SCIENCE GRADE 11

DE MADENOD COLLEGE –KANDANA 1 ST TERM TEST 2024

34 E II

SCIENCE II

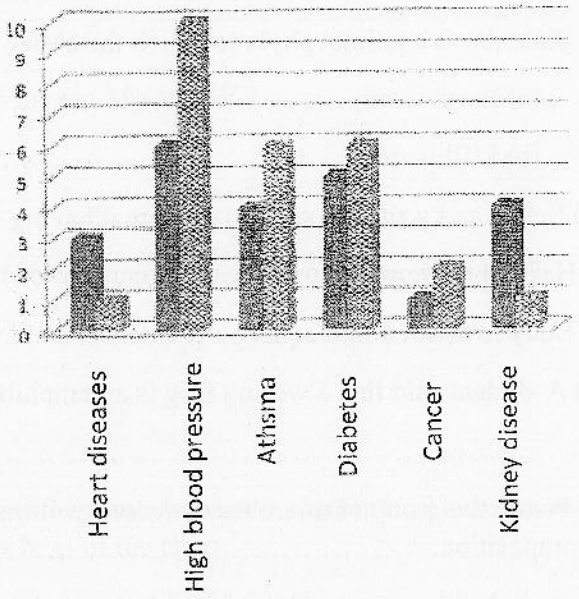
3 HRS

Name : ..... Index No : .....

- This paper consists of two parts A and B.
- Part A is the structured paper. Write the answers in the space provided.
- From the part B, select only three out of five questions and answer.

PART –A

1(A) Below is a graph drawn from the data obtained about people suffering from various diseases according to a census conducted during the death season in Sri Lanka.



(i) What are the common names of all diseases?

.....

(ii) Among the diseases shown in the graph, which diseas has the highest number of people?

.....

(iii) According to the graph, which disease has a higher risk for females as compared to males?

.....

(iv) Mention any two bad lifestyle habits that can lead to cancer.

.....

.....

(v) There are two types of cell division and cancer cells multiply by which of the above?

.....

(vi) State two ways in which the cell division method mentioned in (v) above differs from other cell division methods.

.....

(vii) Use of agrochemicals in high doses is considered a cause of kidney disease. In addition to this, state two other adverse effects that may be caused by agrochemicals.

.....

B) Excessive use of salt causes high blood pressure. Per capita salt consumption in Sri Lanka is also high. Sri Lanka is also a salt producing country.

(i) Give the chemical formula of salt.....

(ii) What are the two separation techniques used in the manufacture of salt?

.....

(iii) State the component responsible for the bitter taste deposited in the third tank during salt production by leaching method.....

(iv) How can that component be removed from the salt?

.....

(02) A Near a decayed log, animals like earth worm and millipede could be observed.

(i) Which kingdom do the above two creatures belong to.....

(ii) State the two animal phyla to which the above two organisms belong.

(a) Earth worm .....

(b) Millipede .....

(iii) Select and write the species of animal having each characteristic from the above two animals.

(a) Has jointed legs.....

(b) Body is divided into equal parts external and internal.....

(iv) A student said that a wormy frog is an amphibian. Explain amphibians.

.....

(v) Name the group of microbes that have a chitinous cell wall that contributes to log decomposition. .....

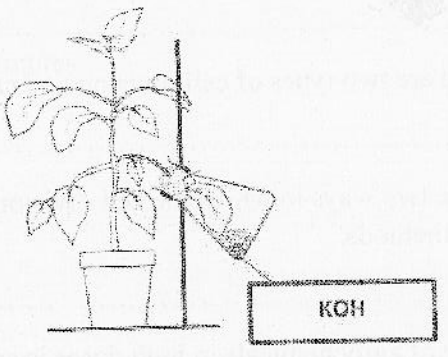
(B) A student has prepared the following experiment to test one of the factors required for photosynthesis.

(i) Which factor required for photosynthesis is expected to be examined here? .....

(ii) What should be used instead of KOH in the control solution to be used for this test? .....

(iii) Apart from the factor mentioned in (ii) above, state two other factors required for photosynthesis.

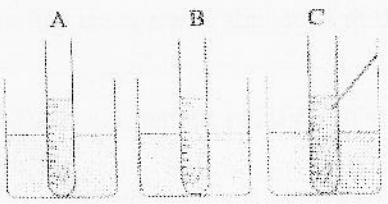
.....



(iv) At the end of the test, which chemical should be used to identify the starch? .....

(v) Work out the balanced chemical equation of photosynthesis.....

