



<u>FACULTY</u>	: Education
<u>DEPARTMENT</u>	: Science and Technology Education
<u>CAMPUS</u>	: APK
<u>MODULE</u>	: TEACHING METHODOLOGY AND PRACTICUM: MATHEMATICS (MPFMAY1)
<u>SEMESTER</u>	: Second
<u>EXAM</u>	: November 2020

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<u>MODERATOR</u>	: DR LP RAMABULANA (UNIVEN)

<u>DURATION</u>	:	<u>MARKS</u>	: 50
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NUMBER OF PAGES: 4

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 and 1.5 line spacing.
 4. Please submit your answer sheet under “Assessments” on Blackboard.
 5. Each question is accompanied by a reading (literature source).
 6. Attach the reference list.
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Readings

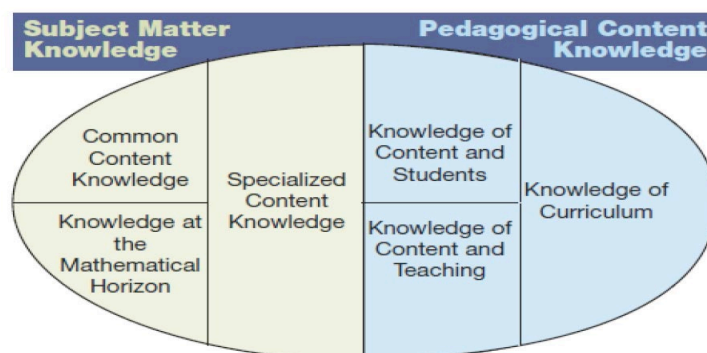
Question 1: Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: What makes it so special? *Journal of Teacher Education*, 59(5), 389–407

Question 2: Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of educational research*, 77(1), 81-112.

Question 3: Thompson, N., & Pascal, J. (2012). Developing critically reflective practice. *Reflective Practice*, 13(2), 311-325.

QUESTION 1: Teacher knowledge and PCK

Shulman (1986) conceptualised pedagogical content knowledge (PCK) as a special kind of knowledge for teaching and which only teachers need to have. Ball, Thames and Phelps (2008) used Shulman's PCK as the foundation for their mathematical knowledge for teaching (MKT) framework. Their famous 'egg diagram' is seen here:



1.1 Examine Ball et al.'s (2008) PCK categories and discuss how they have expanded on Shulman's original definition. (12)

1.2 As a mathematics teacher, it is important to identify learners' errors and address their misconceptions. Explain which of Ball et al.'s (2008) categories deals with this type of teacher's knowledge. (5)

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QUESTION 2: Assessment

The following extract is taken from the CAPS document:
“Assessment should be both informal ... and formal In both cases, regular feedback should be provided to learners to enhance the learning experiences”.
(CAPS, 2011, p. 51)

Discuss the extract critically, by focusing on the following:

- a) What is the difference between formative and summative assessments? (6)
- b) Which, in your opinion, is more important: formative or summative assessment?
Provide reasons for your choice. (4)
- c) The value of feedback in enhancing learner understanding. (5)

[15]

QUESTION 3: Teacher reflection

This has been a difficult year for teachers and learners, especially with the move to an online mode of teaching and learning. It has therefore been extremely important for teachers to reflect deeply on the factors which impact their practice.

- 3.1 What does reflection mean to you? (3)
- 3.2 Discuss Schön's (1983) distinction between reflection in action and reflection on action. (6)
- 3.3 Read through the following scenario titled Peter's failed lesson. Use Schön's (1983) categories for reflection to analyse the scenario and offer some advice to Peter on how to improve his lesson. (9)

[18]

Scenario

Peter's failed lesson

Peter had a well-prepared lesson plan to teach the Grade 8 Natural sciences class how electricity works. He arrived for his lesson with all his notes and knew exactly what he was going to say.

"We are going to learn how electricity works and how to build an electric circuit. It is not difficult to build an electric circuit, as long as you follow the rules and the step-by-step guide, which we are now going to go through."

All the learners looked at him expectantly, which he took as a good sign. "Yes, they are all interested..."

"First, you need a cell and a conductor. You can take a battery and a light bulb out of a torch and use the conducting wires to make a circuit."

Peter carried on with his explanations and all the learners were jotting down notes.

"This is really going well. The learners are interested and they seem to be following my explanations."

"Are there any questions?"

No one had any questions, and Peter, confident that everybody had understood his clear explanations, concluded the class: "As homework, just follow these steps and rules, and draw a series of parallel electric circuits."

On his way out, Peter was walking behind two of the learners who were talking among themselves without noticing that Peter could overhear them: "Busi, did you understand anything of what the teacher said about electricity? I have no idea what he was saying, and I cannot do my homework. May I come to your house this afternoon and we can do it together?" "Well, I didn't understand anything either. I think my older brother may be able to explain it to me. Or maybe your father? I have no idea what to do."

(Gravett and De Beer, 2015).