COMMERCIAL ARITHMETIC II

1. **(a) HIRE PURCHASE**

   1989 Q2 P2

   If a cupboard is to be bought on hire purchase, the buyer pays a deposit equal to 10% of the cash price plus 12 equal monthly installments. John the cupboard by hire purchase and ended up paying a total of sh. 3240, which was 20% above the cost price. Determine the monthly installments.   (4marks)

2. **2007 Q6 P2**
   The cash price of a T.V set is Kshs 13, 800. A customer opts to buy the set on Hire purchase terms by paying a deposit of Kshs 2, 280. If simple interest of 20% p.a is charged on the balance and the customer is required to repay by 24 equal monthly installments, calculate the amount of each installment.
                    (3 marks)

3. **2011 Q17 P2**
   The cash price of a laptop was Ksh. 60,000. On hire purchase terms, a deposit of Ksh 7500 was paid followed by 11 monthly instalments of Ksh 6000 each.

   a) Calculate :
    i) the cost of a laptop on hire purchase terms;   (2marks)
    ii) the percentage increase of hire purchase price compaired to the cash price.
   (2marks)
   b) An institution was offered a 5% discount when purchasing 25 such laptops on cash terms. Calculate the amount paid the institution   (2marks)

   c) Two other institutions, X and Y bought 25 such laptops each. Institition X bought the laptops on hire purchase terms. Institution Y bought the laptops on cash terms with no discount by securing a loan from a bank.

   The bank charged 12% p.a compound interest for two years.
    Calculate how much more money institution Y paid than institution X   (4marks)

1	**(b) SIMPLE AND COMPOUD INTERESTS** **1989 Q7 P1** Omondi deposited sh 4500 in a bank which paid compound interest of 12% per annum. Calculate the amount after 2 years (2marks)
2	**1990 Q22a P1** A man wants to buy a residential house valued at sh 500,000. A housing finance company advances him 90% of the amount. He repays by equal monthly instalments of sh. 6500 for 15 years. Calculate the total interest paid to the finance company. (4marks)
3	**1991 Q20 P2** An insurance company has a target of raising sh. 100,000 in a period of three years. At the beginning of each year the company invests sh. 30,000 at a compound interest of 15% in a financial institution. By how much does the company exceed its target at the end of three years? (8marks)
4	**1992 Q10 P1** Find the compound interest on sh 21000 in 5years at 15% (4marks)
5	**1993 Q17 P2** Pauline deposited sh 1500 in a savings account at the beginning of the year. Compound interest on the money is calculated at the rate of 15% per annum. At the beginning of each subsequent year she deposited sh 1500 in the same account. Calculate the amount of money she will have in her account at the end of the 5th year (8marks)
6	**1994 Q6 P1** A businesswoman withdrew sh 67845 from a financial institution which both the principal and the compound interest which accrued within 3years. If the compound interest rate was 25% per annum, calculate the principal (3marks)
7	**1995 Q15 P2** The cash prize of a television is Kshs 25000. A customer paid a deposits of Kshs 3750. He repaid the amount owing in 24 equal monthly installments. If he was charged simple interest at the rate of 40% p.a, how much was each installment? (4 marks)
8	**1995 Q17 P2** At the beginning of every year, a man deposited Kshs 10,000 in a financial institution which paid compound interest at the rate of 20% p.a. He stopped further deposits after three years. The Money remained invested in the financial institution for a further eight years. (a) How much money did he have at the end of the first three years (4 marks) (b) How much interest did the money generate in the entire period (4 marks)

9	**1996 Q7 P1** Mr. Ngeny borrowed Kshs. 560,000 from a bank to buy a piece of land. He was required to repay the loan with simple interest for a period of 48 months. The repayment amounted to Kshs 21000 per month. Calculate (a) The interest paid to the bank (2 marks) (b) The rate per annum of the simple interest (4 marks)
10	**1998 Q13 P1** A financial institution charges compound interest on money borrowed. A business woman borrowed Kshs. 16, 000 from the financial institution. She paid back Kshs 25,000 after 2 years. Find the interest rate per annum.

11	**1999 Q10 P1**
	A business woman opened an account by depositing Kshs. 12,00 in a bank on 1st July 1995. Each subsequent year, she deposited the same amount on 1st July. The bank offered her 9% per annum compound interest. Calculate the total amount in her account on
	  a) 30th June 1996
	  b) 30th June 1997

12.	**2000 Q12 P1** A tailor intends to buy a sewing machine costs Kshs. 48,000. He borrows the money from a bank the loan has to be repaid at the end of the second year. The bank charges an interest at the rate of 24% per annum compounded half - yearly. Calculate the total amount payable to the bank.

