Read the following instructions **CAREFULLY** before answering the paper.
The paper consists of **THREE** sections: A, B and C.

Lees die instruksies **SORGVULDIG** deur voordat u met die beantwoording van die vraestel begin.
Die vraestel bestaan uit **DRIE** afdelings: A, B en C.

SECTION A
AFDELING A

Candidates must answer **ONE** of the following questions (A.1 **or** A.2). All questions carry equal marks,
ie 25 marks per question. Section A therefore counts 25 marks out of a total of 100.

Kandidate moet **EEN** van die volgende vrae beantwoord (A.1 **of** A.2). Alle vrae tel ewe veel punte, nl
25 punte per vraag. Afdeling A tel dus 25 punte uit 'n totaal van 100 punte.

A.1 (a) Name three basic assumptions about consumer preferences and explain two of
them in detail.

(5)

Noem drie basiese veronderstellings (aannames) oor verbruikersvoorkeure en
verduidelik twee daarvan in besonderhede.

(5)

Completeness, Transitivity and More is better than less.

Completeness - Preferences are assumed to be complete. Consumers can compare and rank all possible baskets. A consumer might prefer steak to hamburgers but hamburgers are cheaper.

Transitivity - Means that if a consumer prefers basket A to basket B and basket B to basket C, then the consumer also prefers A to C. e.g. Porsche is preferred to Cadillac and a Cadillac to chevrolet, then a Porsche is also preferred to Chevrolet. Is normally regarded as necessary for consumer consistency.

More is better than less - Goods are assumed to be desirable i.e. to be good. Consumers always prefer more of any good to less. In addition, consumers are never satisfied or satiated: more is always better, even if just a little better.

(b)   Use the various points on the diagram below to **explain and indicate** the directions and magnitudes of the income and substitution effects stemming from a decrease in the price of rice. Further explain whether rice is a normal, inferior or Giffen good.   (8)
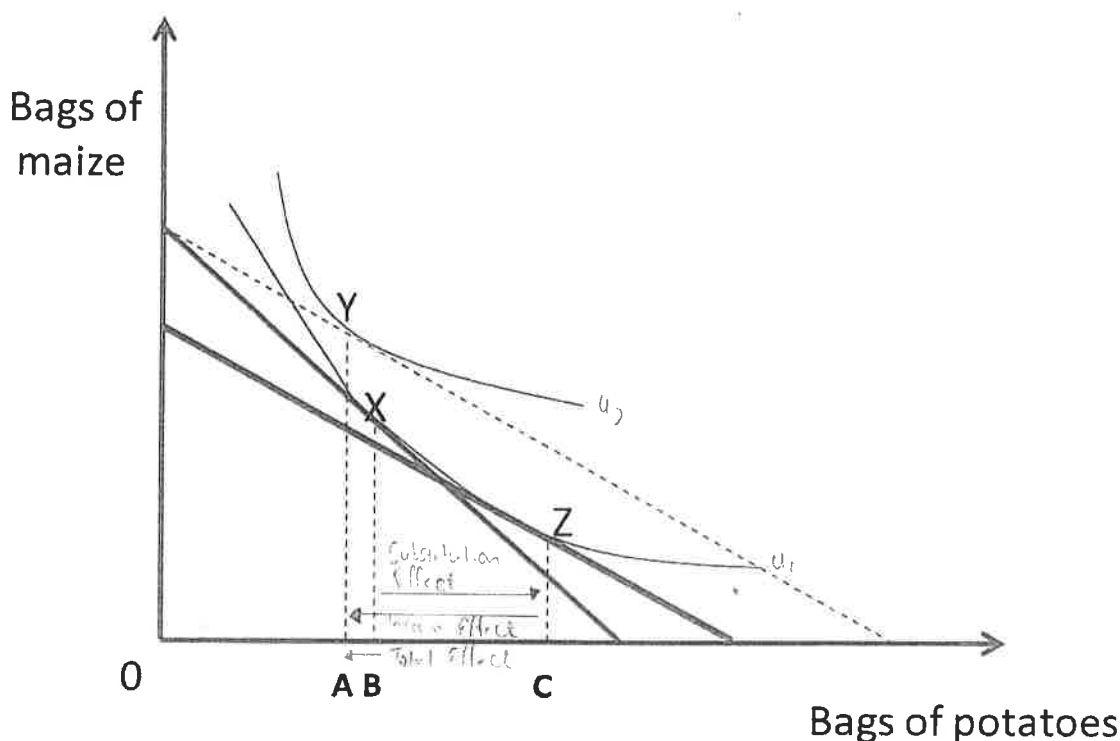
Gebruik die punte op die diagram hieronder om die rigting en omvang van die inkome- en substitusie-effekte voortspruitend uit 'n daling in die prys van rys **aan te toon en te verduidelik**. Bespreek ook of rys 'n normale, minderwaardige of Giffen-produk is.   (8)

