Harvard Undergraduate Economics Association

Harvard Pre-Collegiate Economics Challenge
March 31, 2012
Individual Round

Instructions: Please put your name, school, and answers (in capital letters) on the answer sheet, which is on the reverse of this page. Illegible answers will be marked wrong. Only the answers on the answer sheet will be scored. You have 60 minutes to complete this round. There are 60 multiple choice questions. You will not be penalized for incorrect answers; your score will be the numbers of questions answered correctly. When time is called, put your pencil down.

You may mark, annotate, disassemble, or otherwise use the test in any way. All questions assume *ceteris paribus* (all other things being equal or held constant).

Answer Sheet

Name:

School:

For each question, clearly write the **CAPITALIZED** letter of your answer.

1	**21**	**41**
2	**22**	**42**
3	**23**	**43**
4	**24**	**44**
5	**25**	**45**
6	**26**	**46**
7	**27**	**47**
8	**28**	**48**
9	**29**	**49**
10	**30**	**50**
11	**31**	**51**
12	**32**	**52**
13	**33**	**53**
14	**34**	**54**
15	**35**	**55**
16	**36**	**56**
17	**37**	**57**
18	**38**	**58**
19	**39**	**59**
20	**40**	**60**

1. One of the key assumptions in basic economic models is that the decisions of consumers and producers are ____________ .

    a. Rational
    b. Irrational
    c. Based on a normal distribution
    d. Based on a random distribution

2. Which of the following is a normative statement?

    a. An increase in income taxes causes deadweight loss
    b. The government should lower the income tax
    c. Both a and b
    d. Neither a nor b

The following is used for questions 3 and 4: two countries, Harvardia and New Havenland, are capable of producing two and only two goods, either food or clothing, according to the following production schedule.

	Food	**Clothing**
Harvardia	10 Units per Hour	6 Units per Hour
New Havenland	1 Unit per Hour	4 Units per Hour

3. In which good does Harvardia have an **absolute** advantage?

    a. Food
    b. Clothing
    c. Both a and b
    d. Neither a nor b

4. In which good does New Havenland have a **comparative** advantage?

    a. Food
    b. Clothing
    c. Both a and b
    d. Neither a nor b

5. A good for which, all other things equal, an increase in income leads to an increase in demand is called a(n) ____________ ____________.

    a. Perfect complement
    b. Perfect substitute
    c. Inferior good
    d. Normal good

6. An increase in the price of a related good likely has which of the following effects on the demand curve of the original good?

   a. A shift of the demand curve
   b. Movement along the demand curve
   c. A change in the elasticity of the demand curve
   d. No effect on the demand curve

7. If a 100% increase in price leads to a 10% decrease in the quantity demanded of a certain good, then the price elasticity is ____________.

   a. 1
   b. 10
   c. 1/10
   d. Not enough information given

8. A supply curve that exhibits perfectly elastic supply has a slope of ____________.

   a. 0
   b. Less than 1 but not 0
   c. 1
   d. ∞

9. Which of the following policies will lead to a shortage of goods? (Use a simple supply and demand model and assume a unit elastic supply curve and a unit elastic demand curve.)

   a. A rightward shift in the demand curve
   b. A leftward shift in the supply curve
   c. A binding price floor
   d. A binding price ceiling

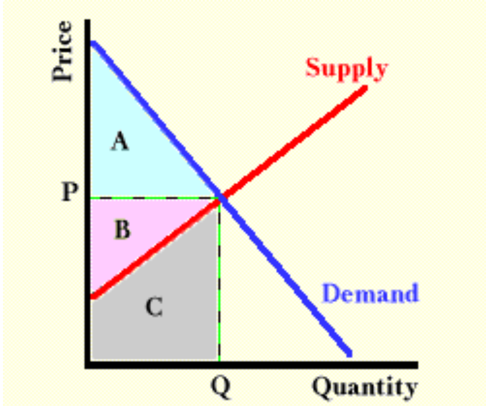
10. In which case will the buyer share **more** of the tax burden than the seller?

   a. The buyer demand curve is less elastic than seller demand
   b. The buyer demand curve is more elastic than seller demand
   c. The tax is levied on the buyers
   d. The tax is levied on the sellers

11. If US real interest rates rise, what will happen to Net Foreign Investment (also known as Net Capital Outflow) and the US exchange rate?

   a. NFI rises, exchange rate rises
   b. NFI rises, exchange rate falls
   c. NFI falls, exchange rate rises
   d. NFI falls, exchange rate falls

The following is used for questions 11 and 12: Consider the following market for widgets and the shaded quantities.



