, Davinder chooses bundle $(2, 2)$.

(i) Bundle $(2,2)$ is not revealed preferred to bundle $(1,3)$.

(ii) Bundle $(1,3)$ is not revealed preferred to bundle $(2,2)$.

(iii) Davinder's choices do not satisfy WARP. TRUE.

(iv) Davinder's choices satisfy GARP

4. Demand is said to be inelastic when:

(i) the percentage change in quantity demanded is greater than the percentage change in price of a good.

(ii) in a linear demand curve, quantity demanded is close to zero (given the price) so that the percentage change in quantity demanded will be very high.

(iii) the percentage change in price exceeds the percentage change in quantity demanded of a good. TRUE

(iv) a relatively small change in price results in a relatively big change in quantity demanded.

5. Eve has a strictly continuous, strictly increasing, and quasi-concave utility function over cheese and wine. She faces fixed prices for these two goods and and fixed non-negative endowments of both goods. You may assume that both goods are Normal.

(i) The Hicksian demand for cheese is increasing in the price of cheese.

(ii) The Hicksian demand for cheese is decreasing in the price of wine.

(iii) If Eve has a zero endowment of cheese, her Marshallian demand for cheese is decreasing in the price of cheese. TRUE.

(iv) If her excess demand for wine is negative at the fixed prices, her Marshallian demand for wine is increasing in the price of wine.

7. Amrita and Bhaskar can consume cheese and beer. Each of them have Leontief preferences i.e. each of them has a level of utility equal to the minimum of x, y where $x =$ beer consumption and $y =$ cheese consumption. Amrita has an endowment of 10 units of cheese, and Bhaskar an endowment of 10 units of beer.

(i) Any Pareto-efficient allocation gives both Amrita and Bhaskar equal amounts of cheese.

(ii) Any Pareto-efficient allocation gives Amrita equal amounts of cheese and beer. TRUE.

(iii) The unique competitive equilibrium is where the relative price of cheese and beer is 1, and each of Amrita and Bhaskar consume 5 units of cheese and 5 units of beer.

(iv) The unique competitive equilibrium is where the relative price of cheese and beer is 1, and each of Amrita and Bhaskar consume 5 units of cheese and 4 units of beer.

8. Consider the following statements about the Walras' Law.

(i) Walras' law says that the aggregate excess demand for each good in the economy is zero at any prices.

(ii) Walras' law says that if there are N goods, and $N-2$ markets clear at some prices, then the Nth market clears at those prices.

(iii) Walras' law says that the aggregate excess demand for each good in the economy is zero at the Walrasian equilibrium prices.

(iv) Walras' law says that the value of aggregate excess demand in the economy is zero at the Walrasian equilibrium prices. TRUE.

9. Suppose that the set of alternatives X is a finite set. For every individual i with preferences $R(i)$, let i's score of alternative x be $B_i(x) = \#\{y : xP(i)y\}$. The Borda social choice rule R is such xRy if and only if $B_1(x) + ... + B_N(x) \geq B_1(y) + ... + B_N(y)$.

(i) This rule does not satisfy the Pareto axiom.

(ii) This rule is manipulable. TRUE.

(iii) This rule does not satisfy the unrestricted domain axiom.

(iv) This rule is dictatorial.

10. Random serial dictatorship (RSD), also called: random priority (RP), is a procedure for dividing indivisible items fairly among people. Suppose n partners have to divide n (or fewer) different items among them. Since the items are indivisible, some partners will necessarily get the less-preferred items (or no items at all). RSD attempts to insert fairness into this situation in the following way. Draw a random permutation of the agents from the uniform distribution. Then, let them successively choose an object in that order (so the first agent in the ordering gets first pick and so on).

(i) RSD satisfies anonimity and is not manipulable. TRUE.

(ii) RSD is manipulable.

(iii) RSD satisfies anonimity, but is manipulable.

(iv) RSD does not satisfy anonimity.