The consumer is initially at X on the budget line RS. With a decrease in the price of rice, the consumer moves to Y. The resulting change in rice purchased can be broken down into a substitution effect AC (associated with a move from X to Z) and an income effect CB (associated with a move from Z to Y). In this case rice is an inferior good because the income effect is negative. Because the substitution effect exceeds the income effect, the decrease in the price of rice leads to an increase in the quantity of rice demanded.

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(c) Use the various points on the diagram below to **indicate and explain** the directions and magnitudes of the income and substitution effects stemming from a decrease in the price of potatoes. Further explain whether potatoes are normal, *inferior* or *giffen* goods.   (8)

Gebruik die punte op die diagram hieronder om die rigting en omvang van die inkome- en substitusie-effekte voortspruitend uit in daling in die prys van aartappels aan te **toon en te verduidelik**. Bespreek ook of aartappels 'n normale, minderwaardige of Giffen-produk is.   (8)
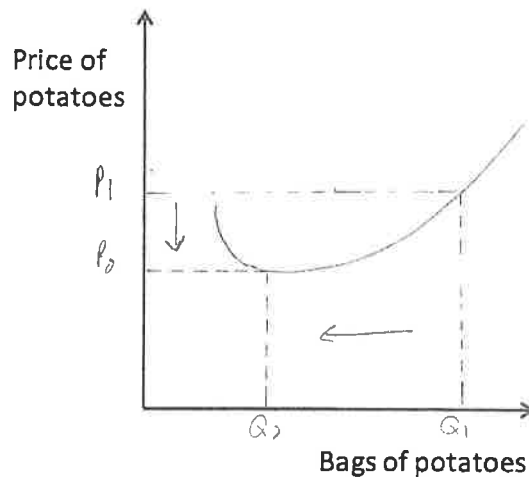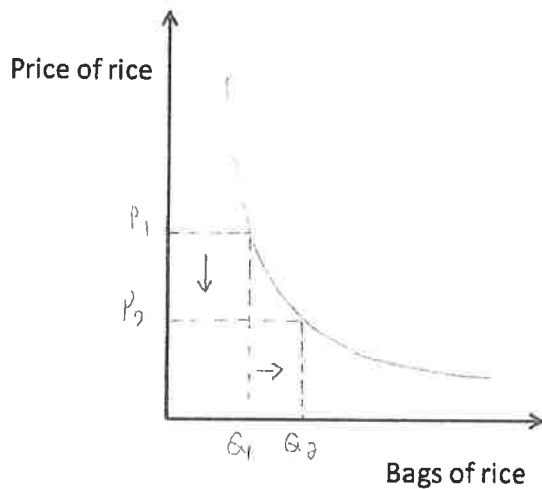

When food is an inferior good, and when the income effect is large enough to dominate the substitution effect, the demand curve will be upward-sloping. The consumer is initially at Point X, but after the price of potatoes decrease, move to Y and consumes less food. Because the income effect CA is larger than the substitution effect BC the decrease in the price of potatoes leads to a lower quantity of potatoes demanded.

