ASSIGNMENT 1 (COMPULSORY)

Due Date	Unique Number
23 February 2018	758219

Submit your answers online through myUnisa. No extensions will be granted for submission of this assignment. ***NO*** *manual or posted submissions will be allowed.*

Question 1

Simplify: $\frac{3a^2b^3}{2ab^2+4ab} \times \frac{b^2+4b+4}{6a^2b^5}$

1) $\frac{3b+4}{4a^2b}$
2) $\frac{b+2}{4ab^3}$
3) $\frac{b+4}{4a^2b^3}$
4) $\frac{3b+2}{4ab^2}$

Question 2

Simplify: $\frac{1+\frac{1}{x+1}}{x-\frac{4}{x}}$

1) $\frac{2x}{(x-1)(x+2)(x-2)}$
2) $\frac{x+1}{x-4}$
3) $\frac{x}{(x+1)(x-2)}$
4) $\frac{2x}{(x+1)(x-4)}$

Question 3

Simplify: $\frac{2^{-4}.(2^{-1})^2}{(2^0+1)^{-1}}$

1) $\frac{1}{128}$
2) $\frac{1}{32}$
3) $\frac{1}{2}$
4) $\frac{1}{64}$

Question 4

Simplify: $\left(\frac{a^2b^{-1}c^3}{a^3b^{-2}}\right)^2$

1) $\frac{b^2c^6}{a^2}$
2) $\frac{a^3c^6}{b^4}$
3) $\frac{bc^3}{a}$
4) $\frac{b^3c^3}{a^3}$

Question 5

Solve: $\sqrt{2x+5} = 3$

1) $x = 4$
2) $x = -2$
3) $x = 2$
4) $x = -1$

Question 6

Solve: $2\left(\frac{x-1}{4}\right) - \frac{2x}{3} = \frac{4-3x}{12}$

1) $x = 8$
2) $x = 10$
3) $x = 2\frac{1}{2}$
4) $x = -1$

Question 7

Find the number of ways a chairman, a vice-chairman, a secretary, and a treasurer can be chosen from a committee of eight members.

1) 32 ways
2) 5040 ways
3) 24 ways
4) 1680 ways

Question 8

A senate investigation committee of four members is to be selected from a senate committee of ten members. Determine the number of ways this can be done.

1) 5040 ways
2) 210 ways
3) 252 ways
4) 6030 ways

Questions 9 and 10 are based on the following information:

The members of a string quartet consisting of two violinists, a violist, and a cellist are to be selected from a group of six violinists, three violists, and two cellists.

Question 9

In how many ways can the string quartet be formed?

1) 180 ways
2) 36 ways
3) 72 ways
4) 90 ways

Question 10

In how many ways can the string quartet be formed if one of the violinists is to be designated as the first violinist and the other as the second violinist?

1) 180 ways
2) 36 ways
3) 72 ways
4) 90 ways

Question 11

A packet of 160 sweets contains red, blue and yellow sweets in the ratio of 3:2:3 respectively. Determine how many sweets of each colour there are in the packet.

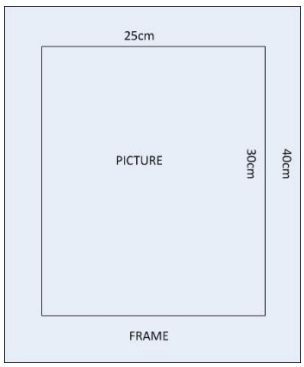
1) Red = 40; Blue = 60; Yellow = 40.
2) Red = 60; Blue = 40; Yellow = 60.
3) Red = 60; Blue = 60; Yellow = 40.
4) Red = 40; Blue = 60; Yellow = 60.

Question 12

In the diagram above, if PQ = 45mm and the ratio of TQ: PQ is 2: 3, calculate PT and TQ.

1) PT = 20mm and TQ = 30mm
2) PT = 30mm and TQ = 20mm
3) PT = 15mm and TQ = 30mm
4) PT = 30mm and TQ = 15mm

Question 13



The sketch above shows a rectangular picture with a frame around it. The frame is the same width all the way around. The picture is 25cm wide and 30cm high. The total height of the picture and the frame is 40cm.

Calculate the area of the frame (without the picture).

1) $650cm^2$
2) $750cm^2$
3) $1000cm^2$
4) $1400cm^2$

Question 14

A rectangular tank is 5m long, 4m wide and 3m deep. Suppose water is pumped into the bank at a rate of 8500 litres per hour. After 4 hours, what is the level of water from the top of the tank? *(round off to two decimal places)*

1) 1.70m
2) 0.57m
3) 2.43m
4) 1.30m

Question 15

Find the volume, in mm^3, of a cube with sides the length of 3cm each.

1) $27mm^3$
2) $27\ 000mm^3$
3) $9mm^3$
4) $9\ 000mm^3$

Question 16

What is the number of square tiles needed to cover a rectangular surface of 4m by 3m, if the length of each side of the tile is 10cm?

1) 120
2) 1 200
3) 12 000
4) 120 000

Question 17

A rectangular tank is 25m long, 12m wide and 6m deep. The tank is open on the top. What is the cost of plastering the inside of its walls and bottom (floor) at R26 per square meter?

1) R7 800
2) R13 572
3) R46 800
4) R19 344

Question 18

Dimakatso wants to travel to see her friends in Spain. She has been given R10 000 spending money. How many euros can she purchase if the exchange rate is currently €1 = R10.68?

1) €936.33
2) €92.08
3) €93.63
4) €920.81

Questions 19 and 20 are based on the following information:

Moloko is buying some books online. She finds a publisher in the UK selling the books for £16.99. She then finds the same books from a publisher in the USA for $32.50. Next she looks up the exchange rate and finds that $1 = 12.43 and £1 = R16.89. Shipping is £2 and $3 respectively.

Question 19

How much will she pay (in rand) if she bought from the UK publisher?

1) R320.74
2) R292.11
3) R441.27
4) R286.96

Question 20

How much will she pay (in rand) if she bought from the USA publisher?

1) R320.74
2) R292.11
3) R441.27
4) R286.96

Questions 21

Statistics results show that the number of farms in South Africa dropped from 276 548 in 1996 to an estimated 246 923 in 2001. What is the index for the number of farms in 2001 based on the number in 1996?

1) 89.15
2) 89.29
3) 112.00
4) 112.17

Question 22 and 23 are based on the following information:

An index for clothing prices for 2005 and 1998 is given below. The clothing items considered are ties and socks. The information for prices and quantities for both years is given below. Use 1998 as the base year and 100 as the base value.

	1998		2005	
	Price (R)	Quantity	Price (R)	Quantity
Ties (each)	75	500	85	520
Socks (pair)	40	1200	45	1300

Question 22

Determine the Laspeyres price index.

1) 98.9
2) 112.9
3) 103.7
4) 106.4

Question 23

Determine the Paasche price index

1) 103.7
2) 106.4
3) 112.9
4) 98.9

Questions 24 and 25 are based on the following information:

The take-home pay of Karabo Moroka and the CPI for 2012 and 2017 are given in the table below.

Year	Take-Home Pay (R)	CPI (Year 2006 = base year)
2012	25 000	107.6
2017	41 200	119.0

Question 24

What was Karabo's real income in 2012?

1) R23 234.20
2) R38 289.96
3) R21 008.40
4) R34 621.85

Question 25

What was Karabo's real income in 2017?

1) R23 234.20
2) R38 289.96
3) R21 008.40
4) R34 621.85