



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2016/2017
SECOND SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE
(ENVIRONMENTAL HEALTH)

HEH 808: ENVIRONMENTAL HEALTH ECONOMICS

DATE: MONDAY 15TH MAY 2017

TIME: 2.00 P.M. - 5.00 P.M.

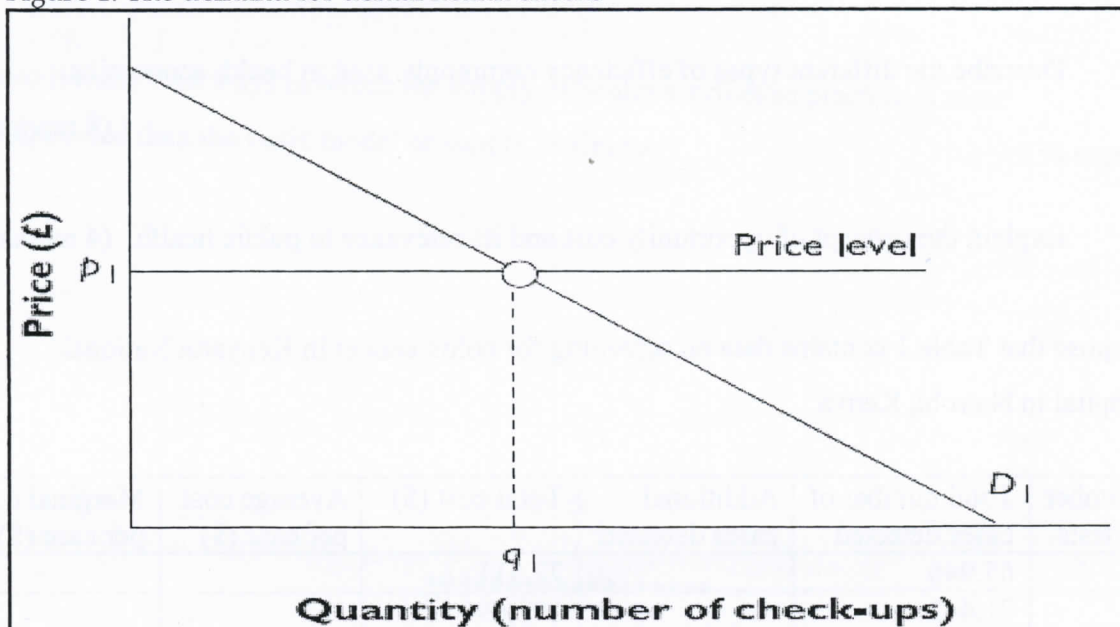
INSTRUCTIONS: Answer QUESTION ONE and any other FOUR

1. (a) Define the following terms:
 - (i) Gross national income (GNI) (2 marks)
 - (ii) Perfect competition (2 marks)
 - (iii) Social welfare (2 marks)
 - (iv) Consumer surplus (2 marks)
 - (v) Cross price-elasticity of demand (2 marks)
 - (b) Describe the different types of efficiency commonly used in health economics. (8 marks)
 - (c) Explain the concept of opportunity cost and its relevance to public health. (4 marks)
2. Suppose that Table 1 contains data on screening for colon cancer in Kenyatta National Hospital in Nairobi, Kenya.

Number of tests	Total number of cases detected	Additional cases detected	Total cost (\$)	Average cost per case (\$)	Marginal cost per case (\$)
1	65.946		77,511		
2	71.442		107,690		
3	71.90		130,199		
4	71.938		148,116		
5	71.94172		163,141		
6	71.942		176,331		

- a) Calculate:
- The additional cases detected (Column 3). (4 marks)
 - The marginal cost per case (Column 6). (4 marks)
- b) Broadly speaking, why might screening exhibit diminishing marginal benefits as is the case here? What is the most 'efficient' number of screening tests to conduct? (4 marks)
3. (a) Assume that there is a health education campaign in Meru County to highlight to the general public the benefits of regular dental check-ups (for which people must pay directly). What do you think would be the effect on the quantity demanded of dental services? Mark this effect on Figure 1, labeling it clearly. (8 marks)
- (b) Suppose that the dental clinic relocates to an area outside the city such that it is far from the majority of the population, thus deterring people from using the service. Mark this effect on Figure 1, labeling it clearly. (8 marks)

