



<u>FACULTY:</u>	Education
<u>DEPARTMENT:</u>	Science and Technology Education
<u>CAMPUS:</u>	APK
<u>MODULE:</u>	TEACHING METHODOLOGY AND PRACTICUM 3A (MFSPMA3)
<u>SEMESTER:</u>	First
<u>EXAM:</u>	SSA July 2020

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DURATION: SUBMISSION **MARKS** : 50

NUMBER OF PAGES: 3

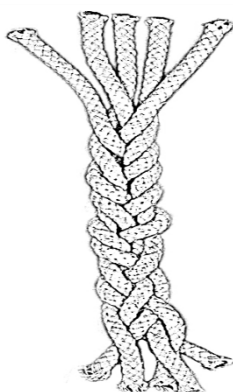
INSTRUCTIONS:

1. Answer ALL THE QUESTIONS.
2. Number your answers correctly according to the numbering system used in this question paper.
3. Use Arial font, font size 12, 1.5-line spacing.
4. Please submit your answer sheet under "Assessments" on Blackboard.
5. Each question should be supported by literature (sources).

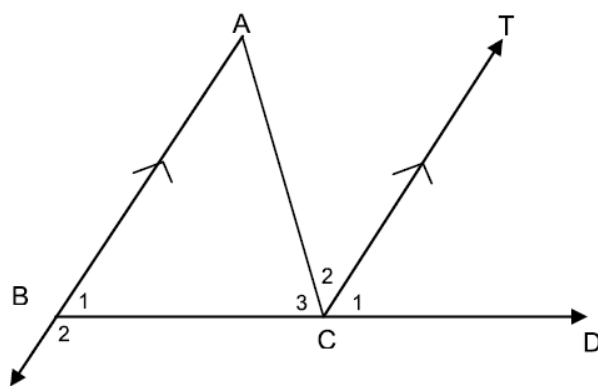
QUESTION 1: Theories of mathematics teaching and learning

Kilpatrick et al. (2001) developed five Strands of Mathematics Proficiency which they believe are important for children to develop to become proficient in mathematics.

- 1.1 Name the five (5) Strands of Mathematical Proficiency and provide a brief description of each strand. **(10)**



- 1.2 The figure above is a popular representation of Kilpatrick et al.'s (2001) model. Discuss the significance of this representation of their theory. **(5)**
- 1.3 The following question is taken from a Grade 9 examination paper.



In the figure above, $AB \parallel TC$, $\hat{C}_1 = 65^\circ$ and $\hat{C}_2 = 43^\circ$. Calculate the size of $\hat{A}$, $\hat{B}_1$ and $\hat{B}_2$.

- 1.3.1 On what Van Hiele level would you say this question is? **(1)**
- 1.3.2 Provide two (2) reasons for your answer in 1.3.1 above. **(4)**

[20]

QUESTION 2: Teaching Strategies

There are various teaching strategies that teachers can make use of during their instruction. These include (the extremes of) direct instruction and interactive teaching or facilitation.

- 2.1 Explain the difference between direct instruction and interactive teaching. Provide one (1) example of each strategy to motivate your answer. **(6)**
- 2.2 Do you think it is possible for a teacher to use a single teaching strategy throughout an entire lesson? **(1)**
- 2.3 Motivate your answer to 2.2 above with an example. **(3)**

[10]**QUESTION 3: Teaching and learning of Functions**

The topic of Functions is part of the FET mathematics curriculum (i.e. Grades 10 – 12). The following extract is taken from the FET Mathematics CAPS document, for Grade 10 Functions:

Work with relationships between variables in terms of numerical, graphical, verbal and symbolic representations of functions and convert flexibly between these representations (tables, graphs, words and formulae). Include linear and some quadratic polynomial functions, exponential functions, some rational functions and trigonometric functions.

- 3.1 Use the teaching and learning theories that you have been introduced to this year, and discuss how you would continue the topic of Functions to Grade 10 learners. Your response must include:
- 3.1.1 The reasons for the teaching and learning theory that you choose; **(6)**
- 3.1.2 The teacher's actions when introducing the topic (e.g. questions the teacher may ask); and **(7)**
- 3.1.3 The learners' actions (e.g. any physical activity such as cutting, drawing, etc.) **(7)**

[20]

TOTAL MARKS: 50