

**UNIVERSITY OF ESWATINI
FACULTY OF EDUCATION
DEPARTMENT OF CURRICULUM AND TEACHING
MAIN EXAMINATION QUESTION PAPER: MAY 2019**

TITLE OF PAPER : CURRICULUM STUDIES IN BIOLOGY II
COURSE CODE : CTE328/528
STUDENTS : B.Ed. LEVEL III, PGCE
TIME ALLOWED : THREE (3) HOURS

- INSTRUCTIONS:**
1. This examination paper has five (5) questions. Answer any four (4) questions.
 2. Each question has a total of 25 points.
 3. There is an attachment for 1 question

**THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN
GRANTED BY THE INVIGILATOR**

1. a) Eswatini and many African countries lag behind all other developing countries in development of science and technology education. However, many African countries have taken steps to improve on the state of science and technology. Discuss the initiatives taken by the following projects to address this issue:

- i) Linking School Science with Industry and Technology (LISSIT) [5]
- ii) Science Across Africa [5]
- iii) Science and Technology in Action in Ghana (STAG) [5]

b) The science curriculum in Eswatini has evolved in response to the changing needs of the country. Compare and contrast the traditional curriculum, rooted in the reform curriculum, and the contextualised curriculum currently in use, rooted in the science, technology and society curriculum. [10]

2. a) Gender responsive lesson plans consider the needs of boys and girls in the total teaching-learning process. Discuss how you would ensure gender responsiveness in the following: [12]

- Teaching and learning materials
- Teaching methodology and teaching strategies
- Learning activities
- Feedback and assessment

b) Gucuka High School, characterised by learners with disadvantaged backgrounds, was established as a FAWE Centre of Excellence, which provides a gender responsive teaching and learning environment. Discuss

- i) the transformation process at this school [9]
- ii) the impact of this transformation in the ensuing years [4]

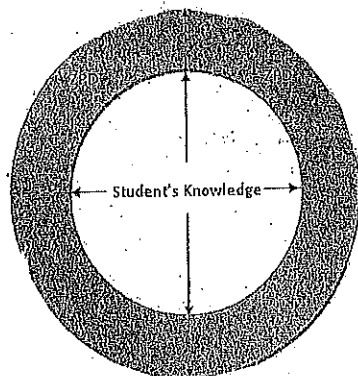
3. a) STEM lessons, which are similar yet different from science lessons, are designed to develop skills learners require for the 21st century. Discuss 3 characteristics of a STEM lesson that set it apart from science lessons using biology content for examples. [15]

b) Language use in the science classroom can either promote or hinder learning. Explain how 2 language related classroom practices hinder learning. [10]

4. a) The use of context based approaches in science education draws support from a number of learning theories. Explain how cognitive constructivism and social constructivism support contextualised learning. [10]

b) Compare the main activities in a cognitive constructivist classroom with the principles applied in a social constructivist classroom. [10]

c) Discuss what the illustration below shows and how it can be used to maximise learning. [5]



5. Attached is Section 13, *Organisms in their Natural Environment*, of the JC syllabus and a lesson plan prepared by a student teacher during teaching practice. The chapter topic is *Organisms in their Natural Environment* and the unit title is *Save all Living Things*.

- i) Examine the structure of the lesson plan and comment on the missing information. [2]
- ii) What is the nature of the relationship between the lesson objectives and Stage 1 of the lesson presentation? [5]
- iii) Match the objectives with the lesson presentation. [2]
- iv) The student teacher allocated 5 minutes to the introduction and 15 minutes to stage 2 of the lesson presentation. Discuss how this impacts on the overall lesson. [5]
- v) Closure and Homework – how do the corresponding teaching and learning activities relate to them? [3]
- vi) Which aspect of this lesson plan will enable the learners to attain objective (a) and outcome (i) of the syllabus? [2]
- vii) Comment on the lesson and the teacher evaluation. [5]

- (k) describe the digestion of cooked starch to maltose by salivary amylase only.
- (l) state the end products of the digestion of carbohydrates, proteins and fats.
- (m) define photosynthesis as the process of making glucose in green plants using water and carbon dioxide in the presence of light.
- (n) state the word equation for photosynthesis.
- (o) investigate and describe the conditions necessary for photosynthesis.
- (p) state that most photosynthesis occurs in the leaves.