3.(A) Below is an experimental set-up done by a group of students in a school laboratory. Equal masses of Mg have been used in tubes A, B and C and the test has been carried out as shown in Fig. 01



	Tube A	Tube B	Tube C
HCl	0.5 ml	5 ml	5 ml
Water	9.5 ml	5 ml	5 ml
Temperature	30 °C	30 °C	10 °C

(i) In which tube the reaction rate is maximum? .....

(ii) Complete the table below.

Pair of test tubes	Factor affecting the rate of reaction
A and B	(a).....
(b)	Temperature

(iii) Write the balanced chemical equation for the reaction between Mg and HCl.

.....

(iv) Which type of chemical reaction does it belong to? .....

(v) A student says that K can be used instead of Mg in the above experiment. Do you agree with that?

.....

(vi) What is the reason for (v) above? .....

.....

(B) Figure shows the variation of the first ionization energy of several successive elements. These are not standard symbols. Answer the following questions with the help of the chart.

(i) Which element belongs to eighth group? .....

(ii) The first ionization energy decreases gradually as one moves down a group. Explain the reason for this.

.....

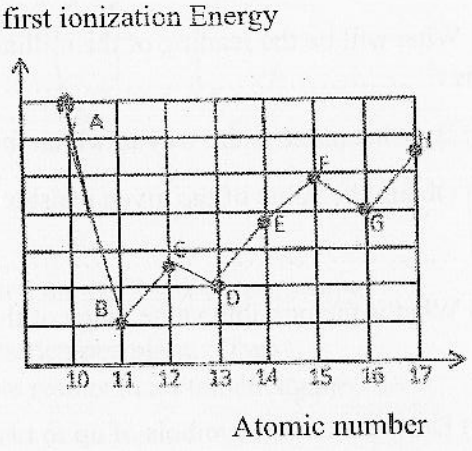
.....

(iii) Name the element with highest electronegativity.....

(iv) Write the formula of a compound that can form element C with element H in the above diagram.....

(v) State whether the compound formed in (iv) above is an ionic compound or a covalent compound.

.....

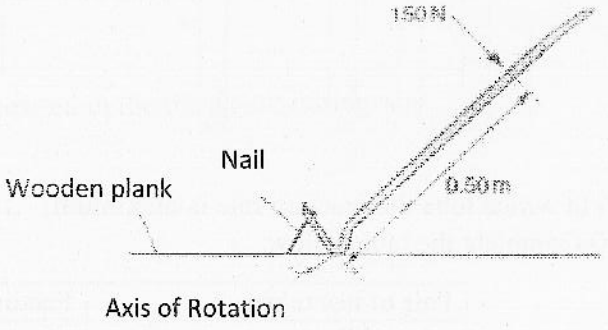


4. (A) Below is an attempt by a hammer to loosen a nail stuck in a wooden plank.

(1) Work out the equation for the moment of force.

.....

(ii) State the SI unit of moment of force.....



(iii) Here the force applied by the man is 150N and the distance from the ground axis to the point of application of the force is 0.5m. From these data, find the torque acting on the hammer.

.....

.....

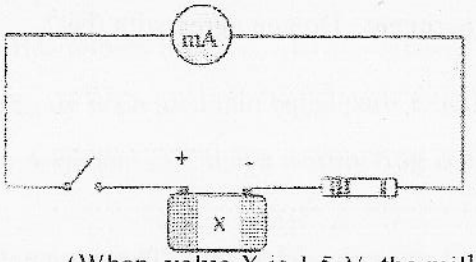
(iv) Give an example of a couple of force in everyday life. .....

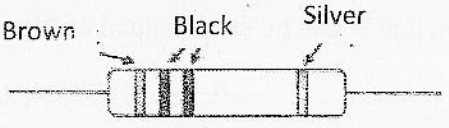
(v) State the two requirements that must be met for a couple of forces

.....

.....

(B) The current flowing through a resistor varies with its potential difference. A diagram used to find it is shown below.





Coloutr code	black	Brown	silver
value	0	1	+/- 10

(When value X is 1.5 V, the milliammeter reading is 150 mA.)

(i) For what point is x used here? .....

(ii) What will be the reading of the milliammeter if two cells of equal value x are connected in series? .....

(iii) By what name is the way in which the ammeter is connected to the circuit?.....

(iv) Obtain the value of the given resistor from the color code.....

.....

(v) What is the possible value range of the resistor? .....

.....

(vi) Draw the circuit symbols of up to two other types of resistors apart from (iv) above.

.....

PART - B

5. Following are some of the steps in the experiment to model the action of amylase enzyme on starch.

- Take an aqueous solution of starch into a test tube and add equal volume of amylase enzyme to it.
- It is mixed well and separated into three samples and put into three test tubes called P, Q, R.
- Addition of iodine to them in the following manner.

