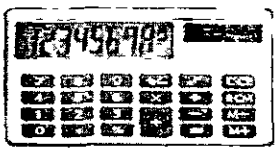
UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA university of south africa

BNU1501 (490631) May/June 2016

BASIC NUMERACY

Duration 2 Hours 100 Marks

EXAMINERS
FIRST MRS JC BEDEKER
SECOND DR S MUKERU

Programmable pocket calculator is permissible.

Closed book examination

This paper consists of 11 pages, including 3 pages for rough work

Answer *all* the questions

Please complete the attendance register on the back page of this paper, tear it off and hand it to the invigilator.

Answer all the questions on the mark-reading sheet supplied Carefully follow the instructions for completing the mark-reading sheet Also pay attention to the following

- Only one option (indicated as [1] [2] [3] [4]) per question is correct Do not mark more than one option per question on the mark-reading sheet
- Marks will not be deducted for incorrect answers
- The paper consists of 25 questions for a total of 100 marks

Please write your name on the mark-reading sheet. This will enable us to link you to the mark-reading sheet, if you have entered your student number incorrectly.

Question 1

Solve the following equation

$$3(x+1)+4=5-3(x-2)$$

[1] $-1\frac{1}{3}$

[2] $-\frac{2}{3}$

[3] 3

[4] $\frac{2}{3}$

Question 2

Solve the following equation

$$\frac{30x}{9}+2=5x$$

[1] $\frac{6}{5}$

[2] $\frac{43}{30}$

[3] $-\frac{18}{25}$

[4] $-\frac{6}{5}$

Question 3

Simplify the following expression as far as possible

$$\sqrt{36x^4y^{16}}$$

[1] $9x^4y^4$

[2] $6x^2y^8$

[3] $18x^2y^8$

[4] $6x^2y^4$

Question 4

Simplify the following expression as far as possible

$$a\left(2a^2-a-4\right)-2a(a+3)-1$$

[1] $2a^3-3a^2-6a-5$

[2] $-a^2-7a-1$

[3] $2a^3-3a^2-10a-1$

[4] $2a^3-3a^2+2a-1$

Question 5

Simplify the following as far as possible

$$\frac{5}{6} \div \frac{3}{6} \times \frac{3}{15}$$

[1] $\frac{25}{3}$
[2] $\frac{1}{3}$
[3] $\frac{1}{12}$
[4] $\frac{3}{25}$

Question 6

Simplify the following as far as possible

$$\frac{5}{6} - \frac{3}{4} + \frac{7}{24}$$

[1] $\frac{9}{26}$
[2] $\frac{1}{8}$
[3] $\frac{61}{24}$
[4] $\frac{3}{8}$

Question 7

Simplify the following as far as possible

$$\frac{3}{4} + \frac{1}{2} \times \frac{5}{4}$$

[1] $\frac{2}{3}$
[2] $\frac{11}{8}$
[3] $\frac{5}{8}$
[4] $\frac{13}{4}$

Question 8

Determine the LCM (lowest common multiple) of the following

$$6a^2bc,\ 8abc,\ 12ab^3$$

[1] $24a^2b^3c$
[2] $12abc$
[3] $12a^2b^3c$
[4] $576a^4b^5c^2$

Question 9

The length of a rectangle is 3 cm less than twice the width Suppose the width is x cm, give an expression in x for the length of the rectangle in cm

[1] $x - 3$

[2] $2(x - 3)$

[3] $2x - 3$

[4] $2(x + 2)$

Question 10

Simplify the following expression as far as possible

$$\frac{x^2 \times x^3}{x^5}$$

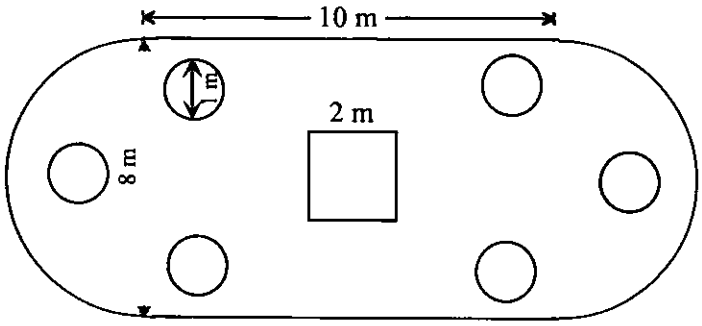
[1] x

[2] $x^{\frac{6}{5}}$

[3] $\frac{6}{5}$

[4] 1

Question 11



A garden is laid out so that it consists of a rectangle with a semi-circle at each of the shorter ends (See sketch above) The garden contains a square fish pond and six circular planting areas Each planting area has a diameter of 1 metre The remainder of the garden is lawn Calculate the perimeter of the garden, rounded to one decimal digit

