UNIVERSITY OF VICTORIA FINAL EXAM APRIL 2011

STUDENT NUMBER: V00

Course Name & No.:	Economics 317: Health Economics				
Section(s):	A01				
CRN:	24816				
Instructor:	Auld				
Duration:	2 hours				

This exam has a total of <u>13</u> pages including this cover page and <u>0</u> separate handout(s).

Students must count the number of pages and report any discrepancy immediately to the Invigilator.

This exam is to be answered:

- \underline{X} On the paper
- ___ In Booklets provided
- ___ NCS Answer Sheets

Marking Scheme:

Multiple choice: 2 marks each. Short answer: 15 marks each. Total: 80 marks.

Materials Allowed:

No calculators, cell phones, or other electronic devices are permitted. No references materials are permitted.

UNIVERSITY OF VICTORIA DEPARTMENT OF ECONOMICS

ECONOMICS 317 HEALTH ECONOMICS FINAL EXAMINATION Spring 2011

INSTRUCTIONS. Answer all questions. Write your answers on the exam paper. No electronic devices, including but not limited to calculators and cell phones, are necessary and no such devices may be used during the exam. Good luck.

1 MULTIPLE CHOICE QUESTIONS (50 MARKS).

Instructions. Select the best answer to every question. Clearly record your answers on this page.

MULTIPLE CHOICE ANSWERS

1.	А.	В.	С.	D.					
2.	А.	В.	С.	D.	14.	А.	В.	С.	D.
3.	А.	В.	С.	D.	15.	А.	В.	С.	D.
4.	А.	В.	С.	D.	16.	А.	В.	С.	D.
5.	А.	В.	С.	D.	17.	А.	В.	С.	D.
6.	А.	В.	С.	D.	18.	А.	В.	С.	D.
7.	А.	В.	С.	D.	19.	А.	В.	С.	D.
8.	А.	В.	С.	D.	20.	А.	В.	С.	D.
9.	А.	В.	С.	D.	21.	А.	В.	С.	D.
10.	А.	В.	С.	D.	22.	А.	В.	С.	D.
11.	А.	В.	С.	D.	23.	А.	В.	С.	D.
12.	А.	В.	С.	D.	24.	А.	В.	С.	D.
13.	А.	В.	С.	D.	25.	А.	В.	С.	D.

- 1. Victor Fuch's "Tale of Two Cities" highlights the fact that
 - (a) living in an urban center has a large effect on mortality.
 - (b) lifestyle has a large effect on mortality.
 - (c) quality of health care has a large effect on mortality.
 - (d) access to health care has a large effect on mortality.
- 2. The Canada Health Act, amongst other regulations,
 - (a) specifies that medically necessary care in Canada cannot be provided for profit.
 - (b) specifies that providers cannot "top up" fees with extra billing.
 - (c) specifies that health care is the responsibility of the Federal government.
 - (d) specifies that hospitals are organized as for-profit firms but are Federally financed.
- 3. When we discussed Grossman's model, "bread" was shorthand for
 - (a) money.
 - (b) leisure time.
 - (c) all foodstuffs.
 - (d) a composite good produced using time and market goods.
- 4. An important empirical prediction the rational addiction model makes is that, all else equal,
 - (a) anticipated increases in future prices decrease current consumption of the addictive good.
 - (b) anticipated increases in future prices have no effect on current consumption of the addictive good.
 - (c) increases in past prices have no effect on current consumption of the addictive good.
 - (d) increases in current prices increase current consumption of the addictive good.
- 5. Suppose the income elasticity of demand for dental visits is +0.7. A consumer was spending \$100 on visits and her income doubles. She will now spend:
 - (a) \$70.
 - (b) \$107.
 - (c) \$170.
 - (d) \$700.

- 6. The economic explanation for the obesity epidemic suggests the major causes are
 - (a) changes in GDP and income distribution over time.
 - (b) long-run decreases in the real interest rate and maternal employment.
 - (c) decreases in the price of food and increases in the costs of physical activity.
 - (d) improvements in medical care technology.
- 7. In Grossman's model, the aging process is represented by
 - (a) eventually increasing rates of depreciation of health stock.
 - (b) decreases in the efficiency of health investment.
 - (c) MEI schedules which are monotonically decreasing in age.
 - (d) decreases in "effective education" levels as memory fades.
- 8. Which of the following is NOT a valid criticism of the rational addiction model?
 - (a) The model assumes people know all future prices, but future prices are actually uncertain.
 - (b) The model assumes people fully understand they will become addicted, but people may not know whether or not they are prone to addiction.
 - (c) There is only addictive good in the model, but in reality multiple addictive behaviors may interact.
 - (d) The model predicts that addicts will regret their past decisions, but not all addicts display regret.
- 9. The U.S. health care system is best characterized as
 - (a) free market provision of health care and insurance.
 - (b) mixed public and private provision of care and insurance.
 - (c) free market provision of insurance but socialized care.
 - (d) free market provision of care but socialized insurance.
- 10. A public good is a
 - (a) good or service provided by a local or national government.
 - (b) good which involuntarily imposes costs or benefits on third parties.
 - (c) good which is non-rivalrous and non-excludable.
 - (d) good which which people display as a signal of wealth, such that demand for these goods may increase with price.