P	After a minute addition of a drop of iodine
Q	After 10 minutes addition of a drop of iodine
R	After 30 minutes addition of a drop of iodine

(i) What is the reaction of amylase with starch?

(ii) What color is observed when iodine is added to the solution in test tube R?

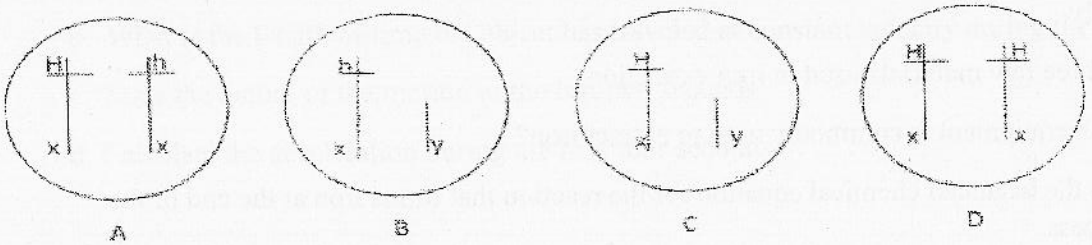
(iii) Mansion the test tubes P. Q and R from the highest to the lowest blue, intense color seen when iodine is added.

(iv) Do enzymes slow down or speed up biochemical reactions?

(v) To which group of organic compounds do enzymes belong?

(B) Hemophilia is caused by a recessive gene located on the X chromosome. Depending on the combination of genes that cause the disease, the offspring become healthy, diseased or carriers.

(i) A is a carrier woman according to the following chromosomal combination. Who are represented by B, C and D? (Consider the recessive gene h causing hemophilia and the dominant gene H da.)

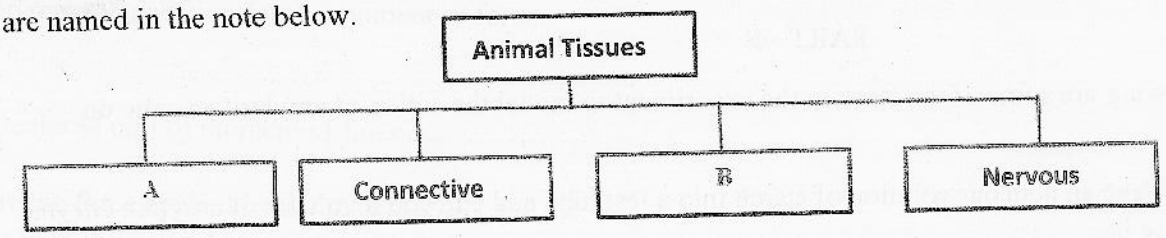


(ii) State a symptom of haemophilia.

(iii) State another genetic disorder caused by a recessive gene located on the X sex chromosome.

(iv) Green color (G) is dominant over yellow color (g) in pods of garden pea plant.. Two heterozygous plants with green pods were crossed. Show the results in a Punnett square.

(C) Four major types of animal tissues contribute to the formation of the human body. Two of them are named in the note below.



(i) There are three main types of A, one of which is voluntary. B Animal tissue rests on a basement membrane. Name the animal tissues A and B based on these facts.

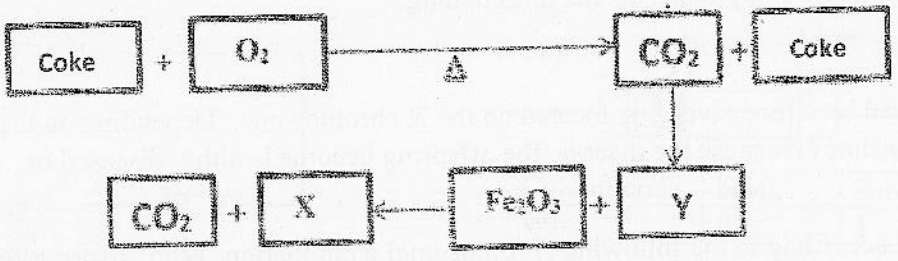
(ii) State where B animal tissue is found in the body

(iii) State the structural unit of nervous tissue.

(iv) What is the main function of connective tissue?

(v) Give an example of connective tissue.

6. (A) The diagram below shows a flow chart related to the extraction of iron



(1) Write down the root substances or compounds corresponding to letters X and Y respectively.

(ii) State three raw materials used in iron extraction.

(iii) Which equipment is commonly used to extract iron?

(iv) Write the balanced chemical equation for the reaction that forms iron at the end of the above process.