13	**2002 Q17 P1**
	A house is to be sold either on cash basis or through a loan. The cash price is sh.750,000. The loan conditions area s follows: there is to be down payment of 10% of the cash price and the rest of the money is to be paid through a loan at 10% per annum compound interest.
	   A customer decided to but the house through a loan.
	a) (i)Calculate the amount of money loaned to the customer.
	  (ii)The customer paid the loan in 3 years. Calculate the total amount paid for the house.
	
	 b) Find how long the customer would have taken to fully pay for the house if she paid a total of sh 891,750. (8mks)

14	**2005 Q15 P1** A bank either pays simple interest as 5% p.a or compound interest 5% p.a on deposits. Nekesa deposited Kshs P in the bank for two years on simple interest terms. If she had deposited the same amount for two years on compound interest terms, she would have earned Kshs 210 more. Calculate without using Mathematics Tables, the values of P (4 marks)

15	**2006 Q17 P2** A computer whose marked price is Kshs 40,000 is sold at Kshs 56,000 on hire purchase terms. (i) Kioko bought the computer on hire purchase term. He paid a deposit of 25% of the hire purchase price and cleared the balance by equal monthly installments of Kshs 2625 Calculate the number of installments (3 marks) (ii) Had Kioko bought the computer on cash terms he would have been allowed a discount of 12 ½ % on marked price. Calculate the difference between the cash price and the hire purchase price and express as a percentage of the cash price .
16	**2012 Q7 P2** Kago deposited Ksh 30 000 in a financial institution that paid simple interest at the rate of 12% per annum. Nekesa deposited the same amount of money as Kago in another financial institution that paid compound interest. After 5 years, they had equal amounts of money in the financial institutions. Determine the compound interest rate per annum, to 1 decimal place, for Nekesa's deposit. (4 marks)

17	**2012 Q17 P2**
	Amaya was paid an initial salary of Ksh 180 000 per annum with a fixed annual increment. Bundi was paid an initial salary of Ksh 150 000 per annum with a 10% increment compounded annually.
	
	  (a) Given that Amaya's annual salary in the 11th year was Ksh 288 000,determine:
	
	    (i) His annual increment; (2 marks)
	
	    (ii) The total amount of money Amaya earned during the 11 years. (2 marks)
	
	  (b) Determine Bundi's monthly earnings, correct to the nearest shilling, during the eleventh year.
	
	                            (2 marks)
	
	  (c) Determine, correct to the nearest shilling:
	
	            (i) The total amount of money Bundi earned during the 11 years. (2 marks)
	
	          (ii) The difference between Bundi's and Amaya's average monthly earnings during the 11
	              years. (2 marks)

	(c) APPRECIATION AND DEPRECIATION

1	**1989 Q21 P1**
	    A farmer bought a machine at sh 110000. If the depreciation rate is 15% per annum, calculate
	    (a) The value of the machine after 3 years (3marks)
	    (b) The number of years it will take for the value to depreciate to sh 55 000 (5marks)

2	**1990 Q9 P2** A salesman sold a new motor cycle at sh 24000. The depreciation rate was 5% per annum. What was the value of the motor cycle after 3 years? (4marks)
3	**1991 Q9 P2** A merchant bought a car for sh40000. Its depreciation rate is estimated at 10% per annum of its value at the beginning of each year. What will be the value of the car at the end of four years? (3marks)
4	**1998 Q5 P2** A plot of land was valued at Kshs 50,000 at the start of 1994. It appreciated by 20% during 1994. Thereafter, every year, it appreciated by 10% of its previous years value. a. The value of the land at the start of 1995 b. The value of the land at the end of 1997

5	**1999 Q17 P1**
	The cost of a minibus was Kshs. 950,000. It depreciated in value by 5% per year for the first two years by 15% per year for the subsequent years.
	  a) Calculate the value of the minibus after 5 years
	   b) After 5 years the minibus was sold through a dealer at 25% more than its value to Mr. X. If the dealers sale
	 price was to be taken as its value after depreciation, calculate the average monthly rate of depreciation for 5 years.

