



<u>FACULTY</u>	: Education
<u>DEPARTMENT</u>	: Science and Technology Education
<u>CAMPUS</u>	: APK
<u>MODULE</u>	: CURRENT ISSUES IN MATHEMATICS EDUCATION (HCIME0Y)
<u>SEMESTER</u>	: Second
<u>EXAM</u>	: SSA JANUARY 2021

<u>ASSESSOR(S)</u>	: DR V RAMDHANY		
<u>MODERATOR</u>	: PROF S BANSILAL (UKZN)		
<u>DURATION</u>	: SUBMISSION	<u>MARKS</u>	: 100

NUMBER OF PAGES: 4

INSTRUCTIONS:

1. Answer ALL the questions.
 2. Number your answers exactly as they appear 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 readings (literature sources).
 6. You are also encouraged to refer to your learning guide as an additional source.
 7. Attach the reference list.
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QUESTION 1: Contextual factors in mathematics teaching**Readings:**

Essien, A. (2010). Investigating proficiency in the language of instruction as means of improving mathematical proficiency in a multilingual classroom. *Education as Change*, 14(2), 169-185.

- 1.1 Explain, as clearly as you can, what you understand by contextual factors in teaching and learning. Provide examples to clarify your understanding. (5)
- 1.2 In South African education, multilingualism is a crucial contextual factor influencing teaching and learning. Define multilingualism. (5)
- 1.3 In a short essay of 1 ½ to two pages (± 450-500 words), discuss your views on the use of multiple languages in the mathematics classroom and how this can and does impact on the teaching and learning of mathematics. You must consider the following:
 - a) The language of learning and teaching in schools;
 - b) The home language/s of the learners; and
 - c) The importance of mathematics as a discipline of knowledge and as a way of communicating with its own language.
 - d) You should refer to, amongst others, Essien (2010), as well as provide example/s from your own practice or experience to support your essay. (15)

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QUESTION 2: Theories of teaching mathematics

Reading:

Kilpatrick, J., Swafford, J., & Findell, B. (Eds.). Adding it up: Helping children learn mathematics. Washington DC: National Academy Press

In this course, you have been introduced to many theories of teaching and learning. Kilpatrick et al.'s (2001) theory of mathematical proficiency is thought to have great benefits for mathematics teachers.

- 2.1 Discuss in some detail each of the five (5) strands of mathematical proficiency conceptualised by Kilpatrick et al. (2001). (15)
- 2.2 Provide two (2) examples of teacher actions which are thought to promote the mathematical proficiency of learners, and describe how these teacher actions are supposed to achieve this. (10)

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QUESTION 3: Teacher beliefs

Readings:

Ernest, P. (1989). The knowledge, beliefs and attitudes of the mathematics teacher: A model. *Journal of Education for Teaching*, 15(1), 13-33.

Pajares, M. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, 62, 307 – 332.

According to Ernest (1989), a teacher's belief system comprises the following elements:

- The teacher's view of the nature of mathematics;
- The teacher's view of the nature of mathematics teaching; and
- The teacher's view of the process of learning mathematics.

Using these three elements, Ernest (1989) distinguishes between 3 categories of mathematics teacher.

- 3.1 What are the three categories of mathematics teacher called? (3)
- 3.2 Provide a brief description of each category in terms of the *view of the nature of mathematics teaching*. (9)
- 3.3 Research (e.g. Beswick, 2012) suggests there exists a close relationship between mathematics teachers' beliefs and their classroom practice. Discuss what you understand by this sentiment ($\pm$ 150-200 words) and state clearly whether you agree with this or not. You are encouraged to use examples from your own practice to support your discussion. (13)

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QUESTION 4: Visible and invisible pedagogies

Reading:

Morais, A.M. (2002). Basil Bernstein at the Micro Level of the Classroom. *British Journal of Sociology of Education*, 23(4), 559-569.

Basil Bernstein (1924-2000), a British sociologist, was interested in how education serves to reproduce inequalities (caused mainly by socio-economic differences) that exist in society, rather than strive to reduce these inequalities. Although he was often criticised for not paying enough attention to transformation, he was content to describe social situations, and to prompt social conscience i.e. to create awareness of what is happening.

Write an essay of 1 ½ to 2 pages ($\pm$ 450-500 words), in which you discuss Bernstein's sociology of education. Use the following subheadings to guide you:

- 4.1 Classification and framing; (10)
- 4.2 Visible and invisible pedagogies. (15)

Relevant examples must be used to enhance your essay.

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