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

1. 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)

2. 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 particals 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)