6	**2002 Q9 P1** The average rate of depreciation in value of a water pump is 9% per annum. After three complete years its like value was sh 150,700. Find its value at the start of the three – year period. (4mks)

7	**2003 Q4 P1** A water pump costs Kshs. 21600 when new. At the end of first year its value depreciates by 25%. The depreciation by the second year is 20% and thereafter the rate of the depreciation is 15% yearly. Calculate the exact value of the water pump at the end of the fourth year. (3mks)
8	**2003 Q23 P1** A businessman obtained a loan of sh.450,000 from a bank to buy a matatu valued at the same amount. The bank charges interest at 24% per annum compounded quarterly a) Calculate the total amount of money the businessman paid to clear the loan in 1 ½ years. b) The average income realized from the matatu per day was sh.1500. The matatu worked for 3 years at an average of 280 days year. Calculate the total income from the matatu. c) During the three years, the value of the matatu depreciated at the rate of 16% per annum. If the businessman sold the matatu at its new value, calculate the total profit he realized by the end of three years. (3mks)
9	**2004 Q10 P1** Omolo bought a new car for ksh. 800,000. After 5 years, he sold it through a second- hand car dealer. The dealer charged a commission of 4% for the sale of the car. If Omolo received Ksh.480, 000, calculate the annual rate of depreciation of the car.

10	**2008 Q23 P2**
	Halima deposited Ksh. 109375 in a financial institution which paid simple interest at the rate of 8% p.a. At the end of 2 years, she withdrew all the money. She then invested the money in share. The value of the shares depreciated at 4% p.a. during the first year of investment. In the next 3 years, the value of the shares appreciated at the rate of 6% every four months
	
	a) Calculate the amount Halima invested in shares. (3mks)
	
	b)Calculate the value of Halima's shares.
	  (i) At the end of the first year; (2mks)
	  (ii) At the end of the fourth year, to the nearest shilling. (3mks)
	
	c)Calculate Halima's gain from the share as a percentage. (2mks)
	 (i)Find the values of x and y. (5mks)
	 (ii) Calculate the time taken before the policemen were
	     unable to communicate. (2mks)

1	**(d) INCOME TAX**
	
	1992 Q17 P2
	Kamau's basic salary was K£5520 per annum when the rates of P.A.Y.E were as per the table below:
	
	Salary in Pounds Tax in sh per pound
	   0 – 2300 2
	 2301 – 4600 3
	   4601 – 6900 5
	   6901 and over 8
	
	He claimed a personal relief of sh 220 per month. Every month sh 120 was deducted from his salary towards a pension scheme and sh 100 deducted towards local service charges. Calculate his net monthly salary to the nearest 10cents. (8marks)

2	**1993 Q17 P1**
	Income tax for all the income earned was charged at the rates shown below
	
	Total income per year *Rates in shillings per*
	  in shillings *20 shillings*
	  1-39600 2
	  39601-79200 3
	  79201-118,800 5
	  118,801-158,400 7
	 158,400-198,000 9
	Excess over 198,000 10
	
	Kariuki earned salary of sh 7500 per month. In addition he was given a house allowance of sh 2500 per month. He got family relief of sh200 per month. How much income tax did he pay per month? (8marks)

3	**1996 Q18 P1**

The table below shows the income tax rates

Total income per month in Kenya pound	Rate in shillings per pound
1 – 325	2
326 – 650	3
651-975	4
976 – 1300	5
1301 – 1625	7
Over 1625	7.50

Mr. Otiende earned a basic salary of Kshs 13,120 and a house allowance of Kshs 3,000 per month. He claimed a tax relief for a married person of Kshs 455 per month

(a) Calculate

(i) The tax payable without the relief

(ii) The tax paid after the relief

(b) Apart from the income tax, the following monthly deductions are made. A service charge of Kshs 100, a health insurance fund of Kshs 280 and 2% of his basic salary as widow and children pension scheme. Calculate

(i) The total monthly deductions made from Mr. Otiende's income
(2 marks)

(ii) Mr. Otiende's net income from his employment   (2 marks)

4	**1998 Q18 P1**
	The table below shows monthly income tax rates

Monthly taxable pay K £	Rate of tax Kshs per K£
1 - 342	2
343 - 684	3
685 - 1026	4
1027-1368	5
1369 - 1710	6
Over 1710	7

A civil servant earns a monthly salary of Kshs 20,000 and is provided with a house at a nominal rent of Kshs 700 per month

(a) Taxable pay is the employee's salary, plus 15% of salary, less nominal rent. Calculate the civil servant's taxable pay in K £

(b) Calculate the total tax

(c) If the employee is entitled to a personal relief of Kshs.1050 Per month, what is the net tax.

