"Investing in Africa's Future"

COLLEGE OF BUSINESS PEACE LEADERSHIP AND GOVERNANCE

NSHA301: HEALTH ECONOMICS AND HEALTHCARE FINANCING

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER 2023

LECTURER: MR T MASESE

TIME: 3 HOURS

INSTRUCTIONS

ANSWER **SECTION A** and any **OTHER TWO** Questions from SECTION B in this paper

MARKS ALLOCATED TO EACH QUESTION ARE SHOWN

CLEAR AND NEATLY PRESENTED WORK WILL BE AWARDED MARKS FOR PRESENTATION

SECTION A

1. Read the following case and answer the questions below

The Cost of NSAIDs

There are about 24 million prescriptions written for non-steroidal anti-inflammatory drugs (NSAIDs) per year in the UK, with the majority given to patients aged over 60. They are important and effective in the control of acute pain, chronic pain and in moderate to severe postoperative pain. The benefits of aspirin, for example, in preventing cardiovascular events are well known, while there is also evidence for its effectiveness in reducing the incidence and mortality from colon cancer. However, NSAIDs are important causes of upper gastrointestinal (GI) ulceration and dyspeptic symptoms, and in order to reduce risk, acid suppressing medication is often co-prescribed, with proton pump inhibitors (PPIs) increasingly the drug of choice. In 2000, there were 23 million prescriptions for ulcer-healing drugs at a net ingredient cost of £540 million in the UK. It has been estimated that for a primary care group of 100 000 patients the costs of co-prescribing might be in excess of £500 000 per year, depending on the extent of co-prescribing and the medication used, which translates to over £300 million per year across the National Health Service (NHS).

In addition to these prescribing costs must be added the considerable human and economic burden associated with NSAID-induced GI disease. From the case notes of all emergency admissions for upper GI crises to two district general hospitals with a combined catchment population of 550 000, it was estimated that some 12 000 emergency upper GI admissions were attributable to NSAID use and that over 2200 deaths in hospitals and another 330 in the community could be attributed to NSAID use each year. Another study concluded that on average 1 in 1220 patients taking oral NSAIDs for 2 months or more dies due to GI complications. Therefore, a major dilemma confronts those who have to determine patient treatment regimens. NSAIDs are highly effective analgesics, provide protection against cardiovascular events and have other potential benefits, but also lead to a three-to-tenfold increase in ulcer complications, hospitalization and death. In addition, it has been reported that NSAIDs were responsible for approximately 19% of hospital admissions with congestive heart failure (CHF), and led the authors to conclude that the burden of illness resulting from NSAID-related CHF may exceed that resulting from GI tract damage.

They also know that PPIs are highly effective gastro-protective agents and effective in the healing and maintenance of NSAID-induced ulcers. This dilemma exists against the background of limited resources and pressures to contain budgets, to prescribe generically and at the lowest possible cost. But the question that needs to be addressed is cost to whom?

Source: Phillips.

a. What are iatrogenic costs? From the above case identify and briefly explain some of the major iatrogenic costs associated with NSAIDs identified in the case explaining how they can be incorporated in budgets or reduced **(8 marks)**
b. Besides iatrogenic costs, discuss other factors that inflate costs of health care provision **(7 marks)**

2. Briefly explain how a health economist's view of costs differs from those of an accountant. Discuss the main stages involved in the process of costing health care services and interventions. In your discussion identify the 3 main categories of costs in health care provision **(10 marks)**

3. A firm has fixed costs of $60 and variable costs as indicated in the table below. Complete the table and graph total fixed cost, total variable cost, and total cost. Explain how the law of diminishing returns influences the shapes of the variable-cost and total-cost curves. Graph AFC, AVC, ATC, and MC. Explain the derivation and shape of each of these four curves and their relationships to one another. Specifically, explain in nontechnical terms why the MC curve intersects both the AVC and the ATC curves at their minimum points **(15 marks)**

Total Product	Total Fixed Cost	Total Variable Cost	Total Cost	Average Fixed Cost	Average Variable Cost	Average Total Cost	Marginal Cost
0	$_____	$ 0	$_____			$_____	$_____
1	_____	45	_____	$_____	$_____	_____	_____
2	_____	85	_____	_____	_____	_____	_____
3	_____	120	_____	_____	_____	_____	_____
4	_____	150	_____	_____	_____	_____	_____
5	_____	185	_____	_____	_____	_____	_____
6	_____	225	_____	_____	_____	_____	_____
7	_____	270	_____	_____	_____	_____	_____
8	_____	325	_____	_____	_____	_____	_____
9	_____	390	_____	_____	_____	_____	_____
10	_____	465	_____	_____	_____	_____	_____

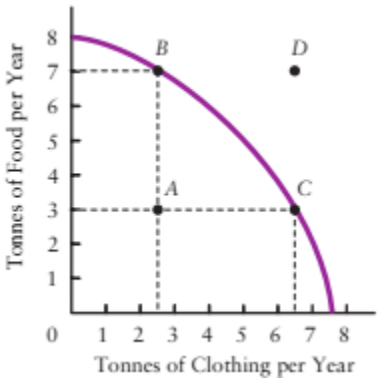
Section B: Answer ANY TWO Questions from this Section

