1. (20 minutes = 20 points) Assume that there are only three individuals in the market for health insurance, and these individual each get to choose between one HMO and one FFS health plan. The three people are A, B, and C. The value that they each attach to the HMO and to the FFS plan, as well as their expected annual costs, is shown below.

<table>
<thead>
<tr>
<th>ID</th>
<th>Value of joining HMO</th>
<th>Value of joining FFS plan</th>
<th>Expected cost in HMO</th>
<th>Expected cost in FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5,000</td>
<td>5,000</td>
<td>3,000</td>
<td>3,500</td>
</tr>
<tr>
<td>B</td>
<td>6,000</td>
<td>7,000</td>
<td>4,000</td>
<td>4,500</td>
</tr>
<tr>
<td>C</td>
<td>7,000</td>
<td>10,000</td>
<td>5,000</td>
<td>5,500</td>
</tr>
</tbody>
</table>

a) Assuming that the HMO and FFS charge actuarially fair premiums and do not have any administrative costs or profit, at what price would the HMO just break even if it served all three people? At what price would the FFS plan just break even if it served all three people? Show how you derived your answers.

b) If the HMO and the FFS both offer to insure this group at the actuarially fair price for all three people that you just calculated, who will choose to join the HMO and who will choose to join the FFS plan? Explain what will happen in to the market.

c) (Do only if you have time) Find the competitive market equilibrium premiums for HMO and FFS plans such that each earns zero profits, everyone is insured, and no consumer wishes to change plans.
2. **(15 minutes = 15 points)** Assume that there are only two goods, medical care, M, and all other goods, AOG. The supply price of medical care is perfectly elastic at PS = MC = 1, and the price of AOG is normalized to one. Mary has an annual income of $10,000 and no dependents. Her indifference curves have the usual convex shape.

a) When there is no health insurance, Mary spends $3000 on medical care. Draw a budget constraint and her most preferred indifference curve consistent with this initial description on either one of the two sets of axes drawn below. Label the axes and consumption quantities. Label the initial consumption point A.

b) Mary is now offered a health insurance plan that will charge a premium of $1500 but then will pay for half of all of her medical care expenses. Carefully draw her new budget constraint on the original diagram. Label her new consumption point B. Can you say from this information whether Mary should or should not be willing to buy this insurance plan? Explain.

c) Explain whether the moral hazard problem is illustrated by this example.
Part II (15 minutes for five questions) Short Answers.
Answer this section using short responses of no more than a few sentences. Try to spend only 3 minutes on each question.

3. (3 points) The factors that influence a person’s health status are _______________(List at last three).

4. (3 points) Time plays an important role in the demand for medical care because _________________.

5. (3 point) According to the Rand Health Insurance Experiment results, expenditures on health services when the consumer has to pay the full cost will be approximately ___________ percent of expenditures on health care when health care is free.

6. (3 points) According to Kenneth Arrow (1963), why is advertising rarely used by physicians, whereas it is commonly used to attract consumers in other markets?

7. (3 points) John has a 40% chance of becoming ill and having to pay $1000 for medical care, and a 60 percent chance of being healthy and not having to pay anything for medical care. He is just indifferent between taking this risk and paying a $500 premium for health insurance that will give him exactly $1000 for health care when he is sick. Is John risk adverse, risk neutral, or risk loving? Explain.