

THE UNIVERSITY OF ZAMBIA

In association with

TECHNICAL AND VOCATIONAL TEACHERS' COLLEGE- TVTC

DEPARTMENT OF APPLIED SCIENCES

SECOND YEAR DEFERRED/REFERRED PROMOTIONAL EXAMINATION

SUBJECT: SCIENCE TEACHING METHODS (STM)

DURATION: THREE (3) HOURS

TOTAL MARKS: 100

APRIL 2021

Information and instructions to candidate

Write your student identification number in the space provided on the answer booklet.

There are **seven (7)** questions in this paper.

Answer any other **five (5)** questions of your choice.

The number of marks is given in brackets [] at the end of each question or part question.

Write all the questions you have attempted in the space of the answer booklet provided

Question one

(a) State and explain the factors affecting choice of science teaching strategy. [20]

Questions two

- (a) Explain why experiments should be accidents free laboratory?[3]
- (b) State the most common laboratory accidents in secondary schools.[6]
- (c) State and explain at least six safety precautions that must be considered in the science laboratory. [6]
- (d) State and explain any two types of fire extinguishing equipment. [2]

Question three

Discuss the types and importance of teaching aids used in teaching learning in Zambia. [20]

Question four

- (a) Explain why the importance of each of the following components of the lesson plans.
 - (i) General information [8]
 - (ii) Rationale [4]
 - (iii) Learning outcomes [2]
 - (iv) Lesson introduction [3]
 - (v) Conclusion [3]

Question five

With reference to the extract from integrated science 8-9 syllabus below, write a weekly scheme of work [12]

TOPIC	SUB TOPIC	SPECIFIC OUTCOMES
8.3.0 The Environment	8.3.1 Water, Air and Land Pollution	8.3.1.1 Explain what pollution is. 8.3.1.2 Identify different types of pollution of the environment 8.3.1.3 Identify causes of pollution of the environment. 8.3.1.4 Describe the effects of pollution on the environment 8.3.1.5 Describe ways of preventing pollution of the environment

(b) It is important as you prepare to teach, to be aware of the fact that learners differ in many ways. Individual differences therefore refer to the way pupils differ in learning activities.

Write brief notes on individual differences in Learners listed below.

- (i) Aptitude and ability
- (ii) Knowledge, skill and attitude
- (iii) Personality and style of learning
- (iv) Age and experience [8]

Question six

- (a) Change each of the following teacher intentions into **fully stated** learning outcomes/specific objectives. during the course of this lesson, I will:
- (i) Show the pupils part of a flower
 - (ii) Ask the pupils to copy a diagram of a flower
 - (iii) Ask the pupils to label the parts of a flower
 - (iv) Explain the functions of the parts of the flower
 - (v) Assist the pupils to understand the meaning of fertilization [10]
- (b) State and explain **three** important reasons why science should be taught in schools in Zambia. [3]
- (c) Teaching of science consists of science **process** and science **product**.
- (i) Briefly explain what is meant by the process of science and state two advantages of teaching process.[4]
 - (ii) Briefly explain science content/product and suggest reasons why most teachers in Zambia teach more content than process. [3]

Question seven

A lesson plan is a teacher's detailed description of the course of instruction or "learning trajectory" for a lesson. A daily lesson plan is developed by a teacher to guide class learning. Planning enables a teacher to think clearly and specifically about the type of learning wishes to occur. Use the extract from integrated science syllabus below to answer the questions.

TOPIC	OBJECTIVES Learners should be able to;	NOTES
Human Reproductive System and Puberty	<ul style="list-style-type: none">□ Identify organs of the human reproductive system.□ Explain the functions of the parts of the reproductive system.□ Identify changes associated with puberty for both male and female□ Explain the importance of observing personal hygiene of the reproductive organs	<ul style="list-style-type: none">□ Organs of reproduction; Male: testes, sperm duct, scrotum, urethra, penis.□ Female: ovaries, oviducts, uterus, cervix, vagina.□ Functions of reproductive parts: penis-depositing sperms, ovary-producing ovules□ Changes associated with puberty: Menstruation and Wet dreams.

- (a) Write a detailed rationale for the lesson. [4]
- (b) (i) Learning outcomes refer to what the teacher intend to achieve at the end of the lesson. They must be **'SMART'**. What does the acronym SMART stand for? [5]
- (ii) Using the answer in (b) (i) write four specific learning outcomes. [8]
- (c) Using a named lesson introduction type, suggest a suitable lesson introduction for this lesson.[3]

End of examination