(d)   Complete the diagrams below by drawing the demand curves of rice and potatoes
       based on the information in questions A.1 (b) and (c) to illustrate their respective
       slopes and associated directions.   (4)

       Voltooi die diagram hieronder deur die vraagkrommes van rys en aartappels te
       skets op grond van die inligting in vraag A.1 (b) en (c) en dui hul onderskeie
       hellings en gepaardgaande rigtings aan.   (4)

                                                                                    [25]

PLEASE NOTE! You should answer A.1 or A.2, not both.
LET WEL! U moet A.1 of A.2 beantwoord, nie albei nie.

A.2   (a)   Given two inputs [cows (C) and land (L)] in the production of milk, explain in
             words what the marginal rate of technical substitution of cows for land means.   (3)

             Gegewe twee insette [koeie (C) en grond (L)] in die produksie van melk,
             verduidelik in woorde wat die marginale koers van tegniese substitusie van grond
             vir koeie (koeie word in plaas van grond beteken).   (3)

marginal rate of technical substitution is the amount by which the production
of one input can be reduced when one extra unit of another input is used
so that output remains constant. In terms of cows and land, as more
cows are added to the production process the resulting effect would be a
reduction of land in the production process

(b) For a given isoquant in the production of milk, prove algebraically that the marginal rate of technical substitution of cows for land equals the marginal product of cows divided by the marginal product of land. (10)

Vir 'n gegewe isokwant in die produksie van melk, bewys algebraïes dat die marginale koers van tegniese substitusie van grond vir koeie gelyk is aan die marginale produk van koeie, gedeel deur die marginale produk van grond. (10)

MRTS = - Change in land / Change in cows input

Additional output from increased use of cows = $(MP_c)(\Delta C)$

Reduction output from decreased use of land = $(MP_L)(\Delta L)$

$$(MP_c)(\Delta C) + (MP_L)(\Delta L) = 0$$

Then by rearranging terms we see that

$$(MP_c)/(MP_L) = -(\Delta L)/(\Delta C) = MRTS$$

(c) Explain in words or algebraically the cost minimising condition for a firm that uses labour (L) and capital (K) as its only inputs. (2)
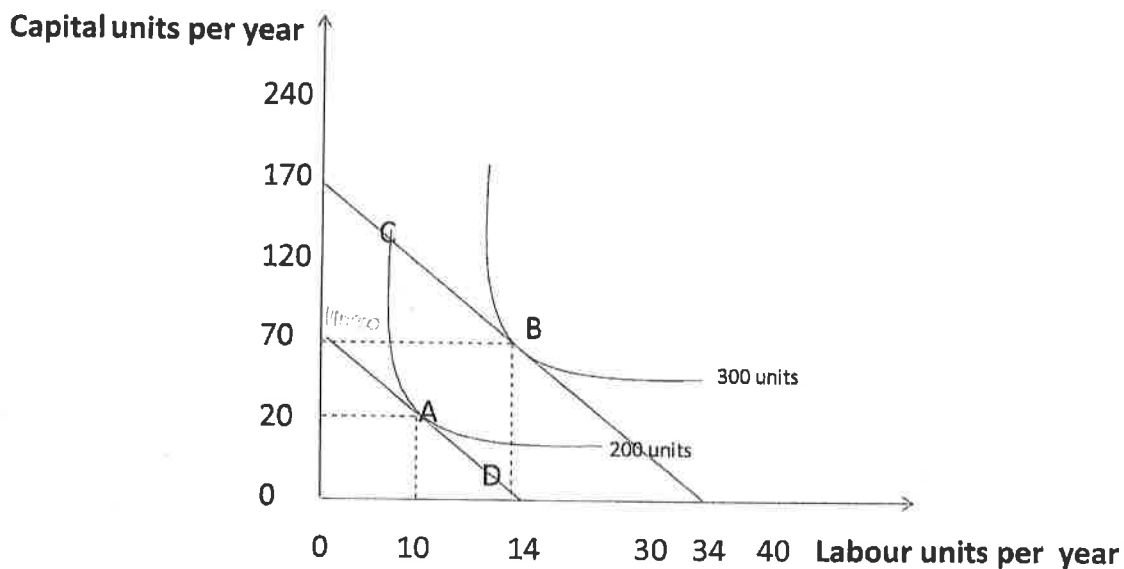
Verduidelik in woorde of algebraïes die koste-minimeringsvoorwaarde vir 'n firma wat net arbeid (L) en kapitaal (K) as insette gebruik. (2)

