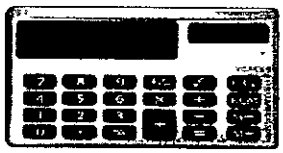
UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA university of south africa

BNU1501 (489785) May/June 2017

BASIC NUMERACY

Duration 2 Hours 100 Marks

EXAMINERS
FIRST MRS JC BEDEKER
SECOND DR KM MALAN

Programmable pocket calculator is permissible.

Closed book examination

This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue.

This paper consists of 13 pages including three pages for rough work A formula sheet is provided on page 10

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
- Where necessary answers are rounded off
- 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 should you enter your student number incorrectly.

Question 1

A biscuit manufacturer uses 200 g of flour, 50 g of sugar and 100 g of butter for each packet of biscuits produced Write an expression for the amount of butter needed to produce x packets of biscuits.

[1] $100x$ kg

[2] $0{,}01x$ kg

[3] $0{,}1x$ kg

[4] $\frac{x}{0{,}01}$ kg

Question 2

Simplify the following expression as far as possible.

$$2b^2(a-1) - 8a(b^2+1)$$

[1] $2ba^2 - 2b^2 - 8ab^2 - 8a$

[2] $-6ab^2 - 2b^2 - 8a$

[3] $8a - 2b^2 - 6b^2a$

[4] $-a - b^2 - 6ab^2$

Question 3

Simplify the following expression as far as possible

$$3\left(2a^2b^3\right)^2 \times 3a^3b^2$$

[1] $18a^{12}b^{12}$

[2] $6a^7b^8$

[3] $36a^7b^8$

[4] $36a^{12}b^{12}$

Question 4

Simplify the following expression as far as possible

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

[1] $4x^{18}y^8$

[2] $8x^6y^4$

[3] $4x^6y^4$

[4] $8x^{18}y^8$

Question 5

Solve the following equation:

$$2(3a+1) = 7 - 4a$$

[1] $a = \frac{9}{2}$
[2] $a = \frac{9}{10}$
[3] $a = \frac{3}{5}$
[4] $a = \frac{1}{2}$

Question 6

Solve the following equation

$$\frac{2x}{5} - \frac{1}{2} = \frac{x}{5}$$

[1] $x = 2\frac{1}{2}$
[2] $x = \frac{5}{6}$
[3] $x = \frac{2}{5}$
[4] $x = -\frac{5}{6}$

Question 7

Simplify the following as far as possible

$$\frac{x^2}{y} \times \frac{xy}{4} - \frac{x^3}{2y}$$

[1] $\frac{2x^4}{y^2}$
[2] $\frac{x^6}{8y}$
[3] $\frac{1}{2y}$
[4] $\frac{y}{2}$

Question 8

Simplify the following expression as far as possible

$$\frac{2}{3b} + \frac{5}{4b}$$

[1] $\frac{1}{b}$
[2] $\frac{23}{12b}$
[3] $\frac{1}{b^2}$
[4] $\frac{23}{12}$

Question 9

Simplify the following expression as far as possible.

$$\frac{5}{6} - \frac{3}{4} \times \frac{6}{5}$$

[1] $\frac{1}{4}$

[2] $1\frac{1}{5}$

[3] $-\frac{1}{15}$

[4] $\frac{1}{10}$

Question 10

If $p = m^2 - \frac{x}{2}$, make x the subject of the formula

[1] $x = 2m^2 - 2p$

[2] $x = \frac{m^2}{2} - \frac{p^2}{2}$

[3] $x = 2m - 2\sqrt{p}$

[4] $x = 2p - 2m^2$

Question 11

Determine the equation of the straight-line graph that passes through points (3, −2) and (5, −6).

