



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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University Examinations 2022/2023

SECOND YEAR FIRST SEMESTER EXAMINATION FOR THE DIPLOMA IN
AGRICULTURE

AAD 2307: PHYSICS

DATE: AUGUST 2023

TIME: 1 1/2 HOURS

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

QUESTION ONE (30 MARKS)

- State the law of inertia (2 marks)
- A van of mass 3 metric tons is travelling at a velocity of 72km/h. calculate the momentum of the vehicle (3 marks)
- State the law of momentum (2 marks)
- A car of mass 1200kg travelling at 45m/s is brought to rest in 9 seconds. Calculate the average retardation of the car and the average force applied by the brakes (4 marks)
- A boy of mass 50kg stands inside a lift which is accelerated downwards at a rate of 2m/s^2 . Determine the reaction of the lift at the boy's feet (2 marks)
- State the law of interaction (2 marks)
- Enumerate two types of linear collisions (4 marks)
- List three applications of Bernoulli's principle (3 marks)
- Discuss four properties of lenses (8 marks)



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QUESTION TWO (15 MARKS)

- a) State the following laws as used in electromagnetic induction
- i. Faraday's law (2 marks)
 - ii. Lenz's law (2 marks)
 - iii. Fleming's right hand rule (2 marks)
- b) State any three properties that should present in a thermometric liquid (3 marks)
- c) A student heated 20g of water to a temperature of 90 Kelvin, he then added x kgs of water at 15kelvin and the final temperature of the mixture is 140kgs. Determine the value of x (6 marks)

QUESTION THREE (15 MARKS)

- a) A bullet of mass 0.005kg is fired from a gun of mass 0.5kg. if the muzzle velocity of the bullet is 350m/s, determine the recoil velocity of the gun (4 marks)
- b) A uniform meter rod of negligible weight is balance by two weights F1 and 2kg hanging at 20cm and 85cm mark respectively. If the pivot is at the 50cm mark. Determine the value of F1 (5 marks)
- c) State any five fundamental units that are used in physics (5 marks)

QUESTION FOUR (15 MARKS)

- a) State two conditions for Equilibrium (2 marks)
- b) i. State the parallelogram law (2 marks)
- ii. Using a diagram illustrate the parallelogram law (5 marks)
- c) Find the acceleration of a body that has been pushed by a force of 6N and has a mass of 18kg (4 marks)

