

IRD 104: QUANTITATIVE SKILLS II
MAIN AND TOWN CAMPUSES

Instructions to candidates:

Answer questions **ONE** and any other **THREE** questions

QUESTION ONE: COMPULSORY (25 MARKS)

- a) A firm rent its premises and rental agreement generates a regular income of shs. 3000. If the rent in the first year is shs 8000
- i. What is the rent in the 10th year (2 marks) ✓
 - ii. How much rent did the tenant pay for the premises over the 10 years (4 marks) ✓
- b) A debt of shs 10000 with interest rate at 5% compounded semiannually is repaid by equal amount over the four years. Find the value of each repayment (4 marks) ✓
- c) Mr. Chuchu invested Kshs. 50000 with a financial institution at 10% P.A for a period of 5 years. Assuming simple interest rate of interest on one hand and compound interest on the second, paid quarterly find:
- i. The sum of his investment at the end of 4 years under simple interest (4 marks) ✓
 - ii. The sum of his investment under compound interest (4 marks) ✓
- d) If in a geometric progression $a^4 = 96$ and $a^5 = 192$ find the sum of the 1st 10 terms (4 marks) ✓
- e) The future value of an investment is expected to be Kshs, 1000000 in 5 years time. What is its present value given a discounting rate of 10% p.a (3 marks)

QUESTION TWO (15 MARKS)

- a) If a, b, c are respectively the sum of p, q, r terms of an A.P, prove that

$$\frac{a}{p} = \frac{(q-r)}{q} + \frac{b}{q} \frac{(r-p)}{r} + \frac{c}{r} \frac{(p-q)}{p} = 10 \quad (4 \text{ marks})$$

The sum of four terms of an AP is 40 and the sum of their squares is 480. Find the numbers

Handwritten notes:
 $S_4 = 40$
 $S_4^2 = 480$

(7 marks)

If a, b, c are in A. P and x, y, z are in G.P then prove that

$$X^{b-c} Y^{c-a} Z^{a-b} = 1$$

(4 marks)

QUESTION THREE

(15 MARKS)

a) A firm uses four basic raw materials ABCD in its production process. The table below relate to the amount and price of each of the raw materials in 2014 and 2015

Raw materials unit	2014		2015	
	Price shs <i>P₀</i>	Quantity units <i>Q₀</i>	Price shs <i>P₁</i>	Quantity units <i>Q₁</i>
A	50	350	60	420
B	120	600	140	700
C	30	330	20	200
D	20	360	15	300

Using 2014 as the base, calculate;

- i. Laspeyre's price and quantity index (3 marks)
- ii. Paasche's price and quantity index (3 marks)
- iii. Marshal-Edgeworth price index (3 marks)
- iv. Fischer' price index (2 marks)

b) Prices per unit of the items forming consumption bundle of an average middle class family in two periods and percentage of total family budget allocated to those items are given in the following table:

	Food	Rent	Clothing	Fuel	Miscellaneous
Percent Expenditure	35	15	20	10	20
Price in base year	150	50	100	20	60
Prices in current year	174	60	125	25	90

Compute an appropriate index number and comment on the results

(5 marks)

QUESTION FOUR (15 MARKS)

- a) State five factors that affect the growth of population (5 marks)
- b) Stock exchange is a vital organ of the modern business. Explain five functions of stock exchange *checklist* (5 marks)
- c) Joseph is comparing interest rates of two different banks. One offers 10% compounded annually and the other offers 9.5% compounded semi-annually. Which of the banks offers better rate? (5 marks)

QUESTION FIVE (15 MARKS)

The following balances were extracted from book of accounts of ABC Ltd.

Stock	150000
Debtors	35900
Cash	20000
Creditors	60000

Proposed dividends to be paid soon	14800
Corporate tax payable	6350
Fixed assets	213900
Loan	40000
Shared capital	160000

Computer:

- i. Current ratio (5 marks)
- ii. Acid – test ratio (quick ration) (5 marks)
- iii. What does quick ration measures (5 marks)

QUESTION SIX (15 MARKS)

- a) Adam Smith in his e-book “The wealth of Nations” stated that a good tax system should possess four canons. Briefly explain these canons (4 marks) *flexible*

- b) Identify any two personal incomes which are not taxed (2 marks)

- c) In 2014, Okumu was an employee of Unilever Tea Company, Kericho Kenya. He was earning a basic salary of 80,000 in addition to the basic salary; he got the following allowance; *bs 280,000*

House allowance	50,000
-----------------	--------

$65 + 111 = 176$
 $176 = 6 \times 29.33$
 $6 \times 29.33 = 176$
 Net Income

Responsibility allowance	10,000
Commuter allowance	6,000

Okumu contributed on a monthly basis Kshs. 5,292 to a registered pension fund, Kshs 320 to National Hospital Insurance Fund, Kshs 1130 to Hesabu Cooperative society, Kshs 320 to a staff benevolent fund and Kshs 1,800 to staff welfare society.

Calculate

- i. Okumu's monthly gross income ✓ (1 mark)
- ii. Okumu's monthly taxable income ✓ (1 mark)
- iii. Okumu's monthly tax liability (4 marks)
- iv. Okumu's net monthly income ✓ (2 marks)
- v. The marginal rate of tax (1 mark)

Monthly tax bracket	Rate of tax
First Kshs 10164	10%
Next Kshs 9576	15%
Next Kshs 9576	20%
Next Kshs 9576	25%
Over Kshs 38892	30%

Monthly personal relief was Kshs 1162

QUESTION SEVEN (15 MARKS)

- a) Justify the payments of tax by residents of Kenya (4 marks)
- b) Distinguish between balance of trade and balance of payments (2 marks)
- c) Differentiate between gross national product (GNP) and gross domestic product (GDP) (2 marks)
- d) A man receives Shs. 3412 as amount by lending Shs. 17000 for 20 years at a certain rate of interest. What will amount to Shs. 5200 in 5 years if its lent at the same rate of interest? (4 marks) ✓
- e) The compound interest on a certain sum of money for two years is Shs. 920.50 and in a simple interest is Shs. 900.00. find the sum and the rate of interest

41

Zub