E-322
Intermediate Macroeconomics
Summer_08

Muhammad Rahman
Indiana University
Bloomington

# MIDTERM_02

## Part_01: Multiple Choice Questions

**Directions:** There are 12 multiple choice questions in this section. Each question is worth 2 points. For each question, find the best possible answer.

1. We assume that the representative consumer's preferences exhibit the properties that
   (a) they evolve over time and that more is always preferred to less.
   (b) more is preferred to less and that the consumer prefers diversity.
   (c) the consumer likes diversity and that more is sometimes preferred to less.
   (d) more is sometimes preferred to less and that consumption and leisure are both normal goods.
2. A good is inferior for a consumer if
   (a) it is never included in his or her consumption bundle.
   (b) its consumption rises when income rises.
   (c) its consumption falls when income rises.
   (d) some minimal level of the good must be consumed to assure the consumer's survival.
3. A lump-sum tax is a tax that
   (a) can be avoided by strategic behavior.
   (b) does not depend on the actions of the economic agent being taxed.
   (c) does not depend on the actions of the government.
   (d) distorts economic decisions.
4. When consumption and leisure are both normal goods, an increase in real dividend income minus taxation, the rational consumer
   (a) increases consumption and increases leisure.
   (b) increases consumption and reduces leisure.
   (c) reduces consumption and increases leisure.
   (d) reduces consumption and reduces leisure.
5. In the United States during the period 1980 until 2003, there was
   (a) a trend upward in both the real wage and average hours worked.
   (b) an upward trend in real wages, and a downward trend in average hours worked.
   (c) a downward trend in real wages, and an upward trend in average hours worked.
   (d) a downward in both real wages and average hours worked.
6. An increase in total factor productivity
   (a) changes neither the slope nor the position of the production function.
   (b) changes the slope but not the position of the production function.
   (c) changes the position but not the slope of the production function.
   (d) changes both the slope and the position of the production function.

7. A competitive equilibrium is a state of affairs in which
   (a) markets clear, and output is maximized.
   (b) output is maximized, and all agents are equally well-off.
   (c) all agents are equally well-off and agents are price-takers.
   (d) agents are price-takers, and markets clear.
8. A competitive equilibrium is Pareto optimal if there is no way to rearrange or to reallocate goods so that
   (a) anyone can be made better off.
   (b) no one can be made worse off.
   (c) someone can be made better off without making someone else worse off.
   (d) someone can be made better off without making everyone else worse off.
9. The second fundamental theorem of welfare economics states that
   (a) under certain conditions, a competitive equilibrium is Pareto optimal.
   (b) a competitive equilibrium is always Pareto optimal.
   (c) under certain conditions, a Pareto optimum is a competitive equilibrium.
   (d) a Pareto optimum is always a competitive equilibrium.
10. The presence of a distorting tax on wage income can result in
   (a) $MP_N < MRT_{l,C}$.
   (b) $MRT_{l,C} < MRS_{l,C}$.
   (c) $MP_N < w$.
   (d) $MRS_{l,C} < MP_N$.
11. In response to an increase in total factor productivity
   (a) both the substitution effect and the income effect suggest that hours worked should increase.
   (b) the substitution effect suggests that hours worked should increase, while the income effect suggests that hours worked should decrease.
   (c) the substitution effect suggests that hours worked should decrease, while the income effect suggests that hours worked should increase.
   (d) both the substitution effect and the income effect suggest that hours worked should decrease.
12. An increase in government spending
   (a) increases consumption, increases hours worked, and increases the real wage.
   (b) reduces consumption, increases hours worked, and increases the real wage.
   (c) reduces consumption, increases hours worked, and reduces the real wage.
   (d) reduces consumption, reduces hours worked, and reduces the real wage.

## Part_02: Long questions

**Directions: Each of the questions is worth 13 points.. Please allocate your time wisely**

**Question_01:** We are thinking about a representative agent macroeconomic model where there is one producer and one consumer. The model is a closed economy and investment (I) is zero. But government spending (G) is not. The specification of consumer is as follows:
The consumer has two source of income, wage from work and dividend income. The consumer's utility function looks like:

$$U = U(C, L)$$

Where C is the composite consumption goods and L is leisure. We assume both C and L are normal goods. We assume that his utility function satisfies all the usual properties of consumer preference. The consumer's time constraint looks like:

$$L + N^S = h$$

The consumer's budget constraint looks like:

$$C = wN^S + \pi - T$$

Where w is the real wage, $\pi$ is the dividend income and T is the lump sump tax. We assume that $\pi \succ T$
The specification of the producer is as follows:
The representative firm has a production function which looks like:

$$Y = zF(K, N^d)$$

Where Y is the output, z is the TFP, F is a concave function, K is capital and $N^d$ is the labor demand by the firm. We assume that production is subject to CRS. Assume that K is fixed.
Now answer the following questions:

a) Now assume that both real wage (w) and dividend income has increased with T being constant. Explain how the consumer goes from the old equilibrium to the new equilibrium. Provide your explanation in terms of IE and SE. Then show the transition from old to the new equilibrium by using a graph.(Clue: when you are analyzing the behavior of the consumer, you do not have to worry about how the producers are behaving in this economy). **( 7 points)**
b) Define a competitive equilibrium for this economy. Write down the mathematical condition that has to be satisfied for CE in this economy. **. (4+2=6 Points).**

**Question_02: T**his question is about some policy experiment in a competitive equilibrium setup. The model is the same as the previous one. You are asked to explain how the following policy experiments will change the Competitive equilibrium allocation. Therefore, it is important to think about both the consumer and the producer while trying to analyze the effect of the policy experiments. The policy experiments are as follows:

a) There is a decline in the government spending (G). For simplicity, assume $\Delta G \succ \Delta Y$ **.** Explain how this affects the CE of the economy. Compare your CE allocation between the old and the new equilibrium**.(6 Points)**

b) There is a decline if the total factor Productivity (z). Explain how this affects the CE of the economy. Compare your CE allocation between the old and the new equilibrium. Be sure to decompose the transition from the old to the new equilibrium in terms of SE and IE. **( 7 points)**