

**MAASAI MARA UNIVERSITY**

**UNIVERSITY EXAMINATIONS; 2021/2022 ACADEMIC YEAR**

**THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF  
BACHELOR OF EDUCATION (SCIENCE)**

**COURSE CODE**     **ECI 3117**  
**COURSE TITE**     **SPECIAL METHODS IN PHYSICS**

**DATE:** ..... **TIME:** .....

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**INSTRUCTIONS**

**Answer Question One and Any Other Two Questions**

1 (a) As a Form II physics teacher, you plan to teach the concept of stability to the learners. You provide them with tall funnel-shaped plastic bottles.

- i. State two suitable objectives for the lesson (2mks)
- ii. Complete the following sections of the lesson plan (6mks)

Step and Time	Teaching/Learning Activities	Teaching/Learning Resources
Introduction		
Development		
Application		
Conclusion		

(b) Explain four reasons why Physics teacher-trainees should study the philosophy of science (4mks)

(c) The contemporary philosophy of science emphasizes the process-skills approach in teaching and learning over the content approach. Explain four reasons for this (8mks)

(d) Outline four improvements a physics teacher would consider to make a lecture lesson more learner-centered (4mks)

(e) Compare and contrast the ‘transmission’ and ‘constructivist’ approaches to teaching and learning under the following areas:

- i. Knowledge acquired
- ii. Teaching

iii. Curriculum (6mks)

2. Discuss the contemporary issues in Physics Education in Kenya under the following topics:

- a. Learners' attitude towards Physics (5mks)
- b. Content mastery by Physics teachers (5mks)
- c. Utilization and distribution of instructional resources by Physics teachers (5mks)
- d. Assessment in the subject (5mks)

3 (a) Distinguish between 'inductive' and 'deductive' reasoning as applied in Physics teaching and learning and give a suitable example of each (4mks)

(b) Describe each of the following learning typologies according to Bloom (1965), and for each, construct a suitable item that can be used to assess it in secondary school Physics:

- i. Knowledge
- ii. Comprehension
- iii. Application
- iv. Analysis (16mks)

4 (a) Explain by citing relevant examples, how teaching and learning of Physics develops the following learner abilities:

- i. Cognitive strategies
- ii. Psychomotor skills
- iii. Attitude characteristics
- iv. Communication Skills (12mks)

(b) Examine the 'demonstration' as a method of teaching and learning of Physics (8mks)

5 Describe each of the following process-skills as applied in teaching and learning of Physics and for each construct a suitable item that can be used to assess it:

- a. Predicting
- b. Experimenting
- c. Interpreting
- d. Investigating (20mks)