13. Organisms in Their Natural Environment

All learners should be able to:

- (a) list the three features which enable life on Earth as water, air and energy.
- (b) state that the sun is the principal source of energy to all living systems.
- (c) define food chains as simple feeding relationships between living organisms in a given habitat through which energy is passed from one organism to the other.
- (d) construct simple food chains and describe energy flow in a food chain.
- (e) identify and describe the use of equipment for collecting specimen; nets and quadrants.
- (f) define:
 - ecology as the study of relationship of organisms with each other and their environment,
 - ecosystem as different organisms living together in a given environment and depending on each other, giving local examples.
- (g) describe, giving local examples, the terms: producer, primary consumer, secondary consumer.
- (h) state the human activities which bring about pollution: motor car exhaust, industrial/household smoke, dust from industries, insecticides, fertilizers, litter-plastics, non rotting wastes.
- (i) define conservation as maintenance and protection of a habitat or species.

14. Energy

All learners should be able to:

- (a) define energy as the ability to do work.
- (b) give examples of energy in different forms and their conversion.
- (c) investigate and describe the energy of motion (kinetic) and energy of position relative to ground (gravitational potential).
- (d) state the law of energy conservation.
- (e) list some common fuels (wood, coal, cow dung, petroleum, natural gas).
- (f) describe production of thermal energy by burning fuels.
- (g) investigate and describe qualitatively the thermal expansion of solids, liquids and gases.
- (h) describe some everyday applications and consequences of thermal expansion.
- (i) investigate convection in liquids.
- (j) describe melting and boiling in terms of energy input without change in temperature.
- (k) investigate the properties of good and bad conductors.
- (l) identify and explain some of the everyday applications and consequences of conduction, convection and radiation.
- (m) explain how a vacuum flask works.

DATE : 18 June

TIME : 10:20 - 11:00 hrs

CLASS : Form 1 B

CLASS SIZE : 49

SUBJECT : J.C. SCIENCE

TOPIC : ORGANISMS AND THEIR ENVIRONMENT

SUBTOPIC : CONSERVATION

LESSON AIM : To encourage cooperative learning.

LESSON OBJECTIVES

By the end of the lesson, learners should be able to:

- a) give examples of animals, which are labelled as endangered species.
- b) explain how wildlife in Swaziland can be protected.

TEACHING MATERIALS

Pupils book page 169

TEACHING METHOD

Debate

LESSON DEVELOPMENT

Duration	Phase	Teacher Activity	Student Activity
5 min	Introduction	Teacher will check homework	Students will present their work
15 min	Lesson presentation	Teacher will lead discussion	Students will present their opinions
15 min	Stage 2	Teacher will ask questions	Students will respond
	Revision of homework exercise		
	Closure and homework	Teacher will ask learners to bring atlases to class for lesson on natural vegetation	Students will take down homework details
Lesson Evaluation			
Lesson was successful and learners presented their opinions well. However, some learners did not write the homework.			
Teacher Evaluation			
Teacher had prepared well for lesson.			

5 min

Introduction

Teacher will check homework

Students will present their work

15 min

Lesson presentation

Teacher will lead discussion

Students will present their opinions

Stage 2

Teacher will ask questions

Students will respond

15 min

Revision of homework exercise

Closure and homework

Teacher will ask learners to bring atlases to class for lesson on natural vegetation

Students will take down homework details

Lesson Evaluation

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Teacher Evaluation

Teacher had prepared well for lesson.

Unit 6 Save all living things

Think about it! Have you ever wondered why certain plants and animals are disappearing?

