Midterm Test — Group I

Full Name: …… c

Student Number: …… Class: ……

1. Mark your answers with an 'O' in the table below. You get 0.9 marks for each right answer, and a 0.9/3 (0.3) deduction for any wrong answer.
2. You cannot look up books or notes of any kind. Invigilators will not help you with the test.
3. Switch off and put away any mobile phones, computers, and any other data storage device.
4. This test paper must be returned to the invigilator even if you decide to quit.

ANSWER TABLE

	1	2	3	4	5	6	7	8	9
a	a	a	a	a	a	a	a	a	a
b	b	b	b	b	b	b	b	b	b
c	c	c	c	c	c	c	c	c	c
d	d	d	d	d	d	d	d	d	d

1. Ana is indifferent between bundles (10, 50), (16, 46), and (20, 40). This means her preferences are:
   a) Not convex.
   b) Not monotonic.
   c) Not transitive.
   d) None of the other answers are correct.

2. Which of the following do NOT represent the same preferences as $u(x, y) = xy$?
   a) $w(x, y) = x^{1/3}y^{1/3} - 30$.
   b) $v(x, y) = \ln(x) + \ln(y)$.
   c) $w(x, y) = 30 + x^3y^3$.
   d) $z(x, y) = \ln(x + y)$.

3. Ana consumes cheese (c) and wine (w) only and has strictly convex preferences. If she buys c^* and w^* she spends all her income and has marginal rate of substitution (quantity of wine per unit of cheese) -0.5. Prices are $p_c = 6$ and $p_w = 3$. Is (c^*, w^*) her optimal bundle?
   a) No, she will prefer more cheese and less wine.
   b) No, she will prefer more wine and less cheese.
   c) Yes, it is.
   d) The information is insufficient to answer.

4. The Engel curve of a normal good is:
   a) Upward sloping.
   b) Downward sloping.
   c) Horizontal.
   d) Vertical.

5. When Ana buys bundle A, bundle B costs less than bundle A; when she buys bundle B, bundle A costs less than bundle B. This means:
   a) A is revealed preferred to B; B is not revealed preferred to A.
   b) B is revealed preferred to A; A is not revealed preferred to B.
   c) None of the bundles is revealed preferred to the other.
   d) Her choices violate the weak axiom of revealed preference.

6. Ana consumes in periods 1 and 2, and she can lend or borrow at interest rate r. There is no inflation. Her budget line can be represented by:
   a) $c_1 + (1 + r)c_2 = m_1 + (1 + r)m_2$.
   b) $c_1 + (1 - r)c_2 = m_1 + (1 - r)m_2$.
   c) $(1 + r)c_1 + c_2 = (1 + r)m_1 + m_2$.
   d) $(1 - r)c_1 + c_2 = (1 - r)m_1 + m_2$.

7. Ana has strictly convex preferences. The price of good x increases, and Ana's income increases so that her new budget line includes her old optimal bundle. Then there will be:
   a) No substitution effect.
   b) No income effect.
   c) Neither income effect nor substitution effect.
   d) None of the other answers are correct.

8. Ana has strictly convex preferences. The price of good x increases. If she gets an income rise of €200 she will be able to buy a bundle on her old indifference curve (but not above it). Then €200 is:
   a) The income effect.
   b) The substitution effect.
   c) The compensating variation.
   d) The equivalent variation.

9. Revenue (or consumers' expenditure) increases when the price increases, if and only if the price-elasticity of demand in absolute value $|\varepsilon|$ is:
   a) $|\varepsilon| > 1$.
   b) $|\varepsilon| \geq 1$.
   c) $|\varepsilon| \leq 1$.
   d) $|\varepsilon| < 1$.

Midterm Test — Group II

1. You cannot look up books or notes of any kind. Invigilators will not help you with the test.
2. Switch off and put away any graphical calculators, computers, mobile phones, or any other data storage device.

All questions are independent of each other.

a) [1.9 marks] Take the preferences described by the utility function $u(x, y) = x^{1.5} + y^{1.5}$. Are they monotonic? Are they strictly convex? Explain.

b) [3.5 marks] Ana's marginal rate of substitution (quantity of good y per unit of x) is $MRS = -2y/x$. She has income $m = 90$ and faces prices $p_x = 6$ and $p_y = 4$. Find her optimal bundle. Explain your reasoning.

c) [3.5 marks] Ana's demand function for good x is $x(p_x, m) = 0.1m - 2p_x$ for the relevant prices and income ranges. Her income is $m = 200$, and the price of good x is $p_x = 3$. Then the price of good x rises to $p_x' = 5$. Find the change in the quantity demanded of good x, and the substitution and income effects. Explain your reasoning.

d) [3 marks] Ana consumes in periods 1 and 2 and can lend or borrow at interest r. She has strictly convex preferences. At and interest rate of 5% she plans to be a net borrower. But then it turns out that the interest rate is 7% after all. Is it possible that she will choose to remain a net borrower? In that case can you tell whether she will be better off or worse off? Explain. Is it possible that she will decide to switch to net lender? In that case can you tell whether she will be better off or worse off? Explain.

Answers to Group I

1	2	3	4	5	6	7	8	9
a	d	b	a	d	c	b	c	d

Answers Topics to Group II

a) Monotonic, but concave.

b) Optimal bundle: (10, 7.5).

c) Substitution effect -1.2, income effect -2.8.

d) Ana will, by assumption maximise her utility. This may be achieved by her remaining a net borrower, in which case she we can tell she will be worse off. It is also possible that she will prefer to switch to lending, in which case it is possible that she will be better off or worse off (depends on her preferences and the exact changes in her budget line. Full marks required that all this be explained (three graphs illustrating the three possibilities would be a good way of doing so). Just stating (the way I have done here) would count for very little.