Minimize $C = wL + rK$

The total cost of producing any particular output is given by the sum of the firm's labour cost wL and its capital cost rK

(d)   Given that the rent (r) = R 1000 per month and that the wage (w) = R 5000 per month, use the information in the following diagram to calculate the costs to be incurred by a representative firm producing at points A, B, C and D. **Show and explain all the steps** involved in your calculations.   (10)

Gegewe dat die huur (r) = R 1000 per maand en dat die loon (w) = R 5000 per maand, gebruik die inligting in die volgende diagram om die koste te bereken wat deur 'n verteenwoordigende firma aangegaan word wat by punt A, B, C en D produseer. **Toon en verduidelik al die stappe** in u berekenings.   (10)

$A_c = wL + rK$

    $= 5000 (10) + 1000 (20)$

    $= 50 000 + 20 000$

    $= 70 000$

$B_c = wL + rK$

    $= 5000 (14) + 1000 (70)$

    $= 70 000 + 70 000$

    $= 140 000$

$C_c = wL + rk$

$= 2000(14) + 1000(70)$

$= 40000 + 70000$

$= 110000$

$Dc = wL + rk$

$= 5000(34) + 1000(170)$

$= 170000 + 170000$

$= 340000$

Points A & l illustrate the lowest-cost combinations of labour and capital that can be used to produce each level of output. Points (E & I) measures the least cost of producing each level of output.

[25]

SECTION B
AFDELING B

INSTRUCTIONS
INSTRUKSIES

Answer **ALL** the questions in this section.
Beantwoord **ALLE** vrae in hierdie afdeling.

Section B counts 25 marks in total.
Afdeling B tel 25 punte in totaal.

B.1 (a) Explain *Pareto Efficiency* in the production of two products (cars and computers) through the use of two factor inputs (capital and labour). (2)
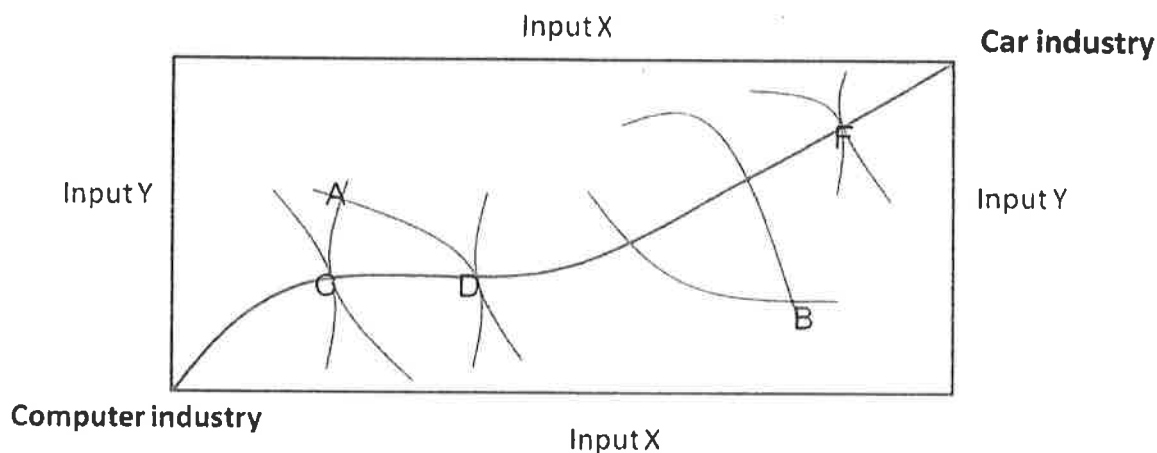
Verduidelik *Pareto-doeltreffendheid* in die produksie van twee produkte (motors en rekenaars) deur die gebruik van twee faktorinsette (kapitaal en arbeid). (2)

