FACULTY	**FACULTY OF EDUCATION**		
DEPARTMENT	**MATHEMATICS, SCIENCE AND SPORT EDUCATION**		
SUBJECT	**MATHEMATICS EDUCATION 1B**		
SUBJECT CODE	**EMMU 3612**		
DATE	**NOVEMBER 2024**		
DURATION	**3 HOURS**	**MARKS**	**100**
LECTURERS	**MR T NAWESEB; DR. F. VATILENI ; MR A.M. ILUKENA; MR B. SIMASIKU**		

FIRST OPPORTUNITY EXAMINATION

Examiner: **Mr. B.M Simasiku**

Moderator: **Dr. F.N. Haimbodi**

INSTRUCTIONS

1. **Work in an orderly way and present your work as neatly as possible.**
2. **While most of the marks will be awarded for content, candidates must bear in mind the importance of presentation, i.e. insight and critical thinking.**
3. **Number your questions correctly and clearly.**
4. **This paper consists of 4 pages including the cover page.**
5. **Answer all the questions.**
6. **POCKET CALCULATORS ARE NOT ALLOWED**

Section A

Answer the following multiple-choice questions by only writing the correct letter e.g. 1. A.

1. The number 96 is 12% of:

A. 500 B. 600 C. 800 D. 850 E. 750 (2)

2. Calculate $(2\frac{1}{4}+\frac{1}{3}) \div (1\frac{1}{2}-\frac{1}{4})$ and the answer is …

A. $2\frac{1}{15}$ B. $2\frac{2}{15}$ C. $3\frac{1}{15}$ D. $3\frac{2}{15}$ E. $4\frac{1}{15}$ (2)

3. If the following fractions $\frac{1}{4}$; 41%; $\frac{4}{10}$; 0.414; 0.404 are arranged in ascending order, the middle fraction is:

A. $\frac{1}{4}$ B. 0.414 C. $\frac{4}{10}$ D. 41% E. 0.404 (2)

4. Which of the following is false, if $\frac{5}{3}=\frac{x}{2}$

A. $\frac{x}{2}=\frac{5}{3}$ B. $\frac{x}{5}=\frac{2}{3}$ C. $\frac{3}{2}=\frac{5}{x}$ D. $\frac{3}{x}=\frac{5}{2}$ E. $3x=10$. (2)

5. The difference between the largest and the smallest of the following numbers:

0.9231; 0.9; 0.89; 0.589 is …

A. 0.3341 B. 0.0231 C. 0.01 D. 0.311 E. 0.301 (2)

6. In the history of fractions Egyptians expressed fractions as a sum of unit fractions. Which unit fraction should be added to $\frac{1}{3}$ to get $\frac{7}{12}$.

A. $\frac{1}{3}$ B. $\frac{1}{5}$ C. $\frac{1}{6}$ D. $\frac{1}{4}$ E. $\frac{1}{7}$ (2)

7. The factor used to simplify $\frac{6}{21}$ is …

A. 4 B. 6 C. 3 D. 3.5 E. 2 (2)

8. Ten cows eat a bale of feed in 50 minutes; how long would it take 5 cows to eat the same bale of feed? (2)

A. 1 hour B. 1 hour 40 minutes C. 1 hour 20 minutes D. 1 hour 50 minutes E. 90 minutes

9. If the price of a dress costing N$200 is increased in the ratio 2: 5; the new price of the dress is ..

A. N$ 250 B. N$500 C. N$ 550 D. 600 E. 650 (2)

10. If you invest N$700 at 15% simple interest per annum for 3 years; the amount of simple interest is :

A. N$ 805 B. N$905 C.N$ 205 D. N$105 E. N$ 315 (2)

[2 x 10 = 20]

Section B

Question 1

Solve the following word problems:

(a) A farmer takes 250 chickens to be sold at a market. In the first hour he sells 8% of the chickens. In the second hour he sells 10% of those that were left. What percentage of the original number did he manage to sell in the two hours? [3]

(b) You invest N$800.00 at 10% compound interest per year for 3 years. Calculate the amount you will have after 3 years. [3]

[2 x 3=6]

Question 2

Simplify

(a) $\frac{2a+2b}{4a+4b}$ [3]

(b) $\frac{x+1}{4} + \frac{x}{5} + \frac{2x}{8}$ [3]

(c) $\frac{x^2+x-6}{4-2x}$ [3]

[3 x 3=9]

Question 3

Solve for the following equations:

(a) $\frac{x}{2} - 1\frac{1}{3} = \frac{5x}{6} + 2$ [2]

(b) $\frac{3x-2}{2} - \frac{x-3}{4} = \frac{2x+1}{8}$ [3]

[3+2 = 5]

Question 4

A Grade 5 Mathematics teacher gave learners to multiply 3.45 and 4.5. John, one of the Grade 5 learners, worked it as follows:

3.45 x 10 x 10 =345

4.5 x 10=45

3 4 5

x 4 5

1 7 2 5

\+ 1 3 8 0

1 5 5 2 5

15525 ÷1000=15.525 answer

(a) Use estimation to check the accuracy of John's answer. [4]
(b) Describe the steps John used to get the answer. [6]
(c) Use another method to get the same answer and provide explanations. [4]
(d) Write a real-life situation that you can use to model this multiplication problem. [2]
(e) Discuss any two common errors and misconceptions that learners exhibit when comparing and ordering decimals. [4]

<u>Question 5</u>

A Grade 7 Mathematics teacher gave the following statement to the learners to analyse and give interpretations:

If 3 Oranges cost N$1.80, then 6 Oranges will cost N$3.60 and one Orange will cost N$ 0.60.

(a) Illustrate the statement using
   i. diagrams [2]
   ii. a table of values [4]
(b) How many oranges will you buy for N$100? Show your working. [3]
(c) How much will 12 oranges cost? Show your working. [3]
(d) Maria, one of the Grade 7 learners, says the statement involves proportion. Is she correct? Motivate. [4]
(e) Maria says the statement can be represented using algebra, but she can't remember how to do it. Show Maria how algebra can be used in interpreting the statement. [4]
(f) Joseph, one of the Grade 7 learners, says the statement involves both inverse and direct proportional situation. Examine the accuracy of his answer and clearly distinguish between inverse proportion and direct proportion. [6]
(g) Write down a question involving inverse proportion and provide its solution. [4]
(h) Distinguish between proportional situations and non-proportional situations. [4]
(i) Discuss any three challenges faced by teachers when teaching proportion involving word problems. [6]

[2 + 3 x 2 +4 x 5 + 6 x2 =40]