Exam 2

Part I: Short Answer / Multiple Choice (56 points this section)

Answer this section on this exam, not in your bluebook.
Each question is worth 2.5 points unless otherwise noted.

Answer problems 1 – 6 based on the following information. Assume there are 4 coal burning power plants producing a total of 20,000 tons of pollution before there is any government regulation. Economists have determined (correctly) that the socially optimal amount of pollution is 80% of the current level, i.e. 16,000 tons/year. The amount of pollution produced by each firm, before government intervention, is given below. The cost of reducing pollution is also given below for each firm.

<table>
<thead>
<tr>
<th>Firm</th>
<th>Amount of pollution produced before govt. intervention</th>
<th>Cost of reducing pollution (per ton, per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm S</td>
<td>6,000 tons/year</td>
<td>$100.00</td>
</tr>
<tr>
<td>Firm T</td>
<td>4,000 tons/year</td>
<td>$65.00</td>
</tr>
<tr>
<td>Firm U</td>
<td>4,000 tons/year</td>
<td>$60.00</td>
</tr>
<tr>
<td>Firm V</td>
<td>6,000 tons/year</td>
<td>$40.00</td>
</tr>
</tbody>
</table>

Total pollution before government intervention: 20,000 tons/year

1. _____ From an efficiency standpoint, which of the following is true?
   a. Firm S should do all the pollution reduction. The other firms should continue to produce the same amount of pollution.
   b. Firms V should do all the pollution reduction. The other firms should continue to produce the same amount of pollution.
   c. Firm S and V should do all the pollution reduction. Firms T and U should continue to produce the same amount of pollution.
   d. All firms should reduce pollution by 1,000 tons.
   e. All firms should reduce pollution by 20%. Firms S and V reduce by 1,200 tons. Firms T and U reduce by 800 tons.

2. _____ Assume that the government issues each firm, free of charge, tradable permits for 4,000 tons of pollution (for a market total of 16,000 tons). Which firm is most likely to be a net seller (i.e. sell more than it was issued) of permits?
   a. firm S
   b. firm T
   c. firm U
   d. firm V
   e. None of the firms are likely to be a net buyer of permits.

3. _____ Assume that the government issues each firm, free of charge, tradable permits for 4,000 tons of pollution (for a market total of 16,000 tons). Assume the market for pollution permits stays competitive (i.e. Firms do not use them as means to keep other firms from producing). Also, no one other than the four firms buys or sells permits. Which firm is most likely to be a net buyer (i.e. buy more than it was issued) of permits?
   a. firm S
   b. firm T
   c. firm U
   d. firm V
   e. None of the firms are likely to be a net buyer of permits.
4. Assume that the government sells tradable permits, for a total of 16,000 tons of pollution, to the highest bidder. Which of the firms is most likely to buy the permits?
   a. firm S  
   b. firm T  
   c. firm U  
   d. firm V  
   e. All of the firms are likely to be a net buyers of permits.

5. The government is considering two plans for tradable pollution permits. In one plan, the government will simply give each firm permits for 4,000 tons (for an industry total of 16,000 tons). In the other plan, the government will sell the permits to the highest bidder. Which of the following is true?
   a. The plan which sells the permits should always result in less pollution.  
   b. Both plans should result in about the same amount of pollution.  
   c. The plan which simply gives firms the permits should always result in less pollution.

6. In class, we mentioned some markets in which tradable pollution permits have been tried. Which of the following is one of those markets?
   a. cocoa production in (FRNC, i.e. rebel, controlled) Columbia  
   b. paper production in Canada  
   c. halibut fishing in Canada  
   d. gasoline production in Europe  
   e. gasoline production in the United States

7 - 9. Henrik Ibsen’s play “Enemy of the People” involves a small Norwegian town in the 1880s. The town’s economy relies on tourists who come to visit its natural springs. A doctor discovers that the town’s many springs are being polluted, threatening people’s health and threatening the tourist industry. It is suspected that tanneries (leather factories) are causing the pollution. Norway has a very well developed code of law and court system. Suggest a way to solve this problem in each of the cases below.

