

THE UNIVERSITY OF ZAMBIA

In association with

TECHNICAL AND VOCATIONAL TEACHERS' COLLEGE

DEPARTMENT OF APPLIED SCIENCES

DIPLOMA FINAL EXAMINATION

SCIENCE TEACHING METHODS

DURATION: THREE (3) HOURS

MARKS: 100

DECEMBER 2021

Information and instructions to candidate

1. Write your student identification number in the space provided on the answer booklet.
2. There are **seven** questions in this paper.
3. Answer question **number one** and any other **four** questions of your choice.
4. The intended marks for each question or part of the question are shown in brackets. []
5. Write all the questions you have attempted in the answer booklet provided **strictly in continuation**.

Question One

With reference to the extract from integrated science 8-9 syllabus below, write a detailed lesson plan [20]

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

Use the MoE SBCPD lesson Plan format

Question two

- (a) “In this lesson pupils will learn about density. Density is important and highly considered in the manufacture of many things such as car body parts, boats, ships, hot air balloons and in home chimneys. In this lesson group discussion, question and answer method will be used. This is the fifth lesson in a series of nine on materials.”

The phrase above best describes one component of the lesson plan.

- (i) Name the component. [1]
(ii) Identify the four sub components using the information given in (a) above. [4]
(b) Explain the purpose of lesson introductions. [5]
(c) Briefly explain any three types of lesson introduction. [10]

Question three

- (a) Briefly explain each of the following test formats and state their advantages and disadvantages.

- (i) Multiple choice test item [5]
(ii) short-answer (completion) test item [5]
(iii) Extended Response test item [5]
(iv) Restricted Response test item [5]

Question four

- (a) Briefly explain what is meant by Classroom management. [2]
- (b) What are the effects of an ineffective teacher of science to the learners? [3]
- (c) Discuss five main characteristics of an effective teacher of science. [15]

Question five

Generally, instructional aids can be grouped in four main categories as Visual aids, auditory aids, Audio-Visual Aids and Stimulation devices. Discuss visual aids focusing on charts and chalkboards. [20]

Question six

Science; scientific method; Classification; Objective; Outcome statements; psychomotor domain; Condition of evaluation; Cognitive domain; teachers centered method: scheme of work; Evaluation statement; Blooms Taxonomy; Affective domain; Teaching method; Demonstration

Use one of the above phrases to answer the following

- (a) defines the conditions under which the learners is expected to perform, what the learner will be allowed to use, under what conditions you expect learners terminal behavior to occur. [2]
- (b) is a set of three hierarchical models used to classify educational learning objectives into levels of complexity and specificity [2]
- (c) involves manual and physical skills (skills or do). [2]
- (d) A is a potential source of danger or harm and can result from working with chemicals, equipment, and instrumentation. [2]
- (e)involves knowledge and the development of intellectual skills. [2]
- (f)..... is a systematic way which a teacher uses to transfer or receive or share information. [2]
- (g) This is the method in which the Teacher holds the central position and assumes to be the source of all materials. [2]

- (h) A is a guideline that defines the structure and content on an academic course. [2]
- (i) are tool and equipment used in teaching as a supplement in class room instruction to enhance the interest of students
- (j) Indicate the criteria for acceptable performance, the standard at which the learners are expected to perform the given task under the given conditions. [2]
- (k) is a method of delivery of **audio-visual** explanation in which the teacher emphasizes important points of a process, product or idea. [2]

Question seven

- (a) In order prevent accidents in the laboratoty it is always important to consider PPE's. What do the letters PPE stand for? [2]
- (b) State the five most common laboratory accidents. [5]
- (c) Explain **five** safety precautions that should be considered in order to minimise accidents in the laboratory. [5]
- (d) Explain any four types of fire extinguishing equipment. [8]

End of Examination