Pareto Efficiency is the efficient allocation of goods in which no one can be made better off unless someone else is made worse off. If the labour and capital markets are perfectly competitive, then the wage rate (w) will be the same in all industries. Likewise, the rental of capital (r) will be the same whether capital is used in the production of cars or computers

(b)   Answer the following questions based on the Edgeworth box diagram below.

Beantwoord die volgende vrae op grond van die Edgeworth-kasdiagram hier-
onder.

(i)   What is the line joining points C, D and F called?   (1)

       Wat word die lyn wat punt C, D en F met mekaar verbind, genoem?   (1)

       Contract curve.

(ii)   List any two points where production is inefficient.   (2)

       Lys enige twee punte waar produksie ondoeltreffend is.   (2)

       A & B.

(iii) A movement from point A to point D will be to the benefit of which of the two
       industries? Explain your answer in no more than three sentences.   (4)

       'n Beweging vanaf punt A na punt D sal tot voordeel van watter een van die
       twee industrieë strek? Verduidelik u antwoord in hoogstens drie sinne.   (4)

       Point A represents the point where production is inefficient, while
       point D represents an efficient allocation. A movement from A to D
       is as a result of bargaining between the two industries. The computer industry
       would benefit from the movement from point A to D as their position has
       changed from inefficient production to a more efficient production point.

(iv)   At point F, which of the two industries is dominant?   (1)

Watter een van die twee nywerhede is dominant by punt F?   (1)

The Computer Industry.

B.2   Assume the South African beer industry was composed of only two firms (Firm 1 and Firm 2), which were faced with the following market conditions:
Demand curve: P = 20 – Q; (P= market price & Q = market quantity)
Marginal Costs (MC) = 0

Veronderstel dat die Suid-Afrikaanse bierindustrie uit slegs twee firmas bestaan (Firma 1 en Firma 2), wat voor die volgende marktoestande te staan kom:
Vraagkromme: P = 20 – Q; (P= markprys & Q = markhoeveelheid)
Marginale Koste (MC) = 0

Calculate the firms' *Cournot equilibrium* (competitive) outputs, the market price of beer and the firm's individual profit levels, by clearly working out the firm's Total Revenues, Marginal Revenue and Reaction Curves. (show the steps in your calculations).   (15)

Bereken die firma se *Cournot-ewewig* (mededingende) uitsette, die markprys van bier en die firma se individuele winsvlakke, deur die firma se Totale Inkome, Marginale Inkome en Reaksiekrommes te bereken.   (15)

Total Revenue $\rightarrow R_1 = PQ_1 = (20 - Q)(Q_1)$

$= 20Q_1 - (Q_1 + Q_2)Q_1$

$= 20Q_1 - Q_1^2 - Q_2 Q_1$

Marginal Revenue $\rightarrow MR_1 = \Delta R_1 / \Delta Q_1$

$= 20 - 2Q_1 - Q_2$

Firm 1: Reaction curve : $Q_1 = 10 - \frac{1}{2}Q_2$

$Q_1 = 10 - \frac{1}{2}\left(10 - \frac{1}{2}Q_1\right)$

$Q_1 = 10 - \frac{10}{2} + \frac{1}{4}Q_1$

$Q_1 - \frac{1}{4}Q_1 = 5$

$\frac{3}{4}Q_1 = 5$

$Q_1 = \frac{5}{\frac{3}{4}}$

$Q_1 = 6^2/_3$