[1] $y = -4x + 14$

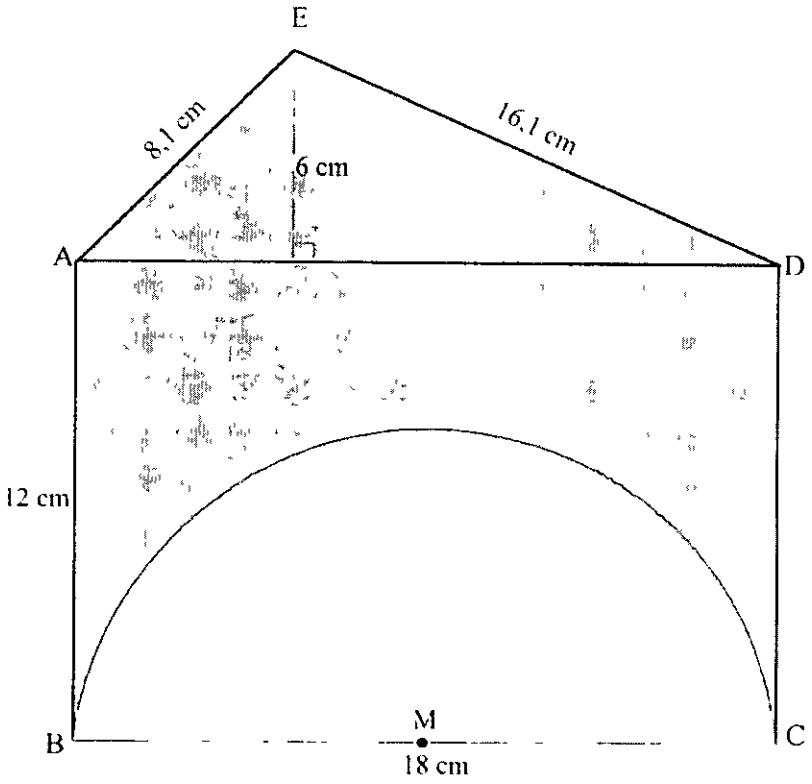
[2] $y = 2x - 8$

[3] $y = 2x - 4$

[4] $y = -2x + 4$

Question 12

Consider the sketch below A semi-circle with centre, M and a diameter of 18 cm is drawn inside a rectangle ABCD EAD is a triangle



Calculate the perimeter of the shaded figure

[1] 76,47 cm

[2] 104,75 cm

[3] 64,47 cm

[4] 142,77 cm

Question 13

Refer to the sketch in question 12 above
Calculate the area of the shaded region

[1] 142,77 cm^2

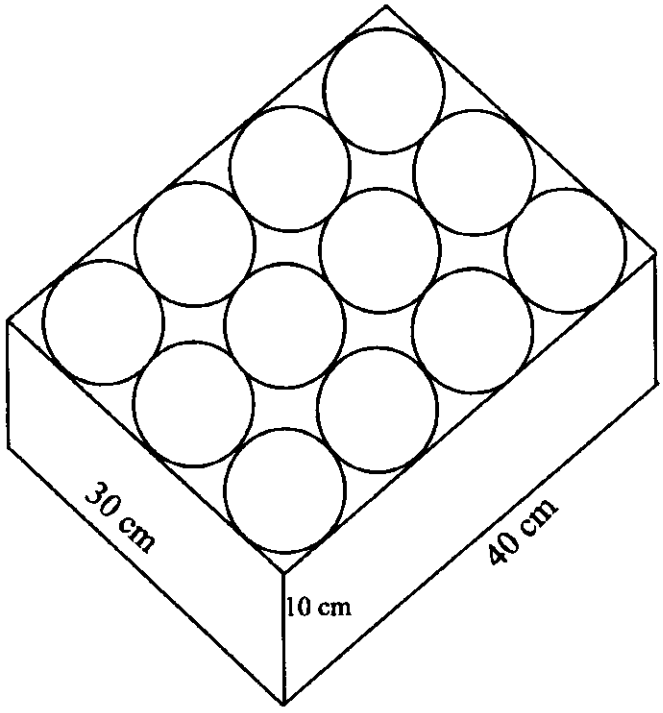
[2] 338,94 cm^2

[3] 397,23 cm^2

[4] 241,73 cm^2

Question 14

A container with a length of 40 cm, a breadth of 30 cm and a height of 10 cm contains 12 identical cans each with a diameter of 10 cm and a height of 10 cm The remaining space is filled with sand How much sand was required?



