



UNIVERSITY OF JOHANNESBURG
FACULTY OF EDUCATION
JANUARY SUPPLEMENTARY EXAMINATION
2017

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 E Libusha

MODERATOR: Dr S Ramsaroop and Mr W Engelbrecht

(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)
- 3.2 The Natural Science component of the Natural Science and Technology curriculum is divided into four (4) strands. Write a report of no more than 1 page on the relationship between the strands and the subject disciplines of Natural Science. (10)

TOTAL SECTION A: 70**SECTION B****QUESTION 1**

- 1.1 In your own words briefly define the concept of technology. (3)
- 1.2 In your own words briefly define the concept of Technology Education. (3)
- 1.3 Explain the difference between science and technology and also give an example where the two subjects are co-dependent. (4)
- (10)

QUESTION 2

Cynthia is a problem student. She doesn't do her homework, and when she does, it's only half-finished. She acts out in class, refusing to follow the rules and cracking jokes at the teacher's expense. Her teacher, Mr. Greene, is at his wit's end. He does not know how he can deal with Cynthia. His colleague suggested that the answer to Mr.

Greene's problem might lie with the psychological philosophy of behaviourism as a teaching approach.

- 2.1 Briefly describe Behaviourism as the learning theories. (2)
- 2.2 Name 4 principles of behaviourism instructional approach. (4)
- 2.3 If you were to be placed in Mr Greene classroom, what where you going to do about Cynthia? Give a brief description on how you were going to apply the behaviourist approach to solve the problem. (4)
- (10)

QUESTION 3

- 3.1 The stages of the technological process are linked to procedural knowledge. Name these 10 stages. (10)

TOTAL SECTION B: 30

GRAND TOTAL: 100

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