

**UNIVERSITY OF SWAZILAND
FACULTY OF EDUCATION
RE-SIT EXAMINATION PAPER 2017**

TITLE OF PAPER: CURRICULUM STUDIES IN MATHEMATICS

COURSE CODE: CTE532

PROGRAMME: PGCE

TIME ALLOWED: THREE (3) HOURS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS. EACH QUESTION IS WORTH 25 MARKS.

This paper contains 4 pages including this one

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Question 1

- (a) Outline **five (5)** learners' learning problems associated with learning mathematics in a foreign language of instruction. [10]
- (b) Identify **four (4)** language issues in appendix 1, an exercise from a mathematics text book. [5]
- (c) How would you deal with the issues identified in (b)? [10]

Question 2

- (a) Explain in your own words each of the following phrases in relationship to national examinations:
 - (i) Marker unreliability [5]
 - (ii) Test unreliability [5]
- (b) Item 3: solve $x^2 - 3x - 4 = 0$ by the method of completing the square showing all steps.
 - (i) Prepare a marking guide for item 3. [5]
 - (ii) Use your marking guide to mark Siphó's solution in appendix 2. [5]
 - (iii) Identify what Siphó knows and errors that she made in her solution. [5]

Question 3

Discuss duties, roles and responsibilities of a head of department in a government school. [25]

Question 4

- (a) Write a structured item that would lead learners to discover Pythagoras's rule. [13]
- (b) Write **three (3)** completion items that would test learners on different aspects of subtraction of common fractions. In each case identify the aspect you are testing. [12]

Question 5

Write an essay on integration in the teaching and learning of school mathematics. [25]

APPENDIX 1

Exercise 16.5A

1. A die is thrown and a coin is tossed.
 - (a) Draw a possibility space diagram to show all possible outcomes.
 - (b) Write down the total number of possible outcomes.
 - (c) Find the probability of getting:
 - (i) a one and a tail
 - (ii) a head and an even number
 - (iii) either a head and a two or a tail and an odd number.

2. A bag contains three red balls and two black balls. Another bag contains two red balls and one black ball. A ball is taken from each bag.
 - (a) Draw a possibility space diagram to show all possible outcomes.
 - (b) What is the total number of possible outcomes?
 - (c) Find the probability that:
 - (i) both balls are of the same colour
 - (ii) at least one ball is black
 - (iii) either the first or the second ball is red
 - (iv) none of the balls drawn is black.

3. Two dice are thrown.
 - (a) Represent the set of all outcomes in a diagram.
 - (b) What is the possibility of obtaining a total score of:
 - (i) six
 - (ii) less than six
 - (iii) more than six?
 - (c) What do you notice about the sum of the three probabilities in (b)? Explain this.
 - (d) Find the probability that both numbers are:
 - (i) even
 - (ii) prime.

4. Two letters are chosen, one from each of the words BODY and BOAT.
 - (a) Draw a possibility space diagram to show all possible outcomes.
 - (b) Find the probability that the chosen letters are:
 - (i) both vowels
 - (ii) different.

APPENDIX 2

$$x^2 - 3x - 4 = 0$$

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

$$\cancel{x^2} - 3(x - 2,25)^2 = 6,25$$

$$\sqrt{(x - 2,25)^2} = \pm \sqrt{6,25}$$

$$x - 2,25 = \pm 2,5$$

$$\underline{x = 2,25 \pm 2,5} \rightarrow$$