Section I, Multiple Choice (34 points): Circle the letter in front of the best answer.

1. Externalities can be positive or negative, and can occur from production or consumption of a good or service. Cigarette smoking is an example of
   a. a negative production externality.
   b. a negative consumption externality.
   c. a positive production externality.
   d. a positive consumption externality.

2. Marketable pollution permits ("tradeable emission permits") provide incentives for
   a. both high-cost-cleanup firms and low-cost-cleanup firms to reduce emissions.
   b. high-cost-cleanup firms to reduce emissions, but not low-cost-cleanup firms.
   c. low-cost-cleanup firms to reduce emissions, but not high-cost-cleanup firms.
   d. neither low-cost-cleanup firms nor low-cost-cleanup firms to reduce emissions.

3. An example of an external cost of tobacco use is
   a. cigarette burns on furniture in a smoker’s house.
   b. the danger of fire from matches or lit cigarettes (especially smoking in bed).
   c. illness and death from secondhand smoke.
   d. increased premiums for life insurance for smokers.

4. If the city council began charging $2 per can of trash collected by garbage collectors, we would expect consumers to
   a. decrease the amount of garbage they generate.
   b. buy products with less packaging.
   c. recycle more recyclable materials and/or compost their organic trash.
   d. All of the above.

5. State support for post-secondary education (beyond high school)
   a. benefits mainly students from low-income families.
   b. benefits students from all income levels equally.
   c. benefits mainly students from middle- and upper-income families.
   d. has increased substantially in recent years.

6. The largest educational expense for an average student at a public university is
   a. tuition and fees.
   b. room and board
   c. books and supplies.
   d. foregone earnings.

7. Positive consumption externalities from a student’s higher education include
   a. the benefits associated with the better job offers for college graduates.
   b. the benefits to society apart from the income benefits that accrue to the student.
   c. Both (a) and (b)
   d. Neither (a) nor (b)

8. Compared to suburban schools, schools in the inner city typically have
   a. a lower tax base but a higher tax rate, resulting in less funding available for these schools.
   b. a higher tax base but a lower tax rate, resulting in less funding available for these schools.
   c. a higher tax base and some federal government support, resulting in more funding available for these schools.
   d. a lower tax base but substantial federal government support, resulting in more funding available for these schools.

9. If income in country A is more equally distributed than income in country B, then
   a. country A’s Lorenz curve will be to the left of country B’s Lorenz curve.
   b. the level of poverty will be greater in country B.
   c. Both (a) and (b)
   d. Neither (a) nor (b)
10. Which of the following is **NOT** true about welfare reform under the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRA)?
   a. It emphasizes work over welfare.
   b. It allows most welfare recipients to stay in the welfare system their entire lifetimes.
   c. It allows for states to design flexible programs to suit their particular needs.
   d. It tightened the eligibility requirements and reduced the benefits offered by other social assistance programs.

11. What was the reason given in class and in the text for why the actual number of people living in poverty in the United States may be much larger than the official statistics?
   a. Many people living in poverty do not wish to be counted in official census tallies.
   b. The official poverty statistics do not include the homeless.
   c. The official poverty statistics count the adults who live in poverty, but not the children.
   d. The official poverty statistics use a 1961 methodology that calculates the poverty line as three times the cost of food (adjusted for family size).

12. Education and employment discrimination against minority groups
   a. hurts society because trained minority workers would knock some of the present workers out of their jobs.
   b. hurts society because our national output is lower than it would be in the absence of discrimination.
   c. benefits society because the majority of people can consume more goods and services.
   d. benefits society because we do not have to spend scarce resources to educate or train

13. We might believe that wage discrimination is present if we see that
   a. a more productive worker is paid higher wages than a less productive worker.
   b. a male lawyer is being paid more than a female retail clerk.
   c. a minority worker is being paid a lower wage than a white worker in the same job, although they seem to be equally productive.
   d. a worker with a rare skill is earning higher wages than an unskilled worker.

**Section II, Direct Questions (36 points):** Answer each of the following questions on the next two pages. You will be graded on your six best responses.

A. Suppose the government wants to reduce strip mining, and imposes a tax on every ton of coal that is obtained by strip mining in the United States. What will be the outcome of this policy on (1) the price consumers pay for coal, (2) the net price the coal companies receive for their product, and (3) the quantity of coal transacted in the market?
B. Use the diagram to the right to show the positive consumption spillover and the government subsidy associated with K-12 education.