Producers' & consumers' surpluses

12. Which of the following shaded areas represents **producers'** surplus?

    a. A
    b. B
    c. A + B
    d. B + C

13. Which of the following shaded areas represents **consumers'** surplus?

    a. A
    b. B
    c. A + B
    d. B + C

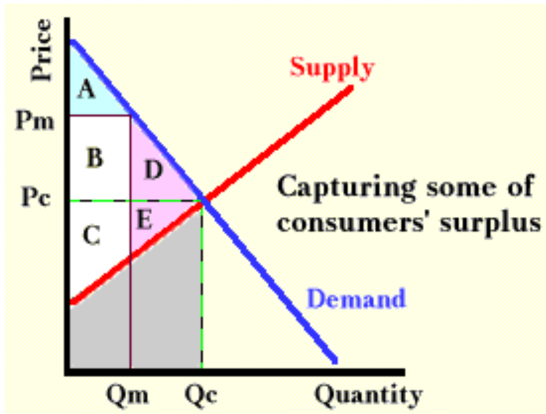
14. The real interest rate adjusts to balance

    a. the money supply and inflation
    b. the supply of loanable funds and the demand for loanable funds
    c. GDP and income
    d. the supply of imports and demand for exports

15. Which will have the greatest value in 2060?

    a. $100 invested at 1% annual interest since 2000
    b. $100 invested at 4% annual interest since 2045
    c. $195 in 2060
    d. $100 invested at 3% annual interest since 2034

The following is used for questions 16 and 17: Consider again the following market for widgets before and after a tax is levied. Before the tax is levied, the equilibrium of the market is Qc and Pc. After the tax is levied, the equilibrium quantity moves to Qm.



16. Which of the following shaded areas represents total surplus **after** the tax is levied.

a. A + B + C + D + E
b. A + B + C
c. B + C
d. None of the above

17. Which of the following represents the total deadweight loss **after** the tax is levied.

a. D + E
b. D
c. E
d. None of the above

18. When the world price is above the equilibrium price in the market of a single good, the domestic economy _____________ . (Use a simple supply and demand model and assume a unit elastic supply curve and a unit elastic demand curve.)

a. Supplies a higher quantity of that good than at the autarky equilibrium quantity
b. Demands a lower quantity of that good that at the autarky equilibrium quantity
c. Both a and b
d. Neither a nor b

19. A corrective tax that is designed to induce private decision makers to take account of the social costs that arise from a negative externality is also called a ____________.

a. Pareto Tax
b. Cobb-Douglas Tax
c. Leontief Tax
d. Pigovian Tax

20. Which of the following is a proposition that if private parties can bargain without cost over the allocation of resources, they can solve the problem of externalities on their own?

    a. Stolper-Samuelson Theorem
    b. Gaussian-Markov Theorem
    c. Coase Theorem
    d. Envelope Theorem

21. A good that is **both** rival in consumption and excludable is a ____________.

    a. Natural monopoly
    b. Public good
    c. Private good
    d. Common resource

22. A good that is **not** rival in consumption but **is** excludable is a ____________.

    a. Natural monopoly
    b. Public good
    c. Private good
    d. Common resource

23. An excess of government spending and expenditures over receipts in a given year is commonly referred to as ____________.

    a. Dead Weight Loss
    b. Government Deficit
    c. Government Debt
    d. None of the above

24. Which industry exhibits the greatest degree of *market concentration* in the U.S.?

    a. Oil and gas extraction
    b. Aircraft parts
    c. Clothing retailing
    d. Tobacco products

25. Net National Product (NNP) is computed by subtracting which of the following from Gross National Product (GNP)?

    a. Net international income transfers
    b. Losses from depreciation
    c. Government interest payments
    d. Change in private savings

