

NATIONAL UNIVERISTY OF LESOTHO

FACULTY OF EDUCATION

B. ED. (PRIMARY) EXAMINATION

BEP 1309: MATHEMATICS FOR THE PRIMARY SCHOOL TEACHER

JULY 2023

MARKS: 100

TIME: 3 HOURS

INSTRUCTIONS:

1. THIS PAPER CONSISTS OF FIVE (5) QUESTIONS
2. EACH QUESTION CARRIES **25 MARKS**
3. QUESTION ONE IS COMPULSORY.
4. IF THE DEGREE OF ACCURACY IS NOT SPECIFIED IN THE QUESTION WRITE IT TO TWO DECIMAL PLACE.
5. ANSWER ONLY FOUR QUESTIONS INCLUDING QUESTION ONE (1)

SHOW ALL YOUR WORKINGS

Number of pages including this one

5

DO NOT OPEN THIS PAGE UNTIL YOU HAVE BEEN TOLD TO DO SO BY THE EXAMINER.

QUESTION 1

- a) Evaluate the following
- (i) $1.5 \div 3\frac{3}{7}$ [2]
 - (ii) 2.37×3.1 [1]
 - (iii) $(2\sqrt{5} \times \sqrt{20} - 1)^{1/2}$ [3]
 - (iv) $\frac{2}{3}\left(6 - \frac{3}{2}\right)$ [2]
 - (v) $\sqrt{\sqrt[3]{64}}$ [2]
 - (vi) $-3 + -17$ [1]
- b) Find
- (i) All the squares numbers between 6 and 40 [2]
 - (ii) Factors of 76 [2]
 - (iii) prime factors of 35 [2]
 - (iv) The lowest common multiple of 6 and 8 [2]
 - (v) The highest common factor of 56 and 70 [2]
- c) From the following numbers classify them into rational and irrational numbers.

Numbers	Rational number	Irrational number
$2.\dot{3}$		
π		
0		
$\sqrt{3}$		

[4]

TOTAL MARKS = 25

QUESTION 2

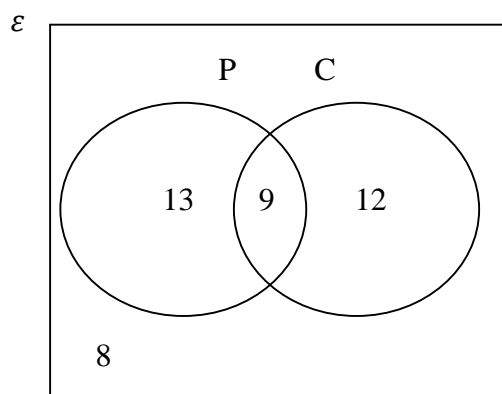
- a) When $A = \frac{1}{2}(a + b)h$
Work out the value of A when $a = 9.6$, $b = 12.4$, and $h = 7.5$ [2]
- b)
- i. Expand $x(x - 3y)$ [2]
 - ii. Expand and simplify $4(2w - 3) + 5(w - 2)$ [2]
- c) A quadrilateral has sides x , $2x$, y and $3y$.
- i. Write down and simplify a formula for the perimeter, p , of the quadrilateral [2]
 - ii. Make y the subject of the formula in part c) i. when p is equal to 20 [2]
- d) Joseph is 3 times as old as Amy.
In 5 years' time Joseph will be 2 times as old as Amy.
- i. Amy is now n years old. Write down equation in n connecting the ages of Joseph and Amy in 5 years' time. [2]
 - ii. Solve the equation to find n [3]

- e) Factorize completely
- $xy^2 - x$ [2]
 - $x^2 + 4x - 12$ [2]
- f) Solve the simultaneous equations.
- $$\begin{aligned} 7x + 2y &= 22 \\ 2x + 3y &= -1 \end{aligned}$$
- [3]
- g) Express as a single fraction in its simplest form
- $$\frac{2x-1}{3} - \frac{x+2}{4}$$
- [3]

TOTAL MARKS = 25

QUESTION 3

In a class of 45 students, some study Physics (P), chemistry (C) or both. The Venn diagram represents the information.



- a) Find
- The total number of students who study **only one** subject. [1]
 - The number of students who study neither Physics nor Chemistry. [1]
 - The number of students who study Physics only [1]
- b) Find
- $n(P \cap C)$ [1]
 - $n(P \cup C)$ [1]
- c) Use set notation to represent the number of students who study chemistry only [2]
- d) Write down the size range for the following angles
- Acute angle [1]
 - Obtuse angle [1]
 - Reflex angle [1]
- e)
- Calculate the area of the circle of radius 6cm [2]
 - If the circle in (i) above is the top part of the cylinder and the height of the cylinder is 20 cm, how much will be the volume of the cylinder? [3]
 - If the cylinder in (ii) above is half filled with water, then another $\frac{1}{4}$ of the water is poured out of the cylinder, how much water is left in the cylinder? [4]

- f)
- i. What is 0100hrs in 12 hour clock? [1]
 - ii. Teboho took 5 hours to drive from Mokhotlong to Maseru and arrived at 1430hrs, at what time did Teboho depart from Mokhotlong. Give the answer in 24 hour clock. [2]
- g) Covert the following units
- i. 0.05m into cm [1]
 - ii. 90 minutes into hours [1]
 - iii. 10kg into g [1]

TOTAL MARKS = 25

QUESTION 4

- a) A box of fruit juice contains a mixture of apple, orange, pineapple and tropical juices. The mixture is in the ratio **apple: orange: pineapple: tropical**= 9 : 7 : 4: 5. The box contains 540milliliters of an apple juice.
- i. Calculate the amount of tropical juice in the box. Give your answer in milliliters. [2]
 - ii. Find the total amount of fruit juice in the box in liters. [5]
 - iii. 70% of the tropical juice is mango. Calculate the amount of mango juice in the box. [2]
- b) $f(x) = 2x - 3$, and $g(x) = 4x$. Find the following.
- i. $g(0.5)$ [1]
 - ii. x when $f(x) = g(x)$ [2]
 - iii. $gf(x)$ [2]
 - iv. Inverse of $f(x)$ [3]
- c) A regular polygon has an interior angle of 135° . Calculate
- i. The size of each exterior angle [1]
 - ii. The number of sides of polygon [1]
 - iii. Number of triangles [1]
 - iv. Sum of interior angles [2]
- d) The diagram shows a quadrilateral shape.



- i. What is the name of this quadrilateral? [1]
- ii. What is the sum of all interior angles of this quadrilateral? [1]
- iii. How many lines of symmetry does the shape have? [1]

TOTAL MARKS = 25

QUESTION 5

- a) $A = 3.0 \times 10^{-3}$ and $B = 1.5 \times 10^{-2}$. Calculate the following, and leave your answer in standard form.
- i. $2A$ [2]
 - ii. $B - A$ [2]
 - iii. $2A + B - A$ [2]
 - iv. A^2 [3]
 - v. $\frac{B}{A}$ [3]
- b) Simplify the following
- i. $p^2 \times p^3$ [1]
 - ii. $r^5 \div r^{\frac{1}{5}}$ [2]
 - iii. $(8a^3)^{1/3}$ [2]
 - iv. $\left(\frac{3m^2}{2n}\right)^{-3}$ [3]
- c) Thabo bought a book for M150.00 and later sold it for M120.00. Calculate the percentage loss. [2]
- d) Eight men take 6 days to dig a toilet hole, how many men will take three days? [3]

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