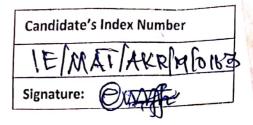
APRIL 2022 EMA 402SW TEACHING PROBLEM SOLVING IN MATHEMATICS 1 HOUR 20 MINUTES



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, APRIL 2022

APRIL 28, 2022

TEACHING PROBLEM SOLVING IN MATHEMATICS 2:40 PM - 4:00 PM

SECTION B [60 MARKS]

Answer any TWO questions from this section.

a. SECTION B [60 MARKS]

Answer ANY TWO questions from this section. Each question carries 30 marks.

1.	a.	Four terms of a sequence of Pythagorean triples can be represented as: (3, 4, 5), (5, 12, 13).
		Four terms of a sequence of Pythagorean triples can be represented as: (3, 4, 5), (5, 12, 13), (7, 24, 25), (9, 40, 41),

i. Write down the next two triples in this sequence.

[6 marks]

ii. Find an expression for the r^{th} triple in this sequence.

[8 marks]

iii. Find the tenth term of this sequence.

[4 marks]

- b. Show that the r^{th} term of the sequence 4, 12, 24, 40, ... of the second numbers of the triples is 2r(r+1). [6 marks]
- c. With specific example in each case, differentiate between a problem and an exercise.

[6 marks]

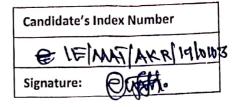
2. Consider the series,
$$(1) + (2+3) + (4+5+6) + (7+8+9+10) + (11+12+13+14+15)$$

a. Find an expression for the i^{th} term in the r^{th} bracket

[10 marks]

b. Given that 39×79 is the sum of all the numbers in the first k brackets in the series, find the value of k. [20 marks]

APRIL 2022 EMA 402SW TEACHING PROBLEM SOLVING IN MATHEMATICS 2 HOURS



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TEACHING PROBLEM SOLVING IN MATHEMATICS 2:00 PM - 2:40 PM

This paper consists of two sections, A and B. Answer ALL the questions in Section A and TWO questions from Section B. Section A will be collected after the first 40 minutes.

SECTION A [40 MARKS]

Answer ALL the questions in this Section.

[2 marks] What is the *primary goal* of problem solving? 1. State the two main purposes that problems serve in mathematics. [4 marks] 2. Outline two values for teaching mathematics through problem solving. [4 marks] 3. Give four features of a problem in mathematics. [4 marks] 4. What does it mean to be successful at Problem Solving? [2 marks] 5. Outline one factor that determines the strategy to use in problem solving and investigations 6. [4 marks] in mathematics.

- 7. The cost of a taxi fare (c) varies directly as the distance (d) traveled. When the distance is 60km the cost is GH\$\mathbb{Q}\$35.00. Using John Mason's phases, find the cost when the distance is 95km. [10 marks]
- 8. The perimeter of a tennis court is 228 feet and the length is 6 feet longer than twice the width.

 Using George Polya's four principles of problem solving, what are the length and the width?

 [10 marks]