



# MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF EDUCATION

DEPARTMENT OF EARLY CHILDHOOD EDUCATION & EDUCATIONAL  
DEPARTMENT OF EDUCATIONAL COMMUNICATION AND

TECHNOLOGY (COMTECH)

THIRD YEAR SECOND SEMESTER EXAMINATION FOR  
BACHELOR OF EDUCATION (ARTS)

ECT 306: PHYSICS TEACHING METHODS

DATE: 6/12/2021

TIME: 2:00 – 4:00 PM

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**INSTRUCTIONS:** Answer question **one** and any other **two** questions

## QUESTION ONE (COMPULSORY) (30 MARKS)

- a) **Discuss** how the teacher factor is an emerging issue affecting teaching and learning in Physics (5 marks)
- b) By use of **three** Examples **explain** how the study of physics has helped technological advancement during this time of Covid-19 pandemic. (6 marks)
- c) **Using illustration** explain the points to consider when preparing a marking scheme for a physics exam. (4 marks)
- d) **Discuss three** advantage of lecture method of instruction (6 marks)
- e) **Explain** three motivational strategies that a physics teacher can apply in order for effective learning to take place (6 marks)
- f) Explain 3 objectives of teaching physics in secondary school in Kenya (3 marks)

## QUESTION TWO (20 MARKS)

Discuss how an emerging issue affecting teaching and learning in Physics based on:

- i. Student factor
- ii. Teacher factor
- iii. Resource factor
- iv. Student negative attitude learning physics.

### QUESTION THREE (20MKS)

- a) State the difference between formative evaluation and summative evaluation (2 marks)
- b) Compare and contrast the objective testing and easy question technique in physics (8 marks)
- c) Discuss 5 requirements a physics teacher should consider when writing an essay question examination (10 marks)

### QUESTION FOUR (20 MARKS)

Provide a marking scheme for these questions

- a) An object is launched at a velocity of 20m/s in a direction making an angle of  $25^\circ$  upwards with the horizontal.
  - (i) What is the maximum height reached by the object? (3 marks)
  - (ii) What is the total flight time of the object? (3 marks)
  - (iii) What is the horizontal range of the object? (3 marks)
  - (iv) What is the magnitude of the velocity of the object just before it hits the ground? (2 marks)
- b) 0.4 kg of water at  $100^\circ\text{C}$  is mixed with 2.0 kg of water at  $20^\circ\text{C}$ . What is the final temperature of the mixture? (3 marks)
- c) 0.100 kg of an unknown metal at  $94^\circ\text{C}$  is placed in 100 grams of water at  $10^\circ\text{C}$ . The final temperature of the metal and water are  $17^\circ\text{C}$ . What is the heat capacity of the unknown metal? Take specific heat capacity of water =  $4200\text{J/kg K}$  (3 marks)
- d) Matter exists in three states. Mention them. (3 marks)

### QUESTION FIVE (20 MARKS)

The teaching of physics involves an integrated use of the following techniques

- i). Questioning techniques
- ii). Stimulus variation
- iii). Set Induction
- iv). Use of examples
- v). Group Discussion technique

Explain the characteristics of each of the above techniques.