7. Case 1. There are 51 tanneries and 64 health spas in the area each with a different owner. Good estimates of the amount of damage suffered by the spas, from various levels of pollution, exist. There is a cheap and easy way to measure the amount of pollution any given tannery emits. The tanneries are also very diverse (i.e. have a lot of differences) in the style of factory and the technology they use. Apply what was discussed in lecture and the text. Which of the following solutions would probably be the most efficient and effective?
   a. offer the spa a subsidy for every visitor they serve.  
   b. little government intervention other than allowing people & companies to sue for damages in court.  
   c. direct government regulation specifying the amount of leather produced and/or the technology used to produce it.  
   d. direct government regulation closing the tannery down  
   e. a tax on leather or the pollution emitted by tanneries  
   f. a subsidy paid to the tanneries for every unit of leather they produce

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1 Actually, the main theme of the play is not really pollution. Instead it is about self-interest vs public interest, hypocrisy, and mistaking the bandwagon, i.e. the latest fads in intellectual thought, for the leading edge of thought. It’s a cool play.
8. ______ Case 2. There is only 1 tannery in the area. There are 2 health spas in the area are owned by one person. Technology exists to measure the amount of pollution being emitted by the tannery. Good estimates of the amount of damage suffered by the spa, from various levels of pollution, exist. Apply what was discussed in lecture and the text. **Which of the following solutions would probably be the most efficient and effective?**
   a. offer the spa a subsidy for every visitor they serve.
   b. little government intervention other than allowing people & companies to sue for damages in court.
   c. direct government regulation specifying the amount of leather produced and/or the technology used to produce it.
   d. direct government regulation closing the tannery down
   e. a leather boycott by the spa’s owners and employees
   f. spray painting cattle with indelible green paint so that it is more costly to produce leather

9. ______ Case 3. There are 51 tanneries and 64 health spas in the area each with a different owner. Good estimates of the amount of damage suffered by the spas, from various levels of pollution, exist. There is not, however, a cheap and easy way to measure the amount of pollution any given tannery emits, or even the amount of leather they produce. Apply what was discussed in lecture and the text. **Which of the following solutions would probably be the most efficient and effective?**
   a. offer the spa a subsidy for every visitor they serve.
   b. little government intervention other than allowing people & companies to sue for damages in court.
   c. direct government regulation specifying the amount of leather produced and/or the technology used to produce it.
   d. direct government regulation closing the tannery down
   e. a tax on leather or the pollution emitted by tanneries
   f. a subsidy paid to the tanneries for every unit of leather they produce

10. ______ Several attempts were made to enact legislation to eliminate the federal government budget deficits of the 1980’s and 1990s. The two main attempts were the Budget Enforcement Act (BEA) and the Gramm-Rudman-Hollings (GRH) act. Which of the following are true?
   b. Gramm-Rudman-Hollings came before the Budget Enforcement Act (BEA). Gramm-Rudmann-Hollings specified the maximum amount of deficit. The Budget Enforcement Act specified (discretionary) spending and taxing levels.
   c. The Budget Enforcement Act (BEA) came before Gramm-Rudman-Hollings. Gramm-Rudmann-Hollings specified the maximum amount of deficit. The Budget Enforcement Act specified (discretionary) spending and taxing levels.
11 – 13: Below, you are given estimates of the Marginal Private Cost (MPC), Marginal Private Benefit (MPB), and the Marginal External Benefit (MEB) from producing fluorescent lights.

11. What level of production will the private sector undertake? ________

12. What level of production is socially optimal? ________

13. Assume the government chooses to use a Pigouvian tax or subsidy to correct the problem. What will the (per unit) the amount of this be and will it be a tax or a subsidy?

14. ________ Our text discussed several possible explanations for the relative growth of government. According to the text, in which of the following 5 person societies would one expect more government transfer spending (as a % of GDP)?

<table>
<thead>
<tr>
<th>Society</th>
<th>Bob’s Income</th>
<th>Rob’s Income</th>
<th>Jan’s Income</th>
<th>Ann’s Income</th>
<th>Dan’s Income</th>
<th>Avg. Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$ 20,000</td>
<td>$30,000</td>
<td>$40,000</td>
<td>$50,000</td>
<td>$60,000</td>
<td>$40,000</td>
</tr>
<tr>
<td>B</td>
<td>$ 10,000</td>
<td>$20,000</td>
<td>$30,000</td>
<td>$65,000</td>
<td>$75,000</td>
<td>$40,000</td>
</tr>
<tr>
<td>C</td>
<td>$ 30,000</td>
<td>$35,000</td>
<td>$40,000</td>
<td>$45,000</td>
<td>$50,000</td>
<td>$40,000</td>
</tr>
</tbody>
</table>

