Name:
Section No.:
SSN:
GSI:

Economics 102
Introduction to Macroeconomics
Prof. Alan Deardorff

Midterm Exam 1 - Answers

Form 1

February 9, 1998

Part 1: Multiple Choice (60 points, 4 each)

1. **e**
2. **c**
3. **d**
4. **d**
5. **a**
6. **c**
7. **c**
8. **d**
9. **e**
10. **c**
11. **b**
12. **e**
13. **b**
14. **b**
15. **b**

Part II: Short Answer (40 points)

1. (10 points) For each of the following transactions list the category or categories of GDP (C, I, G, NX) in which it would be recorded (if any).

   a. GSI buys stock in IBM (a US firm) on the New York Stock Exchange. None

   b. GSI buys an Italian sports car (made in Italy). +C, –NX

   c. Ann Arbor spends $1 million to expand its public libraries. +G

   d. Ford spends $1 million on new computer systems (produced by IBM). +I

   e. An unemployed worker receives $400/month in unemployment benefits from the government. None

2. (12 points) The Bureau of Labor Statistics (BLS) for Econland uses the following basket to calculate its CPI:

Good	Basket	Price in Base Year (1967)
Movies	2	$0.50
Pizza	2	$3.00
Soda	5	$0.10
Outfits	1	$10.00

The prices for these goods were the following in 1983 and 1997:

Good	Price 1983	Price 1997
Movies	$2.00	$3.00
Pizza	$9.00	$15.00
Soda	$0.80	$1.20
Outfits	$70.00	$150

The following questions, based on these data for Econland, require some calculation, and you are welcome to use your calculator. However, if you want to have a chance for partial credit for wrong answers, be sure to show your work in the spaces provided.

a. The CPI for 1983 was _548.6_____, while the CPI for 1997 was _1097.1___.
HINT: you should find that the price level doubled between 1983 and 1997.

$$Basket(1967) = 2(0.50) + 2(3.00) + 5(0.10) + 1(10.00) = 17.50$$

$$Basket(1983) = 2(2.00) + 2(9.00) + 5(0.80) + 1(70.00) = 96.00$$

$$Basket(1997) = 2(3.00) + 2(15.00) + 5(1.20) + 1(150.00) = 192.00$$

$$CPI(1983) = \frac{Basket(1983)}{Basket(1967)}100 = \frac{96.00}{17.50}100 = \boxed{548.57}$$

$$CPI(1997) = \frac{Basket(1997)}{Basket(1967)}100 = \frac{192.00}{17.50}100 = \boxed{1097.14}$$

Now suppose that a Big Mac sandwich at McDonald's cost $.72 in 1983. Today (1997) it costs $1.94.

b. What would the price of the Big Mac be today if it had risen since 1983 at exactly the same rate as the CPI?

Since the CPI doubled, the price of the Big Mac would also have doubled, to $\boxed{\$1.44}$

c. By what percentage has the **real** price of the Big Mac increased or decreased since 1983?

Compare its actual price (1.94) to what it would have been if its real price had not changed, (1.44): $\frac{1.94 - 1.44}{1.44} = \boxed{34.7\%}$

d. What would the price of the Big Mac have been in 1967 if it rose in price from then to 1983 at the same rate as the CPI?

Since the CPI was 100 in the base year of 1967, it rose from 100 to 548.6 in 1983. For the Big Mac to rise by the same amount, it would have to start at some X where $\frac{0.72}{X} = \frac{548.6}{100}$. Thus $X = \frac{100}{548.6}0.72 = 0.131$. So the Big Mac would have cost $\boxed{\$0.13}$ in 1967

e. What was the approximate average annual rate of inflation (of the CPI) from 1983 to 1997?

The CPI doubled from 1983 to 1997. We know from the Rule of 70 that if something grows at a rate of x%, then it will take approximately 70/x years to double. The price level took 14 years to double. Therefore 70/x=14, or x=70/14=5. Thus the rate of inflation must have been about 5%. ☐

3. a. (4 points) The following is a list of some of the macroeconomic variables that we have met in the course so far. Which of these has the property that, if it increases, output per person in the economy will be larger? Identify your answers by circling each of the variables for which this is true.

L	The labor force
(K)	The stock of physical capital
Y	Gross Domestic Product
(H)	The stock of human capital
C	Consumption
T	Net taxes collected by the government
(A)	The level of technological knowledge
(N)	The quantity of natural resources

Arguments can also be made for each of the other answers as well, so we won't count them wrong. However, you must have at least these four to get full credit.

b. (12 points) For each of the following public policies

i. indicate whether it is conducive to per capita growth, and,
ii. if it is conducive to per capita growth, use the economic variables above to list the determinant of productivity in which it is most likely to stimulate an increase. The first one is done for you.

Policy	Conducive to Growth?	Stimulated Determinant of Productivity
Investment tax credit	(yes) no	K
Enforcement of patent rights for new inventions	(yes) no	A
Tax credit for on-the-job training	(yes) no	H
Tariff on imports of shirts	yes (no)	
Subsidy for oil exploration	(yes) no	N
Welfare payments to poor mothers	yes (no)	
Tax exemption for interest on savings	(yes) no	K
Increased government purchases of services	yes (no)	
Tax on construction	yes (no)	