



UNIVERSITY
OF
JOHANNESBURG

<u>FACULTY</u>	Education
<u>DEPARTMENT</u>	Science and Technology Education
<u>CAMPUS</u>	APK
<u>MODULE</u>	HCISEOY CURRENT ISSUES IN SCIENCE EDUCATION
<u>SEMESTER</u>	Second
<u>SUBMISSION</u>	January 2020

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<u>DURATION</u>	3 HOURS	<u>MARKS</u>	100
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NUMBER OF PAGES: 3 PAGES

INSTRUCTIONS:

1. Answer ALL THE QUESTIONS.
 2. Number your answers clearly.
 3. Answer each question in a separate booklet.
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QUESTION 1: PCK and TPACK

Several scholars have shown interest in PCK in the field of science education. For example, Cochran, De Ruiter and King (1993), Magnusson, Krajcik and Borko (1999) have modified Shulman's PCK concept by formulating new models.

- 1.1 Critically review and interpret one (1) of these above mentioned models by considering the following:
- i. Description of the model.
 - ii. Its uniqueness in relation to Shulman's (1986) model.
 - iii. Whether it is a transformative or integrative model. (12)
- 1.2 Content Representations (CoRes) play an important role in representing teachers' PCK. Critically discuss this statement. (10)
- 1.3 Discuss the benefits and challenges of using Information and Communication Technologies (ICTs) in a science classroom in South Africa to prepare learners for future workplace in the 21st century. (8)
- [30]

QUESTION 2: Science concept formation and conceptual change

- 2.1 Identify five (5) sources of alternative conceptions, which come from learners' diverse personal experiences. (5)
- 2.2 The conceptual change model contributes to theory and practice in science teaching. Discuss the steps to take when teaching for conceptual change. (8)
- 2.2 With direct reference to the characteristics of inquiry-based learning, critically discuss its role in science concept formation. Use examples to elaborate your answer. (12)
- [25]

Question 3: Indigenous Knowledge and Science Education

- 3.1 Critically discuss the challenges that hinder teachers to integrate indigenous knowledge in science teaching. (10)
- 3.2 Compare the nature of indigenous knowledge and the nature of science (Western/ Eurocentric). Based on this comparison, critically discussion your position on integrating indigenous knowledge in the science classroom. (15)
- [25]

QUESTION 4: Language in science teaching and learning

- 4.1 Discuss the different ways in which a teacher can overcome language problems in the science classroom. (10)
- 4.2 Discuss with examples the following components of Toulmin's argumentation model:
- 4.2.1 claim
- 4.2.2 ground
- 4.2.3 warrant (10)
- [20]
- Total: 100**
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