

**UNIVERSITY OF SWAZILAND
FACULTY OF EDUCATION
MAIN EXAMINATION PAPER 2012**

TITLE OF PAPER: CURRICULUM STUDIES IN MATHEMATICS

COURSE CODE: EDC 281

PROGRAMME: B.ED 2 & PGCE

TIME ALLOWED: THREE (3) HOURS

**INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS. EACH
QUESTION IS WORTH 25 MARKS.
DO NOT WRITE ON THE SYLLABUS PROVIDED.**

PROVISION: SGCSE Syllabus

**THIS PAPER CONTAINS 3 PAGES. DO NOT OPEN UNTIL PERMISSION HAS
BEEN GRANTED BY THE INVIGILATOR**

Question 1

You are to use cuboidal wire boxes/skeletal boxes to help learners develop the concept of planes of symmetry of solids. **DO NOT PREPARE A LESSON PLAN FOR THIS QUESTION**

- (a) Give a detailed explanation of how you will use the boxes and any other materials for a learner-centred activity. [15]
- (b) What homework tasks will you give them in order for the knowledge gained to be transferred to dealing with other solids? [10]

Question 2

You gave your class the handshake problem to solve.



The handshake problem

Dr. Ngcobo invited her former students to a tea party. **Twenty five** former students came. Each person shook hands with **everyone** at the party.

- a) How many handshakes were there? [6]
- b) Muntomubi unknowingly came to the party with a contagious disease that spreads through handshakes. After the party each person shook hands with **at most one** other person **who was not at the party**. How many people in all were contaminated through Muntomubi's disease? [3]
- c) Identify with justifications the class level you would assign the problem to. [6]
- d) In her hospital bed one of the ladies that came to the party said, "The handshake culture is not safe". Make a stand on the preceding statement. [10]

Question 3

Fraser and Gillam (1972) list Bloom's mathematics objectives in the cognitive domain as:

- A. Knowledge
 - B. Comprehension
 - C. Application
 - D. Higher abilities (analysis, synthesis and evaluation or analysing, evaluating and creating)
- (a) Describe each of the above in the context of the teaching and learning of the topic "reflection" in the SGCSE syllabus. [15]

- (b) For the same topic, “reflection”, copy and complete the table below to indicate the topic and the ability level’s demand on ‘convergent thinking’ or ‘divergent thinking’. (Use ++ for high demand, + strong, - weak and - - for very weak) [2]

Ability Level	Thinking Style	
	Convergent	Divergent
Knowledge		
Comprehension		
Application		
Higher Abilities		

- (c) Justify your choice in each cell in (b) addressing both the topic and the ability level. [8]

Question 4

Write an essay on Realistic Mathematics Education (RME). Your essay should be structured as follows:

- Introduction [3]
- What RME is and how it came about [4]
- RME views about knowledge, learning and teaching [8]
- Strengths and weaknesses of RME [3]
- Challenges to RME ideology in the present Swaziland education system [4]
- Conclusion. [3]

Question 5

“To understand algebra without ever having really understood arithmetic is impossibility.” Write an essay to support or refute the preceding statement in the context of linear equations taught at senior secondary school (SGCSE). Your essay should include your working meaning of arithmetic and linear equations in the senior secondary school mathematics. [25]