(v) Name one metal produced by each of the following methods.

(a) By simple physical methods (b) By oxidation by other compounds

(B) Below is an experiment carried out in a laboratory to produce carbon dioxide.

(i) Name the parts R and Q here.

(ii) State an observation that occurs during the reaction at P. At the end of this test, the mass of air collected in Q is 22g.

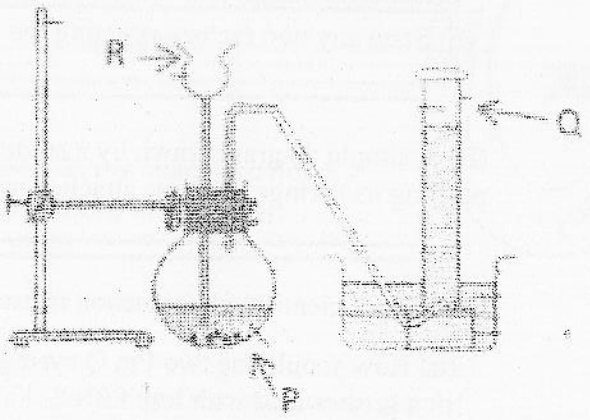
(iii) Calculate the relative molecular mass of carbon dioxide do.

(iv) How many moles of carbon dioxide are added?

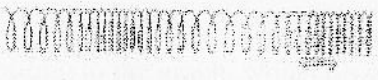
(v) Give a method for detecting carbon dioxide added :

(vi) The reaction between calcium carbonate and hydrochloric acid is shown below. What is Z here?

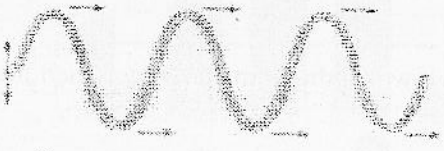
$CaCO_3 + 2HCl \longrightarrow Z + H_2O + CO_2$



7. (A) Two modes of mechanical waves can be modeled using a loop, as shown in Figures A and B.



A



B

(i) Name the two waveforms represented by the diagrams A and B.

(ii) Describe in detail how the particles in the medium behave in one of the wave forms mentioned in (i) above.

(iii) Sound waves belong to which wave form modeled above?

(iv) Following are the definitions of three physical properties associated with a wave. For each of those definitions (indicate with the relevant SI units)

a. The maximum displacement from the center position by the particles participating in the wave motion,

b. The distance from a wave particle participating in wave motion to the nearest particle of the same motion.

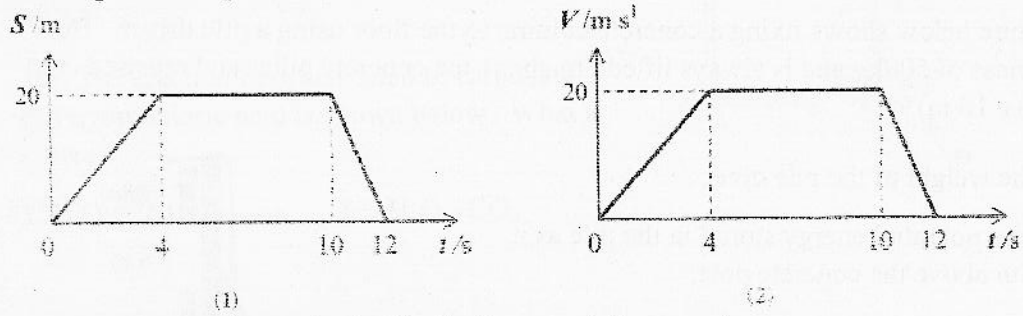
c. Number of oscillations per unit time by a particle.

(v)Acoustic characteristics that help identify each of the following information when speaking on the phone Write what

a. Identifying whether Santa is talking on the phone or going to the grocery store.

b. Being able to recognize if the person speaking is a poet.

(B) Figure (1) shows how the displacement of an object moving along a straight line changes over a period of 12 s. (2) Figure shows how the velocity of an object moving along a straight line changes over a period of 12 s.



(1) (2)

i. Answer the questions asked with displacement-time graph

a. What is the displacement of the object at the end of 12 s?

b. What is the uniform velocity in forward direction?

c. What is the total time spent in motion by the object moving with uniform velocity?

d. What is the nature of the motion in the last two seconds?

ii. Answer the questions asked with the help of velocity-time graph

a. What is the displacement of the object at the end of 12 s?

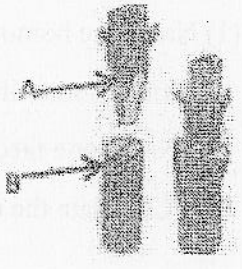
b. What is the length of time the object has traveled at constant velocity during the motion?

c. State the nature of the motion in the last two seconds.

d. Calculate the acceleration during the first four seconds.