In previous lessons we saw that the community of living and non-living things form a balanced system that can keep itself working for a long time. When one part of the system is disturbed, the whole system suffers. Who has the responsibility to maintain this balance?

Read the following passage and answer the questions on it.

One edition of one of the daily newspapers in the country reported that some men had been arrested for stealing a sacred plant that is used to perform rituals during the *incwala* ceremony. Only members of the water party (*benzantsi*) are allowed to enter the bush where the plant grows. Only they can dig up the sacred plant before the ceremony. The plant the men had stolen belongs to a family of rare plants called cycads. In Swaziland it is called *gebeleneni*. In many countries cycads hold symbolic/reverential status and are used during ceremonies and rituals, and for medicinal purposes. They are also highly prized for their beauty. In Swaziland these plants are protected by a law called the Floral Protection Act of 2000.

Discuss the reasons why some plants need to be protected and why people continue to steal them.

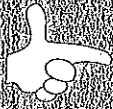
Another edition of the same paper reported that a certain man was arrested for hunting and killing a nyala buck at Mhlwane Game Reserve. Many other newspaper articles have carried stories of people being shot and wounded, and sometimes killed for hunting wild animals (poaching) by nature reserve game rangers.

Discuss why we need game reserves. Discuss also the reasons that make people into poachers.

What puts wild plants and animals (wildlife) in danger of dying out (extinction)? What can be done to conserve the existing wildlife?



ACTIVITY



Activity 7.9

Discussion and debate issues

- History tells us that Swaziland was once teeming with magnificent wild animals like lions, elephants, buffaloes, leopards, rhinoceros and many others. In time, these animals disappeared from Swaziland. Suggest any human practices that may have led to the disappearance of these animals in Swaziland.
- When people talk about wildlife, they often forget about plants. Are plants also in danger of extinction? Again, suggest any human practices that may lead to the destruction of wild plants.
- Many people blame the coming of the White Man for the destruction of wildlife in Africa.
 - Suggest ways in which Swazis used to protect their wild plants and animals.
 - Describe the practices of white people that led to the destruction of wildlife in Africa.
- In many countries the approach to conservation involved working with communities so that they could also make money from conservation. Think of a project that would work in your area.

Do some research in five of the following living things and then copy and complete the following table.

Name (English/Swazi/IsiNtshona)	Uses	Reasons for endangerment	Ways of protection	Traditional ways of protection	Comments
Wild game (wild animals)	Food, medicine	Over-hunting, loss of habitat	Game reserves, hunting laws	Traditional hunting practices	Many species are becoming extinct due to over-hunting and loss of habitat.
Wild plants	Medicinal, traditional	Over-harvesting, loss of habitat	Game reserves, collection	Traditional uses	Some plants are becoming extinct due to over-harvesting and loss of habitat.
Wild birds	Food, medicine	Over-hunting, loss of habitat	Game reserves, hunting laws	Traditional hunting practices	Many species are becoming extinct due to over-hunting and loss of habitat.
Wild fish	Food, medicine	Over-hunting, loss of habitat	Game reserves, hunting laws	Traditional hunting practices	Many species are becoming extinct due to over-hunting and loss of habitat.
Wild insects	Food, medicine	Over-hunting, loss of habitat	Game reserves, hunting laws	Traditional hunting practices	Many species are becoming extinct due to over-hunting and loss of habitat.
Wild reptiles	Food, medicine	Over-hunting, loss of habitat	Game reserves, hunting laws	Traditional hunting practices	Many species are becoming extinct due to over-hunting and loss of habitat.
Wild amphibians	Food, medicine	Over-hunting, loss of habitat	Game reserves, hunting laws	Traditional hunting practices	Many species are becoming extinct due to over-hunting and loss of habitat.
Wild mammals	Food, medicine	Over-hunting, loss of habitat	Game reserves, hunting laws	Traditional hunting practices	Many species are becoming extinct due to over-hunting and loss of habitat.
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