- 11. It is an empirical regularity that people with high school educations are on average more healthy than people who do not graduate from high school. We should infer that
 - (a) a randomly selected person with a high school education is likely to be healthier than a randomly selected person without a high school diploma.
 - (b) policies which increase high school graduation rates will improve public health.
 - (c) either the high school curriculum or social interactions among high school students lead to health-promoting behaviors.
 - (d) the government should consider diverting resources from health care to public education.
- 12. The external costs of cigarette smoking are
 - (a) very large and attributable largely to health care.
 - (b) quite small and largely attributable to factors other than health care.
 - (c) irrelevant because cigarettes are a rationally addictive good.
 - (d) very large because smokers seriously damage their own health through their addiction.
- 13. You have utility function for wealth $U(W) = W^3$. You are offered actuarially fair insurance against some risk. You
 - (a) fully insure.
 - (b) buy no insurance.
 - (c) buy some insurance, but you do not fully insure.
 - (d) there is not enough information to decide if (a), (b), or (c) is correct.
- 14. QALYs are a metric which allows analysts to
 - (a) disentangle correlation and causation in epidemiological studies.
 - (b) accurately assess life expectancy.
 - (c) make tradeoffs between quantity and quality of life.
 - (d) monetize health outcomes for cost-benefit analyses.

- 15. The theory of the second best suggests that
 - (a) it is always optimal to require producers to price at marginal cost.
 - (b) it is always optimal to require that producers do not earn monopoly profits.
 - (c) in the presence of more than one market imperfection, it may not be optimal to require that producers price at marginal cost.
 - (d) in the presence of more than one market imperfection, it will never be optimal to require that producers price at marginal cost.
- 16. In the model of physician behavior we discussed in class, we assumed that
 - (a) physicians maximize their incomes.
 - (b) physicians make a labor-leisure tradeoff and are indifferent to patient health.
 - (c) physicians make a labor-leisure tradeoff and must be sufficiently compensated to harm patient health.
 - (d) physicians make a labor-leisure tradeoff but always seek to maximize patient health.
- 17. Which of the following is evidence that higher income causes better health?
 - (a) Using a large population survey, it is found that income and health are positively correlated.
 - (b) Analysts discover that patients randomized to a more effective treatment also had higher incomes.
 - (c) People who win the lottery are found to be in better health than lottery players who did not win.
 - (d) Statistical results demonstrate that people who place relatively large weight on future outcomes are likely to obtain more education and less likely to smoke than others.
- 18. Adverse selection in health insurance markets
 - (a) refers to the tendency of insured people to take fewer preventive actions, increasing everyone's costs.
 - (b) refers to the tendency of low risk people to opt out of insurance, increasing the price of insurance.
 - (c) refers to firms refusing to insure people with pre-existing conditions, leading to social problems.
 - (d) refers to efforts by consumers to select the lowest priced insurance on the market, leading to pervasive disequilibrium.

- 19. In Grossman's model, an increase in education causes better health because
 - (a) people who choose higher levels education tend to have other characteristics which are associated with good health.
 - (b) people endowed with higher levels of education are more efficient producers of health.
 - (c) people with high temporal discount rates are both more likely to smoke and less likely to go to university.
 - (d) moral hazard induces people to select low-paying jobs when the MEI schedule is inelastic.
- 20. Life expectancy in Canada is much higher in 2011 than it was in 1800 primarily because of
 - (a) improvements in living standards such as housing, nutrition, and sanitation.
 - (b) improvements in medical technology.
 - (c) massive increases in labour and capital devoted to health care (such as physicians and hospitals).
 - (d) reductions in smoking and other unhealthy behaviors that allow people to now commonly live into their 80s and 90s.
- 21. Canada spends less per capita on health care than the U.S. primarily because
 - (a) Canadians use less health care because the Canadian system efficiently rations scarce care.
 - (b) the Canadian single–payer system has lower administrative costs.
 - (c) prices and wages in the health sector are lower in Canada.
 - (d) the profit motive the U.S. leads providers to induce demand for their services.
- 22. The Second Fundamental Theorem of Welfare Economics asserts that
 - (a) all competitive equilibria are Pareto efficient.
 - (b) welfare is maximized when social indifference curves are tangent to the PPF.
 - (c) welfare payments are a more efficient manner of redistributing income than trade on Pareto manifolds.
 - (d) any Pareto efficient allocation may be obtained as a competitive equilibrium.

