TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Applied & Health Sciences

DEPARTMENT OF MATHEMATICS & PHYSICS

CIT M S12)

APS 1103: PHYSICS

END OF SEMESTER EXAMINATION
SERIES: APRIL 2013
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
  -   *Answer Booklet*
This paper consist of **FIVE** questions in **TWO** sections **A** & **B**
Answer question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

SECTION A (COMPULSORY)

Question One

a) Define:
  (i)   Mass   **(2 marks)**
  (ii) Weight   **(2 marks)**
  (iii) Temperature   **(2 marks)**

b) Explain why the mass of an object changes in some other places?   **(3 marks)**

c) A man weighs 700N on the moon, what is the weight of the same man on earth, if moons gravitational
force is $1.62m/s^2$.   **(4 marks)**

d) Express the following units of measuring temperature to Kelvin scale?
  (i) 230^oC **(2 marks)**
  (ii) -45^oC **(2 marks)**

e) Name any **THREE** measuring instrument that can be used to measure mass, length and time.
                                                                                      (3 marks)

SECTION B (Answer any TWO questions from this section)

Question Two

a) Define:
  (i)   Displacement   **(2 marks)**
  (ii) Acceleration   **(2 marks)**
  (iii) Inertia   **(2 marks)**

b) A force of 350N was applied to a body of mass 70kg. Determine the acceleration that was produced.
                                                                                      (3 marks)

c) A phone is dropped from a tower at 40m high from the ground:
  (i)   Determine the velocity of the phone when its half way down.   **(3 marks)**

  (ii) A man standing 10m away from the point of landing of phone. How fast must he run to catch
            the phone just before letting the ground if he spotted it at 20m above the ground?
                                                                                      (5 marks)

d) A stone is dropped inside a well. If it takes 5.2 seconds before it hits the water surface, determine the
depth of the well.   (3 marks)

Question Three

a) What is electrostatic **(2 marks)**

b) Explain briefly the particles that causes electrostatic. **(4 marks)**

c) The net charge of an object is -14.4 x 10^{-19}C :
Define the type of charge and how many particles caused it. **(5 marks)**

d) Explain **THREE** main applications of static electricity **(9 marks)**

Question Four

a) Define:
    (i)   Resistance **(2 marks)**
    (ii)   Oh's Law **(2 marks)**
    (iii)   Capacitor **(2 marks)**

b) Express the relationship of Resistance to voltage. **(2 marks)**

c) Calculate total resistance in the circuit given:
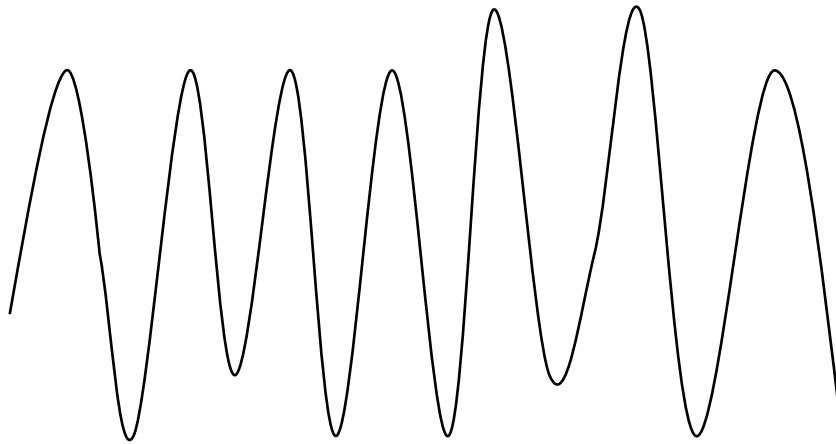
And determine the amount of current flowing in each resistor **(12 marks)**

Question Five

a) Explain briefly the concept of refraction giving a simple example. **(4 marks)**

b) Define the following as applied in waves:
    (i)   Wave
    (ii)   Amplitude
    (iii)   Wave length **(6 marks)**

c) Outline **THREE** main applications of refraction. **(6 marks)**

d) Differentiate refraction from reflection. **(4 marks)**