

AFRICAN ECONOMIC RESEARCH CONSORTIUM

Collaborative MA Programme in Economics for Anglophone Africa (Except Nigeria)

JOINT FACILITY FOR ELECTIVES (JFE)

JULY – OCTOBER 2006

HEALTH ECONOMICS I

First Semester: Final Examination

Duration: 3 Hours

Date: Friday, August 11, 2006

INSTRUCTION:

Answer all the questions.

Maximum Points: 60

- 1. A.** Mary has utility for two goods, health (H) and other goods (X). Her utility function is given as:

$$U = U(X, H) = X^{2*}H^2$$

- a) Calculate Mary's marginal utility of health and marginal utility of other goods. **(2 points)**
- b) What is the marginal rate of substitution between X and H ? **(2 points)**
- c) Draw a production possibility frontier for Mary's choices of X and H and show the efficient and inefficient points therein. **(2 points)**
- B.** Mary can produce health from medical care (M), given the production function as below:

$$H = H(M) = 5 + 5M^{1/3}$$

- a) Calculate the marginal product of medical care (M) **(2 points)**

- b) Suppose the price of X is Ksh 2500 per unit and the price of medical care M is Ksh 4000 per unit, given Mary's monthly income of Ksh 14000 (to be spent on both the goods), what is her budget equation? (2 points)

2. Assume that a monopoly health firm Dicky has a linear demand curve and constant marginal cost curve. Graphically represent Dicky's optimal output choices. Assume a per unit excise tax (t) is levied on the output. Does the equilibrium price increase, if so, proportionately? What about level of output? (Explanation in about a paragraph or two) (6 points)
(Diagram 3 points; Explanation 3 points)

3. Suppose there is a medical firm Medwin that produces health units. These health units sell for \$20. To produce these health units the firm uses two types of labour inputs: registered nurses (RN's) and certified nursing assistants (CNA's). Currently, the wages of the two inputs are \$400/period for RN's and \$200/period for CNA's. With these wages Medwin hires 8 RN's. However, on being pressured by the union the wages are hiked to \$500 for RN's and \$225 for CNA's. Medwin decides to layoff 3 RN's due to increased cost. Use the production schedule given below and answer the following:
- a) How many CNA's will the firm layoff as a result of the wage increase? (5 points)
- b) What is the elasticity of substitution of RN's to CNA's? Interpret this number? (5 points)

Production Schedule of Nursing Assistants

Number of CNA's	Units Produced when there are 5 RN's	Units Produced when there are 6 RN's	Units Produced when there are 8 RN's
0	0	0	0
1	20	23	25
2	38	43	45
3	56	61	63
4	71	76	79
5	83	89	93
6	93	100	105
7	100	109	115
8	106	116	124
9	110	122	133
10	112	126	140

4. Health and education are treated as investment goods, and Grossman assumes that more educated people produce health more efficiently. Explain your answer with the help of the model and empirical evidence. (Not more than three pages)

(6 points)

5. Explain your country experience in health care status and policy that you have undertaken as a part of the 'case study assignment'. (Not more than three pages)

(6 points)

6. Distinguish and explain the following concepts with suitable examples and diagrams (where required): (between two and three paragraphs **each**)

a) Economies of scale and economies of scope in health production.

(4 points)

b) Managed care organizations: HMOs, PPOs, POSs and others.

(4 points)

c) Adverse Selection

(4 points)

d) Moral Hazard

(4 points)

7. "Medical Arms Race" theory states that hospitals purchase excessive amounts of new technologies and doctors to keep one-up position with respect to the competitors. Use the following table and explain which of the markets should have a greater amount of medical technology.

(6 points)

Hospital Admissions and Markets

Hospital Admissions	Market A	Market B	Market C
Hosp 1 Admns	550	125	225
Hosp 2 Admns	450	400	300
Hosp 3 Admns	300	300	1200
Hosp 4 Admns	1000	100	375
Hosp 5 Admns	700	75	900