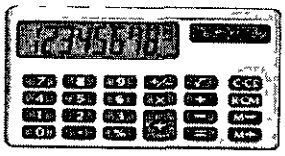
UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA university of south africa

BNU1501 (494713) October/November 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 as well your student number 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

$$3(y+2) = 4(2-y)$$

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

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

[3] $\frac{2}{7}$

[4] -2

Question 2

Solve the following equation

$$2(x-1) - 3(x+1) = 12x + 21$$

[1] $\frac{16}{11}$

[2] -2

[3] $-\frac{20}{13}$

[4] $-\frac{21}{13}$

Question 3

Simplify the following expression

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

[1] $8x^8$

[2] $4x^4$

[3] $8x^4$

[4] $4x^8$

Question 4

Simplify the following expression as far as possible

$$2x^2 - (x-3) - 2x(1+x)$$

[1] $-3x+3$

[2] $4x^2 - 3x - 3$

[3] $2x^2 - 5x + 3$

[4] $-3x - 3$

Question 5

Simplify the following as far as possible

$$\frac{7}{24} \times \frac{3}{16} \div \frac{14}{32}$$

[1] $\frac{117}{6144}$

[2] $\frac{32}{9}$

[3] $\frac{49}{72}$

[4] $\frac{1}{8}$

Question 6

Simplify the following as far as possible

$$\frac{6}{11} + \frac{3}{2} - \frac{5}{3}$$

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

[2] $\frac{25}{66}$

[3] $\frac{7}{33}$

[4] $-\frac{41}{11}$

Question 7

Simplify the following as far as possible

$$\frac{5}{9} - \frac{9}{8} - \frac{3}{4}$$

[1] $-\frac{41}{54}$

[2] $-\frac{17}{27}$

[3] $-\frac{17}{18}$

[4] $\frac{2}{7}$

Question 8

Determine the LCM (lowest common multiple) of the following

$$9xy,\ 8x^2,\ 6xy^3$$

[1] $18xy$

[2] $72x^2y^3$

[3] $432x^4y^4$

[4] $72xy$

Question 9

A father is 3 years younger than 5 times his son's age Suppose the son is x years old Give an expression in x for the father's age

[1] $3 + 5x$

[2] $3x + 5$

[3] $5x - 3$

[4] $3x - 5$

Question 10

Simplify the following expression as far as possible

$$(ab^2)\,(a^2b)^3$$

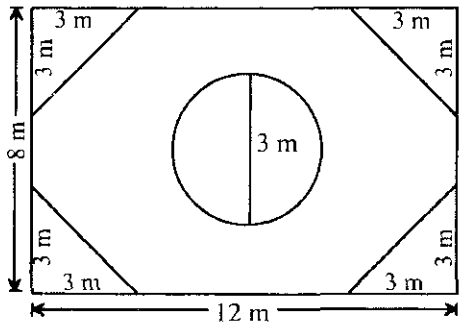
[1] a^9b^9

[2] a^3b^5

[3] a^7b^5

[4] a^7b^3

Question 11



Refer to the sketch above
A rectangular room was turned into a jacuzzi room It is laid out so that it has a circular jacuzzi in the middle of the room and four triangular planting areas in the four corners The remainder of the room is paved The diameter of the jacuzzi is 3 metres and it is $\frac{3}{4}$ of a metre deep The measurements of the triangular planting areas are given on the sketch above Calculate the circumference of the jacuzzi The answer, rounded to one decimal digit, is

[1] 9,4 m

[2] 7,1 m^2

[3] 14,2 m

[4] 96,0 m^2

Question 12

Refer to the sketch in question 11 above
Calculate the area of the paving The answer, rounded to one decimal digit, is

[1] $68{,}6\,\text{m}^2$
[2] $84{,}4\,\text{m}^2$
[3] $49{,}7\,\text{m}^2$
[4] $70{,}9\,\text{m}^2$

Question 13

Refer to the sketch in question 11 above
Calculate the volume of the jacuzzi in litres The answer, rounded to one decimal digit, is

[1] 14,1
[2] 21205,8
[3] 5,3
[4] 5301,4

Question 14

If $a = \frac{1}{2}bh$, make h the subject of the formula

[1] $h = \frac{2a}{b}$
[2] $h = \frac{1}{2}ab$
[3] $h = 2ab$
[4] $h = a - \frac{1}{2}b$

Question 15

A woman decides to earn some extra money by baking chocolate cakes at home and selling them The daily fixed costs are R240 It costs her R60 to bake one chocolate cake and she sells them for R120 each How much profit does the woman make when she bakes and sells 9 cakes per day?

[1] R300
[2] R540
[3] −R1 620
[4] R780

Question 16

Determine the equation of the straight line graph which passes through points $(2\,,\,-7)$ and $(1\,,\,4)$

[1] $y = -11$
[2] $y = -11x + 15$
[3] $y = -\frac{1}{11}$
[4] $y = 3x + 1$

Question 17

Management of a factory offers workers a yearly wage increase of 7,5% The workers earn R7 500 per month at this stage The amount that the workers will earn per month after the wage increase is

[1] R7 507,50

[2] R8 250,00

[3] R562,50

[4] R8 062,50

Question 18

You want to buy 10 kg of the cheapest brand of washing powder Washing powder A costs R48,00 for a 2 kg box and washing powder B costs R125,00 for a 5 kg bag How much will you have to pay for 10 kg of the cheapest washing powder?

[1] R240,00

[2] R1250,00

[3] R250,00

[4] R480,00

Question 19

A man invest R36 000 at a simple interest rate of 6% per year How long will it take for this investment to grow to R55 440?

[1] 7,41 years

[2] 267,0 years

[3] 9 years

[4] 5,84 years

Question 20

A man invests R12 000 at the beginning of each year at a simple interest rate of 15% per year How much will he have in total at the end of the third year?

[1] R17 400,00

[2] R46 800,00

[3] R41 400,00

[4] R45 000,00

Question 21

How long will it take to have R30 000 for a trip to Europe if I invest R10 000 now at 15% per year, compounded quarterly? Give the answer rounded to one decimal digit

[1] 29,8 years

[2] 3,3 years

[3] 7,5 years

[4] 13,3 years

Question 22

If your salary has to double every 7 years to keep up with inflation, what is the yearly inflation rate, if salaries increase yearly?

[1] 9,9%

[2] 1,0%

[3] 10,4%

[4] 9,8%

Question 23

A farmer needs R250 000 to buy a new 10-ton trailer. The bank approves a loan for the full amount at an interest rate of 18% per year, compounded monthly, and the loan has to be paid off in 5 years' time. Determine the farmer's minimum monthly payment.

[1] R6 348,36

[2] R529,03

[3] R2 598,36

[4] R3 750,08

Question 24

Refer to question 23 above.
What will the outstanding balance on the farmer's loan be at the end of the third year, if the interest rate stays fixed at 18% per year?

[1] R127 160,16

[2] R242 087,42

[3] R0,00

[4] R92 303,20

Question 25

Refer to the farmer's loan in question 23 above.
How long will it take to pay the loan off if the farmer pays R7 500 monthly into this loan account from the start? Assume the interest rate stays fixed at 18% per year.

[1] 1,1 year

[2] 2,8 years

[3] 3,9 years

[4] 11,6 years

TOTAL: 100

FORMULAS

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

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

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

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

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

$$I = Prt$$

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

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

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

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

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

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

Rough work

Rough work

Rough work

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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 (0 1 2 3 4 5 6 7 8 9)

8 UNIQUE PAPER NO / UNIEKE VRAESTEL NR

9 (0 1 2 3 4 5 6 7 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				