



UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION
NOVEMBER EXAMINATION 2015

PROGRAMME: B.Ed Intermediate Phase

MODULE: Methodology and Practicum: Natural Science and Technology

CODE: MPSCTB2

TIME: 2 hours

MARKS: 100

EXAMINER: Mr F Naude and Mr W Engelbrecht

MODERATOR: Ms S Ramsaroop and Mr F van As

(This paper consists of 4 pages)

INSTRUCTIONS

Read the following instructions carefully before answering the questions.

1. This question paper consists of two sections. Section A and B should be completed in separate answer booklets.
2. Answer all questions.
3. Use the mark allocation as indication of how much information you should provide for each question.

SECTION A

QUESTION 1

- 1.1 Briefly describe the following learning theories:
- | | |
|--------------------|-----|
| (a) Behaviorism | (2) |
| (b) Constructivism | (3) |
- 1.2 Name and explain 5 of the tenets of the nature of science. (10)
- (15)**

QUESTION 2

- 2.1 It is extremely important for learners to obtain the necessary skills to enable them to do science. Briefly describe how you will ensure that all learners obtain the following skills:
- 2.1.1 Basic science process skills (2)
- 2.1.2 Integrated science process skills (2)
- 2.2 Addendum A shows a list of Natural Science topics as stated in the grade 5 Natural Science and Technology Curriculum and Assessment Policy Statement (CAPS). Choose any one of these topics and design a lesson where you will use De Bono's six thinking hats to facilitate a discussion. Indicate what each hat represents and explain clearly how you will implement this teaching strategy. (15)
- 2.3 Choose another topic from Addendum A (not the same as in question 2.2) and describe a possible excursion that you can arrange to support your teaching of this topic. Describe what educational value this excursion will hold for the learners. (6)
- 2.4 Explain how you will use the ALACT model of reflection to reflect on the lesson that you have presented during the Work Integrated Learning (WIL) period in September. (10)
- (35)**

QUESTION 3

- 3.1 Many nations are putting more emphasis on integrating the teaching of different subject areas in order to eliminate duplication in teaching but also to teach the skill of applying knowledge from various spheres to solve complex problems. The subject areas of Science, Technology, Engineering and Mathematics (STEM) are interrelated. Design a lesson where you incorporate aspects from each of these subject areas in an integrated fashion. (10)

TOTAL SECTION A: 60**SECTION B****QUESTION 1**

- 1.1 In your own words briefly define the concept of technology. (4)
- 1.2 In your own words briefly define the concept of Technology Education. (3)
- 1.3 Conceptual and procedural knowledge are two types of technological knowledge that can be distinguished. Briefly describe the nature of conceptual knowledge. (3)
- 1.4 Briefly describe the nature of procedural knowledge. (3)
- 1.5 Briefly explain the most important differences between conceptual and procedural knowledge. (3)
- (16)**

QUESTION 2

- 2.1 Which document gives an exposition of learning outcomes and assessment standards? (2)
- 2.2 The stages of the technological process are linked to procedural knowledge. Name these stages. (10)
- 2.3 Under which learning outcome will you find technological conceptual knowledge? (1)
- 2.4 Briefly name the main themes of technological conceptual knowledge. (3)
- (16)**

QUESTION 3

- 3.1 Briefly discuss the differences between the behavioural and constructivist instructional approaches. (4)
- 3.2 By referring to the nature of Technology education, briefly explain why it is necessary to complement the behavioural instructional approach with the constructivist approach. (4)
- (8)**

TOTAL SECTION A: 40

GRAND TOTAL: 100

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