8-(A) Reproduction contributes to the continued existence of organisms

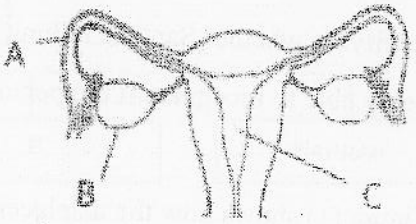
(i) Grafting is a method of artificial vegetative propagation. According to the diagram, does this belong to which type of grafting?



(ii) Name the parts A and B here.

(iii) Mention two other artificial propagation methods used in addition to grafting.

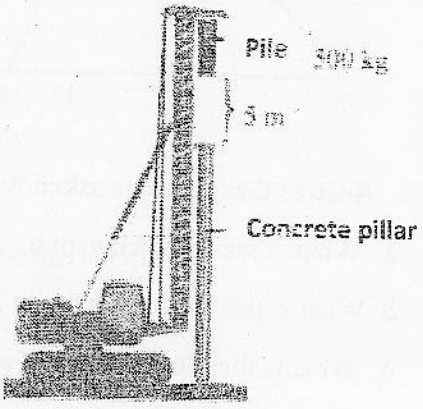
Below is an image of part of the female reproductive system.



(iv) Write down the letters relating to places where fertilization and implantation take place

(v) Major stages of changes in ovaries during the menstrual cycle of women happens in two phases. State the hormones secreted by the pituitary during those two phases respectively.

(B) The figure below shows fixing a concrete column to the floor using a pile driver. The pile has a mass of 500kg and is always lifted 5m above the concrete pillar and released onto the pillar. (g 10 m)



(i) Find the weight of the pile diver

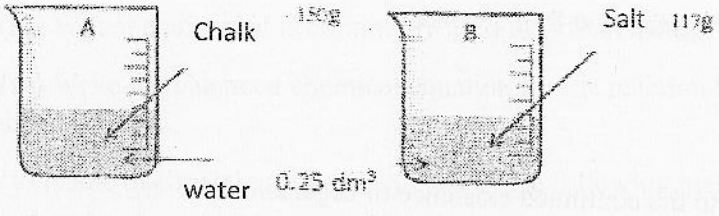
(ii) Find the potential energy stored in the pile as it is lifted 5m above the concrete post.

(iii) Write the increase and decrease of potential energy and kinetic energy respectively as the pile moves from top to bottom.

(iv) Write an expression to find the velocity of the pile at the moment it collides with the concrete pillar

(v) Find the velocity of the pillar from statement iv above.

09. (A) A and B are two mixtures with a volume of 250 ml . A contains 150 g of chalk powder and B contains 117 g of Common salt.



(1) Name the homogeneous mixture from the above mixtures.

(ii) What is solubility?

(iii) Name one factor affecting the solubility of solution B.

(iv) Calculate the molar mass of common salt (Na: 23, CI: 35.5)

(v) State the composition of solution B above in terms of volume/volume (n/v).

(vi) State the charge on the ion forming the ring atom of atomic number 17.

(vii) State any two factors affecting the solubility of a gas.

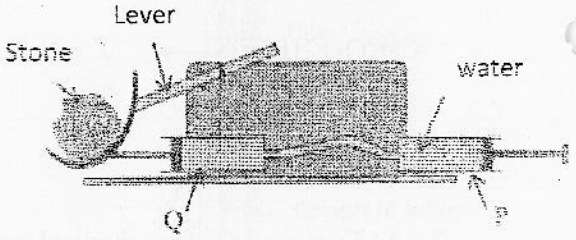
(B) A simple diagram drawn by a student to demonstrate the operation of a backhoe. When pushing its syringe P., stone attached to the lever is raised as the part Q syringe is moved.

(i) What scientific phenomenon is used here?

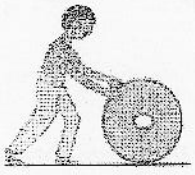
(ii) How should the two Pm Q syringes be modified to lift a greater load with less force?

(iii) Give an example of a situation C in which the above mentioned artistic phenomenon is used in everyday life.

(iv) Can air be used instead of a liquid for the work done in the above order? What is the reason for that?



(C) Below is a diagram showing a man moving a large wooden wheel.



(i) Calculate the work done on the woodenwheel if a force of 100N pushes it a distance of 12m.

(ii) Calculate the speed of doing the work if it took ten minutes.

iii) What is the name for speed of doing work?