UNIVERSITY OF ESWATINI
FACULTY OF EDUCATION
MAIN EXAMINATION PAPER APRIL 2021

TITLE OF PAPER: CURRICULUM STUDIES IN MATHEMATICS I

COURSE CODE: CTE531

PROGRAMME: PGCE FULLTIME & IDE

APPENDICES: EGCSE SYLLABUS EXTRACTS & BOOK
EXTRACT ON PROBABILITY

TIME ALLOWED: THREE (3) HOURS

TOTAL MARKS: 100

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

This paper contains 5 pages including this one

Question 1
Prepare a scheme of work for the topic "probability" using **APPENDIX 1** (extracts from the examination syllabus p. 4 and book extracts p. 5)   [25]

Question 2
Discuss with appropriate examples each of the aspects of the Cognitive domain in the teaching and learning of secondary school mathematics:
    (a) Remember   [4]
    (b) understand   [4]
    (c) Apply   [4]
    (d) Analyse   [4]
    (e) Evaluate   [4]
    (f) Create   [5]

Question 3
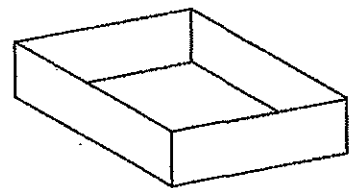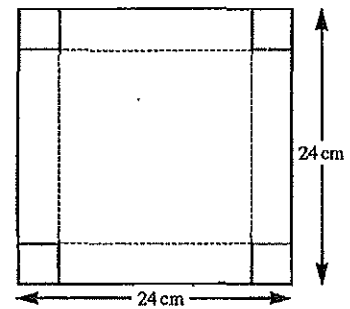Mrs. Shongwe gave problem 5 to his class. Answer (i) and (ii) on the problem.

Problem 5 Maximum box
    (i) **Solve** the problem

You have a square sheet of card 24cm by 24 cm.

You can make a box (without a lid) by cutting squares from the corners and folding up the sides.

    (a) Try different sizes for the corners and record the results in a table like the one below. [3]

Length of the side of the corner square (cm)	Dimensions of the open box (cm)	Volume of the box (cm^3)
1 2 - -	22 × 22 × 1	484

    (b) What size corners should you cut out so that the volume of the box is as large as possible? [1]

Now consider boxes made from different sized cards:
12 cm × 12 cm and 18 cm by 18 cm. [6]
    (c) What size corners should you cut out for each so that the volume of the box is as large as possible? [2]

(d) For the largest volume what is the connection between the size of the corners cut out and the size of the square card? [3]

(ii) What secondary school mathematics is involved in solving the problem? [10]

Question 4

(a) Copy the line below. Label the vertical lines from left to right as follows teacher-centred, neutral and learner-centred. Use the line to position each of the teaching learning methods you studied in this course. [7]
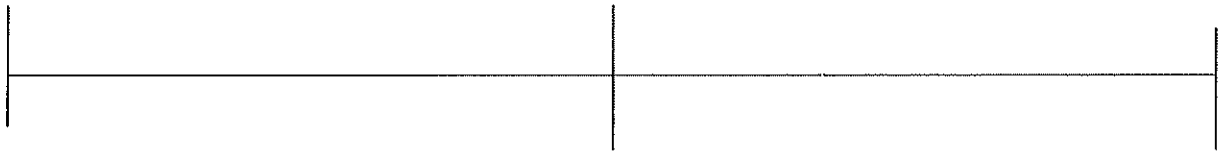
(b) Write a justification for positioning of each method the way you did. [18]

Question 5

Write an essay entitled "Possible reasons mathematics teachers prefer the Lecture methods in teaching mathematics." [25]

APPENDIX 1

Extract from the Examination Syllabus

24. Probability *[Topic Area: Data Handling]*

Learners should be able to:	Learners should be able to:
24.1 Explain the terms and phrases used in probability. e.g fair, biased, equally likely, etc.	24.1 Explain the terms and phrases used in probability. e.g fair, biased, equally likely, etc.
24.2 Calculate the probability of a single event as either a fraction, decimal or percentage (not a ratio).	24.2 Calculate the probability of a single event as either a fraction, decimal or percentage (not a ratio).
24.3 Understand and use probability scale from 0 to 1.	24.3 Understand and use probability scale from 0 to 1.
24.4 Use the fact that the probability of an event occurring = 1 – (minus) the probability of the event not occurring.	24.4 Use the fact that the probability of an event occurring = 1 – (minus) the probability of the event not occurring.
24.5 Understand that relative frequency approximates to probability provided the number of trials is large enough.	24.5 Understand that relative frequency approximates to probability provided the number of trials is large enough.
24.6 Find probabilities of two combined events using possibility space diagrams for independent events (outcomes represented by points on a grid).	24.6 Find probabilities of two combined events using possibility space diagrams for independent events (outcomes represented by points on a grid).
24.7 Extended curriculum only.	24.7 Use the basic rules of probability for the combined events *A and B* and *A or B.*
24.8 Find probabilities of simple combined events using tree diagrams (independent and dependent events) and Venn diagrams (limited to 2 sets).	24.8 Find probabilities of simple combined events using tree diagrams (independent and dependent events) and Venn diagrams (limited to 2 sets).
24.9 Extended curriculum only.	24.9 Calculate the probability of simple combined events, using possibility diagrams, tree diagrams and Venn diagrams (include more than 2 sets).
24.10 Extended curriculum only.	24.10 Use relative frequency as probability in practice (e.g. frequency and cumulative frequency tables).

Extract from the Book