



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF PHYSICAL SCIENCES

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN CIVIL ENGINEERING AND BUILDING TECHNOLOGY

2705/102/PH-PHYSICAL SCIENCE

DATE: 25/4/2019

TIME: 2.30-10.30 AM

INSTRUCTIONS TO CANDIDATES

- Answer question one and any other two.
- Illustrate your answers with suitable diagrams wherever necessary

- a) State two properties of acids and two properties of bases (4 marks)
 - b) Define the following terms; (4 marks)
 - i. Hard water
 - ii. Soft water
 - c) Describe the structure of an atom (6 marks)
 - d) Discuss five factors affecting speed of sound (10 marks)
 - e) A 900 kg car moving at 10m/s takes a turn around a circle with radius of 25.0m. Determine the acceleration and the net force acting upon the car. (6 marks)
- a) State the principal of moment (1 mark)
 - b) A 95kg halfback makes a turn on the football field. The halfback sweeps out a parth that is a portion of a circle with a radius of 12m. The halfback makes a quarter of a turn around the circle in 2.1seconds. determine the speed, acceleration and net force. (8 marks)
 - c) Describe two types of mirrors and images formed (8 marks)

- d) Describe the nature of light (3 marks)
3. a) Define radioactivity (2 marks)
- b) Name three types of radioactivity particles and state two properties of each particle (8 marks)
- c) If the half life of 100.0g of a radioactive isotope is 8years, how many grams will remain in 30years (4 marks)
- d) Describe three methods of radiation detection (6 marks)
4. a) Define the term force (2 marks)
- In 4 (a) (i) above .State its SI unit (1 mark)
- b) Explain three effects of force on an object (6 marks)
- c) Discuss six types of contact forces (10 marks)
5. a) Define the following terms; molar solution and standard solution (4 marks)
- b) Explain the process of oxidation and reduction (6 marks)
- c) Discuss the role of water in ionization (6 marks)
- d) Calculate the decay constant for a radioactive isotope with half life of 22.5 hrs? (4 marks)