[1] 11,06 litres

[2] 2,58 litres

[3] 25,70 litres

[4] 11,21 litres

Question 15

A plumber charges a call-out fee of R180, plus R240 per hour to do a job How many hours did he work if the spares he needed cost R400 and the total bill was R1 780?

[1] 5 hours

[2] 9 hours and 50 minutes

[3] 7 hours and 25 minutes

[4] 5 hours and 45 minutes

Question 16

The inclining block tariffs per month for residential water for the 2016/2017 financial year are given below

Household water in kilolitre (kℓ)	Rand per kℓ
0-6 kℓ ($\pm$200 ℓ per day)	8,66
7-12 kℓ	12,36
13-18 kℓ	16,23
19-24 kℓ	18,78

These tariffs do not include VAT
What is the water bill, excluding VAT for a month in which a household uses 10 kℓ of water?

[1] R105,10

[2] R210,20

[3] R123,60

[4] R101,40

Question 17

In 2016, it cost R1 360 to study a semester module in Economic and Management Sciences at Unisa If an 8% increase in fees is implemented for 2017 how much more does it cost to study ten of these modules in 2017 than in 2016?

[1] R108,80

[2] R1 360,00

[3] R1 088,00

[4] R14 688 00

Question 18

I have 20 apples and 10 oranges in a basket If I take 4 apples out of the basket, what is the ratio of the number of oranges to the number of apples in the basket?

[1] 8 5

[2] 1 2

[3] 5 8

[4] 10 3

Question 19

Braun invested R8 350 in an account that pays simple interest After six years, the accumulated amount was R12 859. What was the simple interest rate on this investment?

[1] 7,46%
[2] 5,84%
[3] 9,00%
[4] 4,23%

Question 20

What should be the annual interest rate, compounded daily, for an investment of R8 000 to earn R3 000 interest in three years' time?

[1] 12,5%
[2] 10,6%
[3] 32,7%
[4] 11,2%

Question 21

Malibongwe secured a bank loan to pay for his new car He repays the loan by means of weekly payments of R1 250 for a period of five years, starting the week after the loan has been granted The interest rate is 24% per annum, compounded weekly What is the purchase price of his new car?

[1] R189 034
[2] R625 886
[3] R325 000
[4] R 82 657

Question 22

Brenda secured a 20-year loan of R400 000. She repays the loan in equal monthly payments The annual interest rate is 16%, compounded monthly. What is Brenda's minimum monthly payment?

[1] R231,69
[2] R5 565,02
[3] R1 666,67
[4] R5 622,23

Question 23

Consider the amortisation of Brenda's loan in question 22 above
What will the outstanding balance be after all the minimum payments have been made for 15 years? Assume the interest rate stayed fixed for the whole period

[1] R369 180,76
[2] R375 000,00
[3] R0,00
[4] R228 843,24

Question 24

Refer to Brenda's loan in question 22 above
Suppose Brenda decides to pay R6 000 per month into this loan account from the start In how many years will she pay off the loan?

[1] 41,5 years

[2] 165,9 years

[3] 13,8 years

[4] 66,7 years

Question 25

Samantha decides to invest money regularly to become a millionaire in ten years' time She manages to secure an interest rate of 24% per annum, compounded monthly She starts making monthly payments into this account How much should she invest per month in order to have R1 000 000 at the end of her ten-year saving plan?