[1] 70,3 m

[2] 120,5 m

[3] 2 010,6 m

[4] 45,1 m

Question 12

Refer to the sketch in question 11 above
Calculate the area of the lawn, rounded to one decimal digit

[1] $121{,}6\,\text{m}^2$
[2] $107{,}4\,\text{m}^2$
[3] $258{,}2\,\text{m}^2$
[4] $82{,}3\,\text{m}^2$

Question 13

Refer to the sketch in question 11 above
Calculate the volume of the fish pond in litres if it is 1,5 m deep

[1] $6\,000\ell$
[2] $4\,000\ell$
[3] 6ℓ
[4] $3\,000\ell$

Question 14

If $C = 2(\ell + w)$, make w the subject of the formula

[1] $w = C - 2 - \ell$
[2] $w = \frac{C-2\ell}{2}$
[3] $w = 2C - \ell$
[4] $w = \frac{C}{2} + \ell$

Question 15

A company manufactures soccer balls The company's daily fixed costs (i e rental, phones, stationery, etc) are R18 000 One soccer ball costs R500 to manufacture and it is sold for R800 How much profit does the company make per day if 100 soccer balls are produced and sold per day?

[1] R12 000
[2] R30 000
[3] −R150 000
[4] R48 000

Question 16

Calculate the slope of the straight line graph which passes through the points $(-1, -2)$ and $(3, 4)$

[1] 1
[2] $\frac{3}{2}$
[3] $4y = 6x - 2$
[4] $\frac{2}{3}$

Question 17

A dealer sells a certain washing machine for R2 410, excluding VAT If we assume VAT is 14%, what will the washing machine cost, including VAT?

[1] R2 072,60
[2] R2 424,00
[3] R2 747,40
[4] R337,40

Question 18

Suppose I need 5 eggs to bake 2 cakes How many eggs will I need to bake 14 cakes?

[1] 28
[2] 14
[3] 35
[4] 10

Question 19

Joseph invests R36 000 at a simple interest rate of 6% per year How much will he have after 6 years and 5 months?

[1] R50 040,00
[2] R49 860,00
[3] R142 200,00
[4] R52 321,69

Question 20

Susan invests R45 000 at a simple interest rate of 6% per year Two years later she invests another R20 000 at the same simple interest rate What is the total amount that Susan will have after another 3 years?

[1] R82 100,00
[2] R74 000,00
[3] R76 700,00
[4] R84 500,00

Question 21

Determine at what interest rate per year an amount will double in 10 years' time if the interest is compounded monthly

[1] 7,18%
[2] 0,07%
[3] 20,00%
[4] 6,95%

Question 22

Determine the amount of interest that will be earned if R8 000 is invested for 30 months at an interest rate of 13% per year, compounded half-yearly

[1] R2 960,69

[2] R10 960,69

[3] R11 600,00

[4] R3 600,00

Question 23

Sarah wants to save an amount of R100 000 over two years for a deposit on a townhouse She wants to make weekly payments into an account which offers an 8% yearly interest rate, compounded weekly Determine the size of her weekly payments

[1] R3 856,06

[2] R4 522,73

[3] R887,40

[4] R1 041,25

Question 24

In 1997 Justin bought a three bedroom house for R480 000 He paid a deposit of R150 000 and secured a loan for the outstanding amount The yearly interest rate on the loan was 24%, compounded monthly, and the term was 20 years Determine the outstanding amount at the end of the tenth year if Justin had done all monthly payments in full and the interest rate stayed fixed on 24% per year for the whole period

[1] R439 201,59

[2] R301 951,08

[3] R329 370,97

[4] R0,00

Question 25

Refer to question 24 above
Suppose Justin had paid R8 000 per month into this loan account from the start How long would it take to pay off the loan if the interest rate stayed fixed?