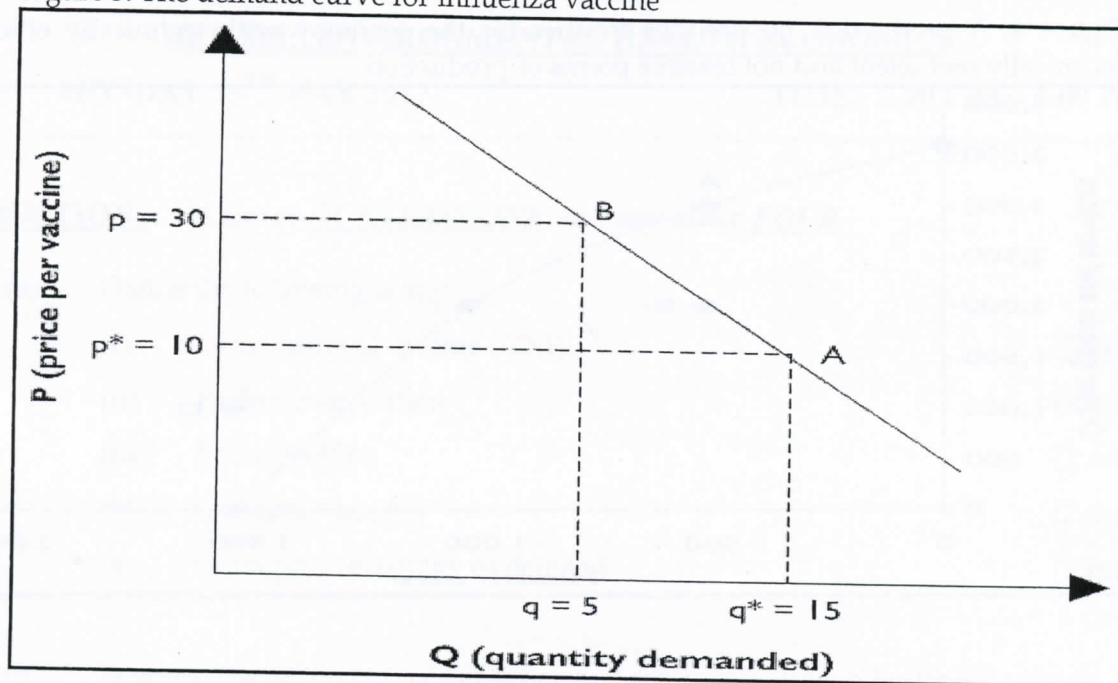
Figure 1. The demand for dental health checks



4. (a) Describe an indifference curve. (15 marks)
- (b) Describe any five ways in which the demand for health care is different from the demand for other goods. (10 marks)
- (c) Define price elasticity of demand. (5 marks)

5. Suppose that you are the manager of a vaccination clinic in Kiambu County and you want to increase the influenza vaccine price. Figure 3 shows the demand curve for influenza vaccine. The current demand (q^*) and price (p^*) are marked at point A on the demand curve. Point B shows the new demand (q) and price (p).

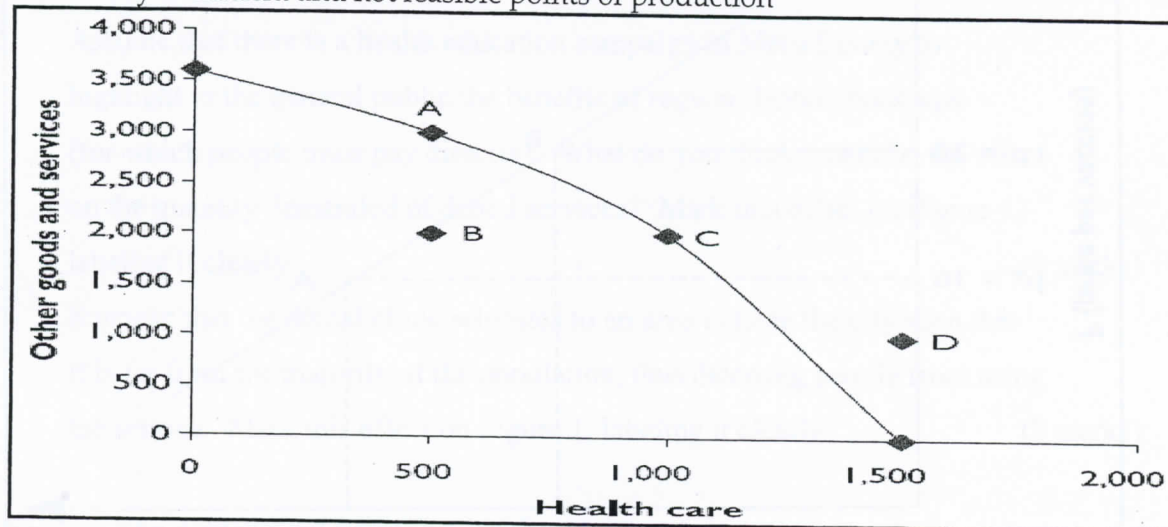
Figure 3. The demand curve for influenza vaccine



- (i) Is price elasticity of demand elastic, inelastic or unit elastic? Explain your answer. (15 marks)
 - (ii) What would be the impact on the total revenue considering this price increase? (15 marks)
- 6) Assume Figure 4 shows a production possibilities frontier for the economy of Mombasa County.
- (a) Which of the points in Figure 4 are technically efficient and technically inefficient not feasible? (6 marks)
 - (b) What is the opportunity cost of increasing health care from 500 to 1,000 units?
 - (i) Starting from point A? (6 marks)
 - (ii) Starting from point B? (6 marks)

- (c) Show on Figure 4 (other things remaining the same) what you think would happen to the PPF if:
- (i) There is a decrease in the size of the population. (6 marks)
 - (ii) There is an improvement in health technology. (6 marks)

Figure 4. A production possibilities frontier for the economy with technically efficient, technically inefficient and not feasible points of production



- 7) Describe any four ways in which the supply of health services in practice is more complicated than the basic model of supply in Kenya. (30 marks)
