

## ECO 103, Winter 2021, Exam #1

**Name:**

**Instructions:** Answer all parts of all questions. You have 90 minutes to complete the exam. This exam is open note, but not open book. You are welcome to use any written materials that you might find helpful excluding textbooks. Calculators, but no other electronic devices, are allowed. Here are some things to keep in mind.

- i. Explain all of your answers. Unsupported answers will receive little or no credit.
- ii. On true/false questions, I only care about the quality of your explanation. Simply writing “true” or “false” will yield no credit.
- iii. Avoid extensive irrelevance, this will also cost you points. Your goal should be to provide clear and concise explanations.
- iv. It is more important to demonstrate that you understand the correct method. Minor math errors will result in only minor deductions.
- v. All parts of all questions are worth the same amount.
- vi. Many questions ask you about a deviation from something that we did in class. If you simply copy down what we did in class, I will award no credit.

1. Suppose that a government is considering raising income taxes in order to finance a new highway. What are the trade-offs involved with this choice?

2. True or False? Rationality implies that all households and firms are fully informed about the market, including the cost of making goods and the utility that goods provide.

3. Many argue that a person's education brings benefits to the rest of society. These may include better civic engagement or lower crime. Is this an example of an externality or a public good? Explain.

4. Suppose that a firm's production is shown to cause production spillovers. Show how a policy might improve efficiency.

For questions #5-7, refer to the following table:

Table 1: Marginal Utility and Marginal Cost for Hot Tubs

Units	Marginal Utility	Marginal Cost
1	1000	2
2	900	22
3	600	111
4	400	132
5	200	200
6	100	222
7	100	4000

5. Why is the downward curve downward sloping in this example?

6. What are the equilibrium price and quantity in this example?

7. Suppose that hot tubs are shown to have previously unknown health benefits. How will this affect the equilibrium price and quantity.

8. True or False? High inflation always reduces social welfare.

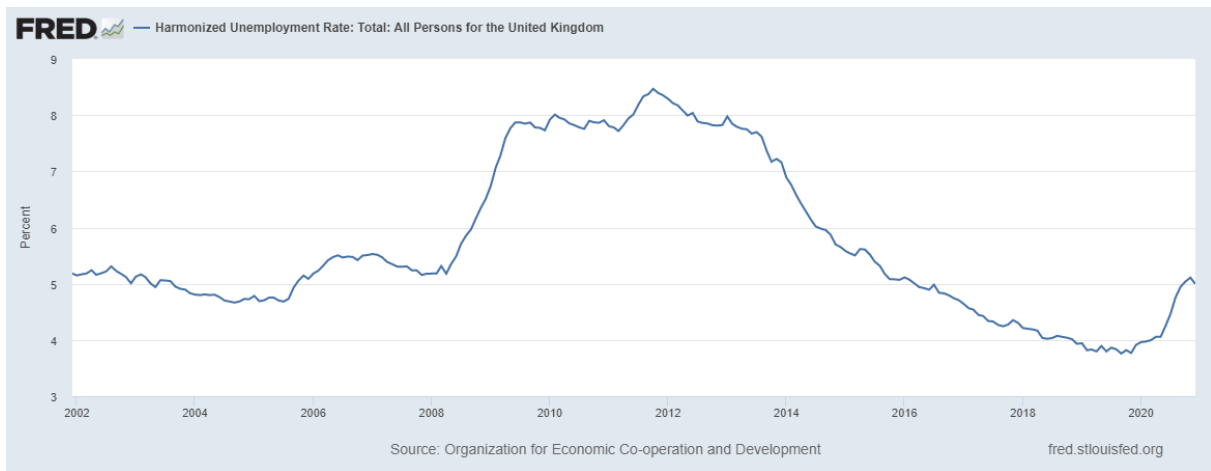
9. How has the recession related to covid -19 impacted economic inequality.

10. Our basic model of supply and demand assumes that households are price takers. Do you think that this is a valid assumption?

11. What subfield of macroeconomics seeks to understand why GDP per capita in Switzerland is more than 100 times higher than that in Madagascar?

The following graph shows the United Kingdom's unemployment rate:

Figure 1: Unemployment Rate: United Kingdom



12. On January 1, 2021, the U.K. officially left the European Union (known as “Brexit”). This act means that the country will no longer participate in a common set of regulatory, trade, and labor policies with the remaining members. Is it valid to claim that Brexit led to a rise in unemployment?



For Questions #13-16 use the following data:

Table 2: Economic Activity in the U.S.

	Q(2020)	P(2020)	Q(2021)	P(2021)
Imported Bacon	2	4	6	3
New Housing	2	10	3	12
Haircuts	3	1	2	1
Previously Built Housing	10	3	12	5
Education	5	8	1	8

13. Calculate nominal GDP for 2021. In doing so, explain why any items from the Table are *not* counted.

14. Calculate real GDP growth in 2021 using 2020 as the base year.

15. Construct a basket of goods and services which includes only the items included in consumption. Use this index to calculate inflation in 2021.

Bonus: Using the data from the table, explain how GDP's exclusion of non-market activity in 2021 could cause 2021 GDP growth to be artificially low. In answering this question, consider how the covid-19 pandemic has affected some of the items from the table.