[1] 12,7 years

[2] 3,4 years

[3] 7,3 years

[4] 22,1 years

TOTAL: 100

FORMULAS

$$C = 2(l + w)$$
$$C = 4l$$
$$C = a + b + c$$
$$C = 2\pi r$$

$$A = l \times w$$
$$A = l^2$$
$$A = \tfrac{1}{2}bh$$
$$A = \pi r^2$$

$$V = l^3$$
$$V = l \times base \times h$$
$$V = \pi r^2 h$$

$$y - y_1 = m(x - x_1)$$

$$\frac{y - y_1}{x - x_1} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$I = Prt$$

$$S = P(1 + rt)$$

$$S = P(1 + i)^n$$

$$P = Ra_{\overline{n}|i}$$

$$P = R\left[\frac{(1 + i)^n - 1}{i(1 + i)^n}\right]$$

$$S = Rs_{\overline{n}|i}$$

$$S = R\left[\frac{(1 + i)^n - 1}{i}\right]$$

Rough work

Rough work

Rough work

UNIVERSITY OF SOUTH AFRICA UNISA University of south africa UNIVERSITEIT VAN SUID-AFRIKA

EXAMINATION MARK READING SHEET EKSAMEN-MERKLEESBLAD

PART 1 (GENERAL/ALGEMEEN) DEEL 1

STUDY UNIT e.g. PSY100 X
STUDIE EENHEID bv. PSY100 X

1

PAPER NUMBER
VRAESTELNOMMER

2

INITIALS AND SURNAME
VOORLETTERS EN VAN

3

DATE OF EXAMINATION
DATUM VAN EKSAMEN

4

EXAMINATION CENTRE (E.G. PRETORIA)
EKSAMENSENTRUM (B.V. PRETORIA)

5

STUDENT NUMBER
STUDENTENOMMER

6

7

UNIQUE PAPER NO
UNIEKE VRAESTEL NR

8

9

For use by examination invigilator

Vir gebruik deur eksamenopsiener

IMPORTANT

1. USE ONLY AN HB PENCIL TO COMPLETE THIS SHEET
2. MARK LIKE THIS ●
3. CHECK THAT YOUR INITIALS AND SURNAME HAS BEEN FILLED IN CORRECTLY
4. ENTER YOUR STUDENT NUMBER FROM LEFT TO RIGHT
5. CHECK THAT YOUR STUDENT NUMBER HAS BEEN FILLED IN CORRECTLY
6. CHECK THAT THE UNIQUE NUMBER HAS BEEN FILLED IN CORRECTLY
7. CHECK THAT ONLY ONE ANSWER PER QUESTION HAS BEEN MARKED
8. DO NOT FOLD

BELANGRIK

1. GEBRUIK SLEGS N HB POTLOOD OM HIERDIE BLAD TE VOLTOOI
2. MERK AS VOLG ●
3. KONTROLEER DAT U VOORLETTERS EN VAN REG INGEVUL IS
4. VUL U STUDENTENOMMER VAN LINKS NA REGS IN
5. KONTROLEER DAT U DIE KORREKTE STUDENTENOMMER VERSTREK HET
6. KONTROLEER DAT DIE UNIEKE NOMMER REG INGEVUL IS
7. MAAK SEKER DAT NET EEN ALTERNATIEF PER VRAAG GEMERK IS
8. MOENIE VOU NIE

PART 2 (ANSWERS/ANTWOORDE) DEEL 2

10

1	36	71	106
2	37	72	107
3	38	73	108
4	39	74	109
5	40	75	110
6	41	76	111
7	42	77	112
8	43	78	113
9	44	79	114
10	45	80	115
11	46	81	116
12	47	82	117
13	48	83	118
14	49	84	119
15	50	85	120
16	51	86	121
17	52	87	122
18	53	88	123
19	54	89	124
20	55	90	125
21	56	91	126
22	57	92	127
23	58	93	128
24	59	94	129
25	60	95	130
26	61	96	131
27	62	97	132
28	63	98	133
29	64	99	134
30	65	100	135
31	66	101	136
32	67	102	137
33	68	103	138
34	69	104	139
35	70	105	140