26. What was the smallest annual income needed to be in the U.S. top-earning 1% in 2010?

a. $200,000
b. $400,000
c. $800,000
d. $1,600,000

27. What share of gross U.S. income was earned by the top 1% in 2010?

a. 20%
b. 30%
c. 40%
d. 50%

28. Looking at a firm's cost-quantity plot, which feature would identify a *natural monopoly* with certainty?

a. Average Total Cost slopes downward over the relevant quantity region
b. Marginal Revenue slopes downward more steeply than the Demand curve
c. Marginal Cost greater than Average Total Cost over the relevant quantity region
d. Very inelastic Long-Run Demand

29. The price of which of these commodities is most strongly *procyclical*?

a. Gold
b. Corn
c. Copper
d. Pork bellies

30. If a good is Giffen for some consumers, what must be true of the consumers and the good?

a. Wealthy consumers; normal good with income elasticity between 0 and 1
b. Any income level; strong luxury good (income elasticity much greater than 1)
c. Poor consumers; luxury good that constitutes a small fraction of spending
d. Poor consumers; inferior good that constitutes a large fraction of spending

31. In a closed economy, which identity must be true?

a. savings = consumption + government spending
b. savings = consumption
c. savings = GDP – consumption
d. savings = GDP – consumption – government spending

32. In the Long Run, how is inflation related to unemployment?

a. As inflation rises, unemployment falls
b. As inflation rises, unemployment rises
c. inflation is not related to unemployment
d. any inflation leads to unemployment

33. Which item would not be included in the calculation of U.S. GDP?

a. A new bridge in Alaska
b. Cattle sold by a Texas rancher to McDonald's Corp.
c. Bulldozers built at a Samsung-owned facility in Mississippi
d. Harvard tuition

34. The CPI and PPI are two closely related and commonly used price indices. Which statement is the most accurate?

a. Changes in CPI tend to occur after changes in PPI
b. There is historically a weak correlation between CPI and PPI
c. Changes in PPI tend to occur after changes in CPI
d. The intertemporal relationship between CPI and PPI is not well-understood

35. The little-known island nation of Zymbōbweye suffers from persistently high but stable and uniform inflation. Four years ago, a haircut cost Z$10; today, it costs Z$1,000. What is the approximate annual rate of inflation?

a. 100%
b. 200%
c. 300%
d. 1,000%

36. *Asymmetric information* between buyers and sellers is most likely a problem in which type of market?

a. Lemons (the citrus fruit)
b. Insurance
c. U.S. Treasury notes
d. Commodities

37. In a perfectly competitive market where firms have identical cost structures, a firm's supply is equal to…

a. Marginal cost
b. Average total cost
c. Average variable cost
d. Demand

38. Andrew optimizes the amount of time that he spends working to maximize his utility, which is affected by his income and his quantity of leisure time. How will the amount of time he spends working change in response to a large wage increase if income and leisure are strong complements; If they are strong substitutes?

a. Increase; Decrease
b. Increase; Increase
c. Decrease; Increase
d. Decrease; Decrease

39. If the nominal interest rate is constant but inflation increases, how would net borrowing change?

a. Increase
b. Decrease
c. Uncertain – need more information
d. No change

Consider a game with the following payoff matrix:

	Player 2: Have fun	Player 2: Make a pun
Player 1: Eat meat	Player 1: 4 Player 2: 4	Player 1: 1 Player 2: 3
Player 1: Eat beet	Player 1: 3 Player 2: 1	Player 1: 2 Player 2: 2

40. How many *pure strategy Nash equilibria* (PSNE) does this game have?

a. Zero
b. One
c. Two
d. Three

41. If depreciation is \$140, investment is \$90, imports are \$50, consumption is \$30, government spending is \$60, foreign direct investment is \$70, and exports are \$70, what is GDP?

a. \$200
b. \$270
c. \$340
d. \$350

42. If the Keynesian multiplier is 0.75, what is the marginal propensity to consume?

a. 4/3
b. 1/3
c. – 1/3
d. – 3/4

Now consider this other game:

	Player 2: Fly kite	Player 2: Be trite
Player 1: Be glad	Player 1: 0 Player 2: 0	Player 1: -1 Player 2: 1
Player 1: Be mad	Player 1: 1 Player 2: -1	Player 1: -10 Player 2: -10

43. Which statement about the game is true?

    a. Both players have dominant strategies
    b. Only Player 2 has a dominant strategy
    c. Neither player has a dominant strategy
    d. Only Player 1 has a dominant strategy

44. Why is it that the sustained positive profits recorded by most firms on their income statements don't disprove the theory of "zero long-run profits in a competitive market."

    a. Real markets are never very competitive
    b. Economic theory doesn't account for small market fluctuations
    c. Accountants make mistakes which on average cancel each other out
    d. Accounting statements don't reflect opportunity costs

The next two questions refer to an Electricity firm which uses only a single input, Coal, at $100/ton. The firm produces *E* units of electricity given *C* tons of Coal according to the production function:

E*(*C*)=50 * *C

The firm sells its Electricity at a constant (regulated) market price of $2.50/unit.