a. society A  
b. society B  
c. society C  
d. There is no reason to predict government spending would be different in the 3 societies.
15. _____ What is meant by the “Iron Triangle” as used in the text?
   a. the three items which gave Pittsburgh more economic and political power than any other city in Pennsylvania: 1) iron ore, 2) coal, and 3) excellent transportation links
   b. the three branch system of government used in the United States: 1) the Executive, 2) the legislature, and 3) the judiciary
   c. the three layer system of government used in the United States: 1) the federal government, 2) state governments, and 3) local governments
   d. the three levels of decision making in (legislative) representative democracy: 1) voters, 2) legislators, 3) legislative committees
   e. the principal supporters of many government programs: 1) members of Congress who voted for it, 2) bureaucrats who administer it, and 3) special interests who benefit from it
   f. the Viet Cong controlled area south of Saigon during the Vietnam War

16. Barbara Bureaucrat heads the Bureau of Highway Signs. The costs and social benefits of putting up highway signs is shown at right. Barbara behaves according the (Niskanen) theory, regarding bureaucrats, discussed in the book. How many highway signs will Barbara lobby for?

   [Graph of Total Costs and Benefits]
   [Graph of Marginal Costs and Benefits]
17. Which of the following best describes Arrow’s Impossibility Theorem? “No democratic voting mechanism can be guaranteed to always:
   a. always give each individual the same “voice” as long as real wealth (or real potential income) is not identical for every voter.”
   b. always give each individual the same ‘voice’ as long as the level of information is not identical for every voter.”
   c. enhance social welfare as long as there are barriers to entry and exit into the government’s area. ex. It is difficult to switch school districts. This is a barrier to entry and exit into a government’s area.”
   d. 1) respond to changes in voters’ preferences, and 2) always produce ‘consistent results’. ex. If A is preferred to B, and B is preferred to C, consistency requires that A is preferred to C.”
   e. be able to make a living catching arrows.”

18. Indicate (✓) the type of election by which members of the following legislatures get their jobs. You probably only want to check one cell per row.

<table>
<thead>
<tr>
<th>Legislature</th>
<th>Borda Count</th>
<th>Proportional</th>
<th>Chain Weighting</th>
<th>Winner Take All</th>
<th>Point Voting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israeli Knesset</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK House of Commons</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. House of Representatives</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

19. Where are education vouchers being tried?
   a. Greenlawn, New York (home of Mariah Carey)
   b. Cleveland, Ohio (home of Drew Carey)
   c. Indianapolis, Indiana (home of Dan Quayle)
   d. Calgary Canada (home of lots of Canadians)
   e. Philadelphia, Pennsylvania (home of the Liberty Bell)
Part II: Essay (22 points each, 44 points this section)
Answer 2 of the following 3 Questions in your bluebook.

II.1. Assume the following:

- Each parent’s income = $40,000 (after taxes)
- Each parent has 1 child, Bob Jr., whom she/he must educate.
- Each child receive 1,000 “units” of public school at no added cost to their parent.
- Each parent is offered an education voucher of $5,000.
- Bob could send Bob Jr. to any number of private schools. Private schools cost $10/unit. These units are quality adjusted so that 1 unit of education is the same regardless of which school one goes to.
- By law, every child must receive at least 1,000 units of education.
- Public and private schools are mutually exclusive. For example, children can not attend public schools and also attend private schools as a supplement.

a. Using budget line and indifference curve analysis, neatly and accurately illustrate 2 situations; one in which the person takes the voucher and one in which they don’t. Make sure you clearly and accurately label your curves, axes, and points.

b. Assuming parents and children have perfect information about school quality, do vouchers always enhance the utility of those offered them? Briefly explain why or why not.

II.2. In 1993, the people of Puerto Rico, a U.S. commonwealth, held an referendum in which there were three choices – 1) retain commonwealth status, 2) become a state, or 3) become an independent country. Discuss the problems that can arise when people vote over more than two options. Illustrate this with a specific, numerical, example(s).

II.3. In 1972, Richard Nixon after facing only token opposition in the primaries, Richard Nixon won the Republican nomination for president. On the Democrat’s side, George McGovern and Hubert Humphrey were locked in a bitter battle for the nomination. McGovern finally won. However, in the general election, McGovern was too left of center and lost … badly. McGovern got less than 40% of the popular vote and only 17 of 538 electoral votes (3.2%). His defeat is one of the worst ever by a major party candidate running for president. \textbf{Is this result, McGovern not being a centrist candidate, consistent with the Median Voter Theorem? Why or why not?} \footnote{Hint … California … gubernatorial race … 2002}