- 23. The government currently spends \$2B on highway maintenance and \$1B on asbestos removal per year. Saving another statistical life through highway maintenance programs is estimated to cost \$10M, whereas saving another life through asbestos removal programs is estimated to cost \$20M. Assume the only effect either program has is on lives saved. Then the government should
 - (a) reallocate funding from highway maintenance to asbestos removal until expenditures are equalized across programs.
 - (b) reallocate funding from highway maintenance to asbestos removal until cost to save another life is equalized across programs.
 - (c) reallocate funding from asbestos removal to highway maintenance until expenditures are equalized across programs.
 - (d) reallocate funding from asbestos removal to highway maintenance until cost to save another life is equalized across programs.
- 24. The elasticity of population health to national health care expenditures in the U.S. is thought to be
 - (a) highly elastic and positive.
 - (b) highly inelastic and positive.
 - (c) highly inelastic and negative.
 - (d) unknown; it is impossible to estimate that relationship.
- 25. We interpreted the patient–physician interaction as a principal–agent problem in the sense that
 - (a) the physician acts as a principal, and the patient as an agent, because the physician's behavior is hidden to the patient.
 - (b) the physician acts as an agent, and the patient as a principal, because the physician's behavior is hidden to the patient.
 - (c) the physician acts as a principal, and the patient as an agent, because the patient's behavior is hidden to the physician.
 - (d) the physician acts as an agent, and the patient as a principal, because the patient's behavior is hidden to the physician.

2 SHORT ANSWER QUESTIONS (30 MARKS).

INSTRUCTIONS. Answer both questions clearly and concisely. Write your answers on this paper in the space provided. Undefended answers are worth no marks. Remember to clearly label the axes and other objects in graphs. Each question is worth 15 marks.

- 1. Consider a physician who receives m dollars in income per unit of service she provides. The physician values her income, her leisure time, and her patients' health. The physician may choose to induce $I \ge 0$ units of services. If the physician induces no services, she provides $Q_0 > 0$ units of services.
 - (a) Show the physician's budget set and an indifference curve on a diagram, placing I on the x-axis and the physician's income on the y-axis. Label all axes, intercepts, and curves.
 - (b) Assume the physician prefers to induce a strictly positive number of services. Show her optimal allocation on a new version of the diagram and label it **A**. Show the indifference curve passing through point A.
 - (c) Interpret the slope of the indifference curve evaluated at point **A** and state the physician's equilibrium condition.
 - (d) On another new version of the diagram, display the physician's new budget set if the fee, m, decreases.
 - (e) On the same diagram as in part (d), display the physician's new optimal allocation at the lower fee, assuming the physician sets I > 0, and label this point **B**. Carefully display the income and substitution effects on inducement caused by the fee change, assuming their signs are as we assumed in the lectures.

ANSWER: (also use following page as needed.)

ANSWER TO SHORT ANSWER QUESTION 1 CONTINUED:

2. Consider a competitive market for health care. First suppose there is no health insurance available. Suppose demand for health care is given by

$$Q^D = 10 - 2P, (1)$$

where Q^D is quantity demanded and P^D is the price paid by consumers. Supply is given by

$$Q^S = P. (2)$$

where Q^S is quantity supplied and P^S is the price received by firms.

- (a) Show the supply and demand schedules on a diagram.
- (b) Find the equilibrium price and quantity mathematically.
- (c) Now suppose the government introduces an insurance program which pays 50% of all health care expenditures. Placing prices faced by firms on the y-axis, display supply and demand schedules under this insurance plan on a new diagram (*Hint: if you cannot do this mathematically, try finding two points on the new (linear) demand schedule*).
- (d) Find the new equilibrium price and quantity.
- (e) Indicate the deadweight loss caused by the insurance program on your diagram.
- (f) Calculate the arc elasticity of supply for health care between the equilibria in part (b) and part (d).
- (g) Now relax the assumption that the market is competitive. Present and very briefly discuss TWO reasons why the government insurance program may increase social welfare.

ANSWER: (also use following page as needed.)

ANSWER TO SHORT ANSWER QUESTION 2 CONTINUED:

EXTRA SPACE. Use as needed to answer short answer questions or as scratch space.