45. What is the Marginal Revenue Product of one ton of Coal?

    a. $50
    b. $5
    c. $52.5
    d. $125

46. Now the price of Coal changes according to the quantity purchased, so that the price P of one additional ton of coal is given by: **P(C) = 100 + 5 * C**
    So four tons of coal would cost $430: $100 (for the first ton) + $105 + $110 + $115.
    Assuming that the firm is maximizing profits, how many tons of coal will it consume?

    a. 5
    b. 10
    c. 25
    d. 50

The demand elasticity of Oil with respect to price is 3; its supply elasticity with respect to price is 1; and its supply elasticity with respect to the cost of Steel Casing (an intermediate good used only in the production of Oil) is 0.50.

47. If the price of Steel Casing increases by 10%, by what factor will the price of Oil change?

a. 1.25%
b. 1.75%
c. 2.25%
d. 2.75%

48. On average, over the past century, US real GDP has grown at:

a. 1% per year
b. 2% per year
c. 3% per year
d. 5% per year

49. Producing widgets has constant returns to scale, and widgets are produced using only labor and capital. Each unit of labor costs $1 and each unit of capital costs $2. If producing 10 widgets requires three units of labor and five units of capital, how much does it cost to produce 20 widgets?

a. $13
b. $26
c. $16
d. $23

50. The factor identified by the largest fraction of economists as being responsible for recent rises in inequality in the US is:

a. The US tax code and tax loopholes
b. outsourcing
c. endogenous growth
d. skill-biased technological change

51. If the European Central Bank lowers interest rates, what are the immediate effects on US exports and US GDP?

a. US exports rise, US GDP rises
b. US exports rise, US GDP falls
c. US exports fall, US GDP rises
d. US exports fall, US GDP falls

52. The US most recently signed bilateral free trade agreements with which three countries?

a. South Korea, Panama, and Colombia
b. South Korea, Mexico, and Singapore
c. South Korea, Mexico, and Canada
d. Australia, Mexico, and Canada

53. The Malthusian Trap refers to

a. unanchored inflationary expectations leading to a cycle of hyperinflation.
b. debt so large that interest payments require additional debt, leading to eventual default
c. ever-larger outflows in foreign direct investment in a country, eventually destabilizing the country's currency
d. increased prosperity leading to increased population, keeping per capita income constant

54. In 2010, exports were about what percentage of US GDP?

a. 1%
b. 10%
c. 25%
d. 50%

55. What determines the long-run aggregate supply curve?

a. the available factors of production, monetary policy, and technology
b. only technology
c. the available factors of production and technology
d. the available factors of production and monetary policy

56. A decrease in the price level causes (in the short run)

a. the aggregate demand curve to shift right, and the quantity of goods and services demanded to fall
b. the aggregate demand curve to shift left, and the quantity of goods and services demanded to rise
c. the aggregate demand curve to stay the same, and the quantity of goods and services demanded to rise
d. the aggregate demand curve to stay the same, and the quantity of goods and services demanded to fall

57. Which of the following would cause the aggregate demand curve to shift right?

a. a tax cut
b. a fall in the price level
c. a stock-market crash
d. none of the above

58. According to the OECD, the US Gini coefficient after taxes and transfers is about:

a. 0.4
b. 0.3
c. 0.2
d. 0.1

59. An increase in the money supply leads to

a. an increase in the quantity of money demanded and a rise in real interest rates
b. an increase in the quantity of money demanded and a fall in real interest rates
c. a decrease in the quantity of money demanded and a rise in real interest rates
d. a decrease in the quantity of money demanded and a fall in real interest rates

60. US monetary policy is most frequently set by changing

a. the federal funds rate
b. the LIBOR
c. reserve requirements
d. the velocity of money