JANUARY 2023
EMA 203SW
PSYCHOLOGICAL BASIS OF TEACHING
AND LEARNING MATHEMATICS
1 HOUR 30 MINUTES

Candidate's Index Number
IE/MA
Signatu

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 300, END-OF-SECOND SEMESTER EXAMINATION, JANUARY 2023

6TH JANUARY 2023 PSYCHOLOGICAL BASIS OF TEACHING AND LEARNING MATHEMATICS 1:30 PM - 3:00 PM

SECTION B
(40 MARKS)

Answer any TWO questions from this section

1.

a.

i. What is a schema in mathematics? **2 marks**

ii. Explain **three** functions of schemas mathematics **9 marks**

b. Explain the of each of the following to children's failure in mathematics.

i. Anxiety; **3 marks**

ii. Rate of learning; **3 marks**

iii. Understanding. **3 marks**

2.

a. Explain **four** reasons advocated for the teaching and learning mathematics in school. **8 marks**

b. Explain **four** moves the teacher adopts in communicating mathematics concepts to learners. **12 marks**

3.

a. Give a conceptual interpretation of the expression $3 \div \frac{1}{4}$ and explain how you would use this interpretation to guide your students to find the answer to the equation $3 \div \frac{1}{4} = ?$ **8 marks**

b.

i. Explain **four** advantages of relational understanding. **8 marks**

ii. Explain **two** situational factors that discourage mathematics teachers from engaging their students in relational learning. **4 marks**

4.

a. Explain **four** roles of the mathematics teacher in promoting reflective thinking skills among students. **8 marks**

b. Explain the following principles in Dienes' theory of mathematics learning.

i. Perceptual variability principle; **3 marks**

ii. Constructively principle. **3 marks**

c. Draw a diagram to illustrate the use of Bruner's algebra tiles to represent $x^2 + 8x + 16$ and state the dimensions of the resulting diagram. **6 marks**