



<b><u>FACULTY</u></b>	: Education
<b><u>DEPARTMENT</u></b>	: Science and Technology Education
<b><u>CAMPUS</u></b>	: APK
<b><u>MODULE</u></b>	: MOFPPA3 METHODOLOGY AND PRACTICUM: PHYSICAL SCIENCE 3A
<b><u>SEMESTER</u></b>	: First
<b><u>EXAM</u></b>	: May 2018

<b><u>DATE</u></b>	: 01 June 2018	<b><u>SESSION</u></b>	: 14:00-15:00
<b><u>ASSESSOR(S)</u></b>	: MR A SONDLLO		
<b><u>MODERATOR</u></b>	: DR L MAVURU		
<b><u>DURATION</u></b>	: 1 HOUR	<b><u>MARKS</u></b>	: 50

---

NUMBER OF PAGES: 3 PAGES

INSTRUCTIONS:

1. Answer ALL the questions.
  2. Number your answers clearly.
-

**QUESTION 1**

- 1.1 Define Technological Pedagogical Content Knowledge (TPACK) as coined by Koehler and Mishra (2008). (3)
- 1.2 What is an interactive simulation? (2)
- 1.3 The Gauteng Education MEC Panyaza Lesufi, has indicated that the department's Information and Communication Technology (ICT) objective is to provide high school children in public schools with tablets. This creates an imperative for the infusion of ICT in science teaching.
- 1.3.1 Discuss three (3) advantages of using computer simulations in science teaching (6)
- 1.3.2 Discuss three (3) challenges this can pose for science teachers. (6)
- [17]

**QUESTION 2**

- 2.1 Content Representation (CoRe) and Pedagogical and Professional-experiences Repertoires (PaP-eRs), both developed as tools by Loughran et al. (2006) could be used to capture PCK could be captured. State the primary role of CoRes. (2)
- 2.2 A CoRe is made up of 'big ideas'. What is your understanding of the 'big ideas'? (2)
- 2.3 The prompts below are used when constructing CoRes. Identify a topic in Physical Sciences and then respond to each of the following prompts for that topic:
- 2.3.1 What is your topic? (1)
- 2.3.2 Identify one 'big idea' for this topic (1)
- 2.3.3 What do you intend learners to learn about this idea? (2)
- 2.3.4 Why is it important for learners to know this? (2)
- 2.3.5 What else do you understand about the idea that you would not share with learners yet? (2)
- 2.3.6 What are the difficulties/limitations associated with teaching this idea? (2)
- [14]

### **QUESTION 3**

There has been overwhelming support from the public and other stakeholders for the principles of the reformed school science curriculum. However, many science teachers experience barriers when implementing the changes.

- 3.1 Identify and discuss any two barriers that impede the implementation of the reformed school science curriculum. (4)
- 3.2 What strategies can science teachers implement in addressing the two barriers you have identified in 3.1 (7)

[11]

### **QUESTION 4**

Mr Molefe wants to introduce chemical equilibrium to his class. This is a concept his class is not familiar with. Shulman (1986) speaks of pedagogical representations such as demonstrations, illustrations, explanations and analogies that enable abstract concepts to become understandable to learners. Discuss pedagogical representations Mr. Molefe could use to make chemical equilibrium understandable to his learners. (9)

[9]

---

**TOTAL: 50**