5	**2001 Q17 P1**
	The table shows income tax rates

Monthly taxable pay	Rate of tax Kshs in 1 K£
1 – 435	2
436 – 870	3
871-1305	4
1306 – 1740	5
Excess Over 1740	6

A company employee earns a monthly basic salary of Kshs 30,000 and is also given taxable allowances amounting to Kshs 10, 480.

(a) Calculate the total income tax

(b) The employee is entitled to a personal tax relief of Kshs 800 per month. Determine the net tax.

(c) If the employee received a 50% increase in his total income, calculate the corresponding percentage increase on the income tax.

6	**2002 Q18 P2**
	The table below shows Kenyan tax rates in a certain year

Income (K£ per annum)	Tax rates (Sh. Per £)
1 -4,512	2
4513 -9024	3
9025 – 13536	4
13537 – 18048	5
18049 -22560	6
Over 22560	6.5

In that year Muhando earned a salary of Ksh.16510 per month. He was entitled to a monthly tax relief of Kshs 960.
Calculate:
a)   Muhandos annual salary in K£
b)   The monthly tax paid by muhando in Kshs.

7	**2004 Q17 P1**
	The table below shows monthly income tax rates for the year 2003.

Monthly taxable income in Ksh.	Tax rates(Percentage)
1-9860	10%
9681 – 18800	15%
18801-27920	20%
27921 – 37040	25%
37041 and above	30%

In the year 2003,Ole Sanguya's monthly earnings were as
follows:-

Basic salary	Ksh 20600
House allowance	ksh 12000
Medical allowance	Ksh 2880
Transport allowance	Ksh 340.

Ole Sanguya was entitled to a monthly tax relief of Ksh 1056. Calculate: a) His monthly taxable income
b) The monthly tax paid by Ole Sanguya.

8	**2006 Q17 P2**
	A certain sum of money is deposited in a bank that pays simple interest at a certain rate.
	After 5 years the total amount of money in an account is Kshs 358 400. The interest earned each year is 12 800
	Calculate
	(i) the amount of money which was deposited (2 marks)
	(ii) the annual rate of interest that the bank paid (2 marks)
9	**2006 Q18 P2**
	The table below is a part of tax table for monthly income for the year 2004
10	**2009 Q21 P2**
	The table below shows the income tax rates

(Row 9 table):

Monthly taxable income In (kshs)	Tax rate percentage (%) in each shilling
Under Kshs 9681	10%
From Kshs 9681 but under 18801	15%
From Kshs 18801 but 27921	20%

In the tax year 2004, the tax on Kerubo's monthly income was Kshs 1916. Calculate Kerubos monthly income   (3 marks)

(Row 10 table):

Monthly income in Kenya shillings (Ksh)	Tax rate percentage (%) Iin each shillings
Up to 9 680	10
From 9 681 to 18 800	15
From 18 801 to 27 920	20
From 27 921 to 37 040	25
From 37 041 and above	30

In a certain year, Robi's monthly taxable earnings amounted to Ksh. 24 200

(a) Calculate the tax charged on Robi's monthly earning (4 marks)

(b) Robi was entitled to the following tax reliefs
   i.   Monthly personal relief of Ksh. 1 056;
   ii. Monthly insurance relief at the rate of 15% of the premium paid
        Calculate the tax paid by Robi each month, if she paid a monthly premium of Ksh. 2400 towards her life insurance policy   (2 marks)
(b) During a certain month, Robi received additional earning which were taxed at 20% in each shilling. Given that she paid 36.3% more tax that month, calculate the percentage increase in her earnings
                                                    (4 marks)

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11 | **2012 Q20 P2**
In June of a certain year, an employee's basic salary was Ksh 17 000.The employee was also paid a house allowance of Ksh 6 000,a commuter allowance of Ksh 2 500 and a medical allowance of Ksh 1 800. In July of that year, the employee's basic salary was raised by 2%.

(a) Calculate the employees:

   (i)   Basic salary for July;   (2 marks)

   (ii)   Total taxable income in July of that year.

                                                    (2 marks)
   (b)   In that year, the Income Tax Rates were as shown in the table below:

Given that the Monthly Personal Relief was Ksh 1 056, calculate the net tax paid by the employee.
                                    (6 marks)

Monthly taxable income (Kshs)	Percentage rate of tax per shilling
Up to 9680	10
From 9681 to 18 800	15
From 18 801 to 27 920	20
From 27 921 to 37 040	25
From 37 041 and above	30