

JUNE 2023
EMA 406SW
ADVANCED STUDY OF TEACHING BASIC
SCHOOL MATHEMATICS
1 HOUR 30 MINUTES

Candidate's Index Number

1E/MAT/KBI/21/0110

Signature:

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

FIVE-SEMESTER BACHELOR OF EDUCATION (SANDWICH) PROGRAMME
LEVEL 400, END-OF-FIRST SEMESTER EXAMINATIONS, JUNE 2023

20TH JUNE 2023

ADVANCED STUDY OF TEACHING BASIC
SCHOOL MATHEMATICS

4:30 PM - 6:00 PM

SECTION B
(40 MARKS)

Answer any TWO questions from this Section.

NOTE: If you answer more than two questions *only the first two* will be marked.

1.
 - a. With specific example in each case, explain four problem-solving strategies used in enacting the subject matter in mathematics [16 marks]
 - b. Explain **two** ways of improving classroom questioning skills as a prospective mathematics teacher. [4 marks]

2.
 - a. As a prospective mathematics teacher, use John Mason's phases of problem-solving to solve the task below explaining to your students clearly all necessary actions taken in each of the phases:

Mary has a special package for large groups to attend their amusement park: an admission fee of GH¢20.00 per group and an additional fee of GH¢6.00 per person.

Using George Polya's four principles of problem-solving, if a club has GH¢100.00 to spend at the park, determine the:

- i. maximum number of people who can attend. [12 marks]
- ii. the problem-solving strategy you employed in arriving at your answer in (i) above. [2 marks]

- b. As a prospective mathematics teacher, an in-service mathematics teacher approached you to help him understand his role in helping his students develop problem-solving skills in mathematics. Explain **two** roles of this colleague in helping his students develop problem-solving skills in mathematics. [6 marks]

3.

- a. Explain the term motivation in mathematics education. [2 marks]
- b. Explain any **two** strategies that you would employ to create an environment that incites motivation for mathematics. [8 marks]
- c. With specific examples in each case, differentiate between intrinsic and extrinsic motivation in mathematics education. [6 marks]
- d. Explain **two** specific motivational strategies for teaching mathematics. [4 marks]

4. Every good teacher frequently makes decisions on the most appropriate mathematics task to pose to students in order to elicit appropriate responses based on students' past experiences. They always endeavour as much as possible to make good decisions regarding when to intervene when students are struggling with task so that students do not get frustrated. With specific example in each case, explain **five** ways that a mathematics teacher can employ to promote appropriate reflective thought in his/her students during mathematics lessons. [20 marks]

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1. creating a mathematical environment

2. Give time

3. history of mathematics

4. Helping learners to understand the mathematical language

Types of Questions:

- Yes-No or Guessing Questions
- Ambiguous Questions
- Choice Response Questions
- Whiplash Questions.

ways of improving classroom questioning skills

5) Explain a Constructivist Theory of Learning
 a) roles of a maths teacher
 b) roles of the learner
 c) the common misconception
 d) 3 methods employed in their classroom.