WOMEN'S UNIVERSITY IN AFRICA

Addressing gender disparity and fostering equity in University Education

FACULTY OF SOCIAL AND GENDER TRANSFORMATIVE SCIENCES

DIPLOMA IN EDUCATION SPECIALISING IN EARLY CHILDHOOD DEVELOPMENT

MAIN PAPER

DECD 324: MAIN SUBJECT – SCIENCE

INTAKE 5: THIRD YEAR SECOND SEMESTER

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

1. Answer all questions.
2. All questions carry equal marks.

Question 1

a) What is an atom? [2]
b) Describe the formation of sodium chloride. [8]
c) What is the electronic configuration for the following elements:
   (i) Oxygen; [2]
   (ii) Calcium; [2]
   (iii) Carbon; [2]
   (iv) Hydrogen; and [2]
   (v) Potassium. [2]
d) State the element's name and the number of protons, electrons and neutrons it possesses.
   (i) $^{35}_{17}CL$ [4]

   (ii) $^{40}_{20}ca$ [4]

   (iii) $^{16}_{8}0$ [4]

Question 2

a) Use letters from the diagram to identify the structures described. Each letter may be used once, more than once, or not at all.
   (i) One structure where digestion of protein occurs;
   (ii) One structure where bile is stored;
   (iii) One structure where peristalsis happens;
   (i) One structure where starch digestion occurs; and
   (ii) One structure where amino acids are absorbed into the blood. [5]

b) Plants are autotrophs and can synthesize nutrients from simple inorganic substances by the process of photosynthesis.
   (i) Write a word equation for the process of photosynthesis. [2]
   (ii) With reference to photosynthesis explain what is meant by a limiting factor**.** [1]
   (iii) List four factors that may be rate-limiting in photosynthesis. [4]
c) List four factors that may be rate-limiting in photosynthesis. [4]
d) What is the function of root hair cells? [2]
e) List two ways in which root hair cells are adapted to this function. [3]

Question 3

a) What is density? [2]
b) Write the following in standard notation:
   (i) 4 000 [2]
   (ii) 0,004 [2]
c) 3,4185062 to :

(i) Two significant figure; and [2]
(ii) Three significant figure. [2]

d) Briefly describe how you would determine the density of an irregularly shaped stone. [5]

e) A motorbike has a momentary of 6000kgmls and travels with a velocity of 20mls. Calculate its mass. [4]

f) A 50kg object is moving with a velocity of 10mls. What is its momentum? [4]

Question 4

A loaded shopping trolley with a total mass of 45kg rolls away from its owner with a momentum of 540kg/m/s. What is its velocity? [4]

END