UNIVERSITY OF SWAZILAND
FACULTY OF EDUCATION
FINAL EXAMINATION PAPER 2009

TTLE OF PAPER: CURRICULUM STUDIES IN MATHEMATICS

COURSE CODE: EDC 381

PROGRAMME: B.ED 3 & PGCE

TIME ALLOWED: THREE (3) HOURS

TOTAL MARKS: 100

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

This paper contains 4 pages including this one

Question 1

(a) What **five** things does an item vetter do?[5]

(b) (i) Write a critique for the multiple choice question below:

The operator $\lozenge$ is defined on the set of integers by $a \lozenge b = \dfrac{ab}{a+b}$

$(1 \lozenge 2) \lozenge 3$ is equal to

A $\quad \dfrac{3}{7}$ B $\quad \dfrac{6}{11}$ C $\quad \dfrac{3}{4}$ D $\quad 1$ E $\quad$ none of these.

[4]

(ii) Rewrite the question to correct the mistake(s) you identified in (i). [5]

(c) Work out the question in Appendix 1 and identify the concepts tested.[6]

(d) Rewrite the item in Appendix 1 so that the context is relevant for Swaziland learners.[5]

Question 2

(a) List **three** cognitive gender differences' claims that account for differential representation of man and women in high level careers requiring mathematics. [6]

(b) Identify gender bias in exercise 6 (Appendix 2) from a mathematics text book. Create a table with the following column headings: Question, Male Bias, and Female Bias. Write in all the question numbers and indicate with a tick for male or female bias on each question. . [9]

(c) Give reasons why you classified a question as having male or female bias in (b) and write briefly about other gender issues in the teaching/learning of mathematics a teacher needs to bear in mind. [10]

Question 3

Write an essay on the importance of liaison in the management of school mathematics. [25]
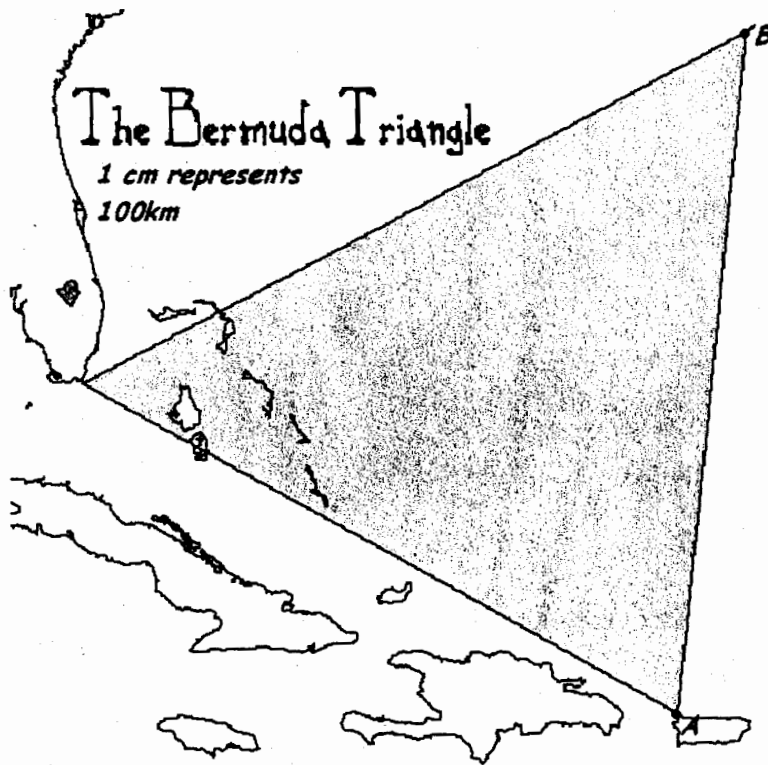
Question 4

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

Question 5

Write an essay entitled: "Curriculum reforms to be successful should involve all stakeholders: Clearing the IGCSE/SGCSE controversy." [25]

7.   The map shows the Bermuda Triangle.   **Appendix 1**

The Bermuda Triangle
1 cm represents 100km

A boat must sail in a line that is always the same distance from A as it is from B.

(a) Draw the path the boat should take. Show all your construction lines.

A boat race is to take place inside the Bermuda Triangle.

The boats must not go outside the triangle.

The boats must stay within 400 km of B.

(b) Shade the region where boats may sail.

Exercise 6

1. Calculate
   (a) 30% of £50   (b) 45% of 2 000 kg   (c) 4% of $70
   (d) 2.5% of 5 000 people

2. In a sale, a jacket costing £40 is reduced by 20%. What is the sale price?

3. The charge for a telephone call costing 12p is increased by 10%. What is the new charge?

4. In peeling potatoes 4% of the mass of the potatoes is lost as 'peel'. How much is *left* for use from a bag containing 55 kg?

5. Work out, to the nearest penny
   (a) 6.4% of £15.95   (b) 11.2% 0f £192.66   (c) 8.6% of £22.84
   (d) 2.9% of £25.84

6. Find the total bill:
   5 golf clubs at £18.65 each
   60 golf balls at £16.50 per dozen
   1 bag at £35.80
   V.A.T. at 17½ % is added to the total cost.

7. In 1994 a club has 250 members who each pay £95 annual subscription. In 1995 the membership increases by 4% and the annual subscription is increased by 6%. What is the total income from subscriptions in 1995?

8. In 1993 the prison population was 48 700 men and 1 600 women. What percentage of the total prison population were men?

9. In1991 there were 21 280 000 licensed vehicles on the road. Of these, 16 486 000 were private cars. What percentage of the licensed vehicles were private cars?

10. A quarterly telephone bill consists of £19.15 rental plus 4.7p for each dialled unit. V.A.T. is added at 17½ %. What is the total bill for Mrs. Jones who used 915 dialled units?

11. Johnny thinks his goldfish got chickenpox. He lost 70% of his collection of goldfish. If he has 60 survivors, how many did he have originally?

12. The average attendance at Everton football club fell by 7% in 1994. If 2 030 fewer people went to matches ina994, how many went in 1993?

13. When heated an iron bar expands by o.2%. If the increase in length is 1 cm, what is the original length of the bar?

14. In the last two weeks of a sale, prices are reduced first by 30% and then by a *further* 40% of the new price. What is the final sale price of a shirt which originally cost £15?

15. During a Grand Prix car race, the tyres on a car are reduced in weight by 3%. If they weigh 388 kg at the end of the race, how much did they weigh at the start?

16. Over a period of 6 months, a colony of rabbits increases in number by 25% and then by a further 30%. If there were originally 200 rabbits in the colony how many were there at the end?

17. A television costs £376 including 17½ % V.A.T. How much of the cost is tax?

18. The cash price for a car was £7 640. Mr. Elder bought the car on the following hire purchase terms: 'A deposit of 20% of the cash price and 36 monthly payments of £119.60'. Calculate the total amount Mr. Elder paid.