[1] R2 048

[2] R8 333

[3] R48 825 815

[4] R7 535

TOTAL: 100

Rough work

Rough work

UNIVERSITY OF SOUTH AFRICA UNISA UNIVERSITEIT VAN SUID-AFRIKA

EXAMINATION MARK READING SHEET EKSAMEN-MERKLEESBLAD

PART 1 (GENERAL/ALGEMEEN) DEEL 1

1 STUDY UNIT e.g. PSY100-X / STUDIE EENHEID bv. PSY100-X

2 PAPER NUMBER / VRAESTELNOMMER

3 INITIALS AND SURNAME / VOORLETTERS EN VAN

4 DATE OF EXAMINATION / DATUM VAN EKSAMEN

5 EXAMINATION CENTRE (E.G. PRETORIA) / EKSAMENSENTRUM (BV. PRETORIA)

6 STUDENT NUMBER / STUDENTENOMMER

7 c0 c1 c2 c3 c4 c5 c6 c7 c8 c9

8 UNIQUE PAPER NO / UNIEKE VRAESTEL NR

9 c0 c1 c2 c3 c4 c5 c6 c7 c8 c9

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	c1 c2 c3 c4 c5	36	c1 c2 c3 c4 c5	71	c1 c2 c3 c4 c5	106	c1 c2 c3 c4 c5
2	c1 c2 c3 c4 c5	37	c1 c2 c3 c4 c5	72	c1 c2 c3 c4 c5	107	c1 c2 c3 c4 c5
3	c1 c2 c3 c4 c5	38	c1 c2 c3 c4 c5	73	c1 c2 c3 c4 c5	108	c1 c2 c3 c4 c5
4	c1 c2 c3 c4 c5	39	c1 c2 c3 c4 c5	74	c1 c2 c3 c4 c5	109	c1 c2 c3 c4 c5
5	c1 c2 c3 c4 c5	40	c1 c2 c3 c4 c5	75	c1 c2 c3 c4 c5	110	c1 c2 c3 c4 c5
6	c1 c2 c3 c4 c5	41	c1 c2 c3 c4 c5	76	c1 c2 c3 c4 c5	111	c1 c2 c3 c4 c5
7	c1 c2 c3 c4 c5	42	c1 c2 c3 c4 c5	77	c1 c2 c3 c4 c5	112	c1 c2 c3 c4 c5
8	c1 c2 c3 c4 c5	43	c1 c2 c3 c4 c5	78	c1 c2 c3 c4 c5	113	c1 c2 c3 c4 c5
9	c1 c2 c3 c4 c5	44	c1 c2 c3 c4 c5	79	c1 c2 c3 c4 c5	114	c1 c2 c3 c4 c5
10	c1 c2 c3 c4 c5	45	c1 c2 c3 c4 c5	80	c1 c2 c3 c4 c5	115	c1 c2 c3 c4 c5
11	c1 c2 c3 c4 c5	46	c1 c2 c3 c4 c5	81	c1 c2 c3 c4 c5	116	c1 c2 c3 c4 c5
12	c1 c2 c3 c4 c5	47	c1 c2 c3 c4 c5	82	c1 c2 c3 c4 c5	117	c1 c2 c3 c4 c5
13	c1 c2 c3 c4 c5	48	c1 c2 c3 c4 c5	83	c1 c2 c3 c4 c5	118	c1 c2 c3 c4 c5
14	c1 c2 c3 c4 c5	49	c1 c2 c3 c4 c5	84	c1 c2 c3 c4 c5	119	c1 c2 c3 c4 c5
15	c1 c2 c3 c4 c5	50	c1 c2 c3 c4 c5	85	c1 c2 c3 c4 c5	120	c1 c2 c3 c4 c5
16	c1 c2 c3 c4 c5	51	c1 c2 c3 c4 c5	86	c1 c2 c3 c4 c5	121	c1 c2 c3 c4 c5
17	c1 c2 c3 c4 c5	52	c1 c2 c3 c4 c5	87	c1 c2 c3 c4 c5	122	c1 c2 c3 c4 c5
18	c1 c2 c3 c4 c5	53	c1 c2 c3 c4 c5	88	c1 c2 c3 c4 c5	123	c1 c2 c3 c4 c5
19	c1 c2 c3 c4 c5	54	c1 c2 c3 c4 c5	89	c1 c2 c3 c4 c5	124	c1 c2 c3 c4 c5
20	c1 c2 c3 c4 c5	55	c1 c2 c3 c4 c5	90	c1 c2 c3 c4 c5	125	c1 c2 c3 c4 c5
21	c1 c2 c3 c4 c5	56	c1 c2 c3 c4 c5	91	c1 c2 c3 c4 c5	126	c1 c2 c3 c4 c5
22	c1 c2 c3 c4 c5	57	c1 c2 c3 c4 c5	92	c1 c2 c3 c4 c5	127	c1 c2 c3 c4 c5
23	c1 c2 c3 c4 c5	58	c1 c2 c3 c4 c5	93	c1 c2 c3 c4 c5	128	c1 c2 c3 c4 c5
24	c1 c2 c3 c4 c5	59	c1 c2 c3 c4 c5	94	c1 c2 c3 c4 c5	129	c1 c2 c3 c4 c5
25	c1 c2 c3 c4 c5	60	c1 c2 c3 c4 c5	95	c1 c2 c3 c4 c5	130	c1 c2 c3 c4 c5
26	c1 c2 c3 c4 c5	61	c1 c2 c3 c4 c5	96	c1 c2 c3 c4 c5	131	c1 c2 c3 c4 c5
27	c1 c2 c3 c4 c5	62	c1 c2 c3 c4 c5	97	c1 c2 c3 c4 c5	132	c1 c2 c3 c4 c5
28	c1 c2 c3 c4 c5	63	c1 c2 c3 c4 c5	98	c1 c2 c3 c4 c5	133	c1 c2 c3 c4 c5
29	c1 c2 c3 c4 c5	64	c1 c2 c3 c4 c5	99	c1 c2 c3 c4 c5	134	c1 c2 c3 c4 c5
30	c1 c2 c3 c4 c5	65	c1 c2 c3 c4 c5	100	c1 c2 c3 c4 c5	135	c1 c2 c3 c4 c5
31	c1 c2 c3 c4 c5	66	c1 c2 c3 c4 c5	101	c1 c2 c3 c4 c5	136	c1 c2 c3 c4 c5
32	c1 c2 c3 c4 c5	67	c1 c2 c3 c4 c5	102	c1 c2 c3 c4 c5	137	c1 c2 c3 c4 c5
33	c1 c2 c3 c4 c5	68	c1 c2 c3 c4 c5	103	c1 c2 c3 c4 c5	138	c1 c2 c3 c4 c5
34	c1 c2 c3 c4 c5	69	c1 c2 c3 c4 c5	104	c1 c2 c3 c4 c5	139	c1 c2 c3 c4 c5
35	c1 c2 c3 c4 c5	70	c1 c2 c3 c4 c5	105	c1 c2 c3 c4 c5	140	c1 c2 c3 c4 c5