Question 2

a. Discuss the major arguments in favor the necessity for government involvement in the financing of health care provision **(10 marks)**

b. For each of the following statements, determine whether there has been a change in supply or a change in quantity supplied. Draw a demand and supply diagram for each situation to show either a movement along the supply curve or a shift of the supply curve.
   i. The price of Vumba-grown peaches skyrockets during an unusually cold summer that reduces the size of the peach harvest **(2 marks)**
   ii. An increase in income leads to an increase in the price of beef and also to an increase in beef sales **(2 marks)**
   iii. Greater awareness of the health risks from smoking lead to a reduction in the price of cigarettes and to fewer cigarettes being sold **(2 marks)**

c. Consider an economy that produces only food and clothing. Its production possibilities boundary is shown in the diagram below
   i. The production possibilities boundary below illustrates a number of concepts: scarcity, unemployment, opportunity cost, economic growth, choice and increasing opportunity cost. Explain. **(6 marks)**
   ii. If the economy is at point A, how many tonnes of clothing and how many tonnes of food are being produced? At point B? At point C? **(3 marks)**



   iii. What do we know about the use of resources at point A? Point D? How would it be possible for the economy to produce at point D? **(3 marks)**
   iv. Give 3 examples of goods of the future. Explain and illustrate how an economy that chooses to produce more goods of the future now would differ from one that chooses to produce more consumption goods. **(5 marks)**

Question 3

a. Cost of illness or burden of illness studies aim to assess the overall economic effects of illness and disease on individuals, the health service, the economy and society. What is cost of illness

or disease? Briefly discuss the various approaches used to estimate or calculate the burden of disease **(10 marks)**

b. The outputs and outcomes resulting from health care also need to be identified and wherever possible measured and valued. Briefly explain each of the following outputs and outcomes of healthcare:
    i. Disease specific/clinical effects **(3 marks)**
    ii. Mortality and survival **(3 marks)**
    iii. Utility effects **(2 marks)**
    iv. Economic effects **(2 marks)**

c. Economic evaluation has been defined as a 'comparative analysis of alternative courses of action in terms of their costs and consequences. Health economic evaluation determines the efficiency of a service or activity by comparison with an alternative or alternatives, which may include no service provision. Briefly explain the economic evaluation framework and discuss when the following type of analysis can be used: cost-effectiveness analysis, cost-minimization analysis, cost-utility analysis and cost-benefit analysis **(10 marks)**

Question 4

a. The role of the health care professional as the agent of the patient is of particular relevance to the organization of health care services. Discuss this statement as it relates to supplier-induced demand (SID) for perceived and unperceived needs **(4 marks)**

b. A given study has shown that the quantity demanded for beer in Mutare has increased by 10% and during the same period the income of the population of the town is assumed to have increased by 5%. Based on the information provided calculate the income elasticity of demand and discuss the business policy implications of the result **(5 marks)**

c. Suppose you have been given the following demand and supply curves for nutritional avocados that doctors recommend for diabetic patients: $Q_d = 160 - 40p$ and $Q_s = 50 + 15p$ where Q is the quantity and P is the price.
    i. Calculate the equilibrium price and quantity for nutritional avocados **(3 marks)**
    ii. Draw a table which shows the quantities demanded and supplied for the following prices: \$1.40, \$1.60, \$1.80, \$1.80, \$2.00, \$2.40 and \$2.60 **(5 marks)**
    iii. Sketch the two functions on a clearly labeled demand and supply framework for nutritional avocados indicating the equilibrium points **(4 marks)**
    iv. Suppose the price of avocados rises from \$1.80 to \$2, calculate the price elasticity of demand and supply using the mid-point method **(3 marks)**
    v. Suppose the government sets up a maximum price of \$1.60, what will be the effect on the market for avocados? What will be the quantity supplied and demanded at this price? What do we call such a price control? **(3 marks)**
    vi. Suppose the government sets a minimum price of \$2.40 for avocados. How much will be supplied and demanded in this market? What do we call this kind of price control and why are such controls implemented? **(3 marks)**

Question 5

a. Discuss the basic alternative methods and approaches of financing care services **(10 marks)**

b. The following table shows the original and new levels of price and quantity as well as the average price and average quantity.

Product	Unit	Original Price ($)	New Price ($)	Average Price ($)	Original Quantity	New Quantity	Average Quantity
Cheese	kilogram	5.00	3.00	4.00	116 250	123 750	120 000
T-shirts	shirt	17.00	15.00	16.00	187 500	212 500	200 000
MP3 players	player	81.00	79.00	80.00	9 750	10 250	10 000

Calculate the price elasticity of demand for cheese, t-shirts and MP3 players using the mid-point formula and comment on each of the elasticity coefficients **(6 marks)**

c. Consider households demand for chicken meat. For each of the events listed below, state and explain the likely effect on the demand for chicken. How would each event be illustrated in a diagram?

   i. A medical study reports that eating chicken reduces the likelihood of suffering from particular types of heart problems. **(3 marks)**

   ii. A widespread bovine disease leads to an increase in the price of beef **(3 marks)**

   iii. An increase in average household income **(3 marks)**

d. Outline and briefly explain the four practical approaches that have been suggested to the problem of determining the level of state funding of health and social care **(5 marks)**

END OF PAPER