C. Imagine a 28-year-old single mother of two children, ages 5 and 2. She has a high school diploma ("C" average) and no college or technical training. Her only work experience is fast food and waitressing. Should she be given welfare or should she be required to work? Fill in the following box with six arguments, including at least two in each half of the box:

<table>
<thead>
<tr>
<th>Arguments in favor of her working and against her receiving welfare</th>
<th>Arguments against her working and in favor of her receiving welfare</th>
</tr>
</thead>
</table>

What do you think? Should she work or go on welfare?

D. Who are the poor? Identify the groups that are disproportionately poor in each of the following categories:

1. Age
2. Race/Ethnicity
3. Residence (urban, suburban, rural)
4. Household structure
5. Education
E. How do the official government statistics determine whether an individual (or a household) is living “in poverty”?

F. Not all wage differentials are the result of discrimination. For each of the following job attributes circle the item that would typically be associated with the higher wage.

1. Clean vs. Dirty
2. Dangerous vs. Safe
3. Boring vs. Fun
4. Flexible vs. Rigid (hours)

For each of the pairs of items above, what is the one common economic characteristic that explains the higher wage? Explain briefly.

G. Consider the markets for high school math teachers and high school gym teachers. Should math teachers and gym teachers be paid the same salary? Explain using economic reasoning.
Section III, Problems (30 points)

A. (12 points) For each of the numbered items below, a positive or negative production or consumption externality (spillover) exists. For each of these items, (a) state whether this item is a positive or negative externality, (b) denote which function shifts and (c) in which direction, and show whether (d) the socially desirable price that consumers would pay and (e) the socially desirable quantity transacted would be an Increase or Decrease from the private market outcomes.

1. Childhood vaccinations
   a. Is this a positive or negative externality? Positive    Negative
   b. Which function shifts to reflect this externality? Demand    Supply
   c. In which direction does the function shift? Increase / Right   Decrease / Left
   d. Socially desirable price that consumers would pay Increase    Decrease
   e. Socially desirable quantity transacted Increase    Decrease

2. Technical school education/training
   a. Is this a positive or negative externality? Positive    Negative
   b. Which function shifts to reflect this externality? Demand    Supply
   c. In which direction does the function shift? Increase / Right   Decrease / Left
   d. Socially desirable price that consumers would pay Increase    Decrease
   e. Socially desirable quantity transacted Increase    Decrease

3. Industrial Pollution
   a. Is this a positive or negative externality? Positive    Negative
   b. Which function shifts to reflect this externality? Demand    Supply
   c. In which direction does the function shift? Increase / Right   Decrease / Left
   d. Socially desirable price that consumers would pay Increase    Decrease
   e. Socially desirable quantity transacted Increase    Decrease

4. Litter from glass and plastic bottles
   a. Is this a positive or negative externality? Positive    Negative
   b. Which function shifts to reflect this externality? Demand    Supply
   c. In which direction does the function shift? Increase / Right   Decrease / Left
   d. Socially desirable price that consumers would pay Increase    Decrease
   e. Socially desirable quantity transacted Increase    Decrease

5. Driving under the influence of drugs / alcohol
   a. Is this a positive or negative externality? Positive    Negative
   b. Which function shifts to reflect this externality? Demand    Supply
   c. In which direction does the function shift? Increase / Right   Decrease / Left
   d. Socially desirable price that consumers would pay Increase    Decrease
   e. Socially desirable quantity transacted Increase    Decrease
B. (6 points) The following numbers reflect distributions of income or wealth in a hypothetical country. On the diagram to the right construct the Lorenz curve for each distribution.

<table>
<thead>
<tr>
<th>Percent of families</th>
<th>(A)</th>
<th>(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poorest 20 percent</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Second 20 percent</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Third 20 percent</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>Fourth 20 percent</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>Richest 20 percent</td>
<td>55</td>
<td>45</td>
</tr>
</tbody>
</table>

Which distribution is most likely the income distribution and which is wealth? Why?

C. On the diagrams below, show the impacts of reverse discrimination against white males and in favor of white females instead. Shift either demand or supply on each diagram and note whether wage rates and employment would increase or decrease for each group. NOTE: \( P_0 \) and \( Q_0 \) are the wage rates and employees hired in the absence of discrimination.

Labor market for White Males
- Wage rate for White Males: \( I / D \)
- Employment of White Males: \( I / D \)

Labor market for White Females
- Wage rate for White Females: \( I / D \)
- Employment of White Females: \( I / D \)