MARK READING SHEET INSTRUCTIONS

Your mark reading sheet is marked by computer and should therefore be filled in thoroughly and correctly

USE ONLY AN HB PENCIL TO COMPLETE YOUR MARK READING SHEET

PLEASE DO NOT FOLD OR DAMAGE YOUR MARK READING SHEET

Consult the illustration of a mark reading sheet on the reverse of this page and follow the instructions step by step when working on your sheet

Instruction numbers ❶ to ❿ refer to spaces on your mark reading sheet which you should fill in as follows

❶ Write your paper code in these eight squares, for instance

P	S	Y	1	0	0	-	X

❷ The paper number pertains only to first-level courses consisting of two papers

WRITE | 0 | 1 | for the first paper and | 0 | 2 | for the second If only one paper, then leave blank

❸ Fill in your initials and surname

❹ Fill in the date of the examination

❺ Fill in the name of the examination centre

❻ WRITE the digits of your student number HORIZONTALLY (from left to right) Begin by filling in the first digit of your student number in the first square on the left, then fill in the other digits, each one in a separate square

❼ In each vertical column mark the digit that corresponds to the digit in your student number as follows [-]

❽ WRITE your unique paper number HORIZONTALLY

NB Your unique paper number appears at the top of your examination paper and consists only of digits (e g 403326)

❾ In each vertical column mark the digit that corresponds to the digit number in your unique paper number as follows [-]

❿ Question numbers 1 to 140 indicate corresponding question numbers in your examination paper The five spaces with digits 1 to 5 next to each question number indicate an alternative answer to each question The spaces of which the number correspond to the answer you have chosen for each question and should be marked as follows [-]

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Examination period

Student number

Surname

First Names

Subject

Code of paper — Number of paper

Centre Date

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That the information supplied by me in this answer book is correct and valid

I undertake to adhere to the procedures, rules and regulations of the University of South Africa as published in the official brochures

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Signature of invigilator

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