බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
**Department of Education – Western Province**

පළමු වාර ඇගයීම
**First Term Evaluation** **2019**

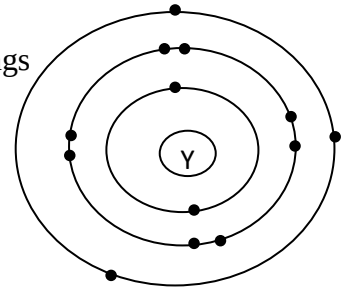
| **ශ්‍රේණිය** **Grade** 10 | **විෂයය** **Subject** Science | පත්‍රය Paper I | **කාලය** **Time** 01 hour |
|---|---|---|---|

නම Name ..... විභාග අංකය Index Number .....

**Answer all the questions.** Underline the correct or most suitable answer.

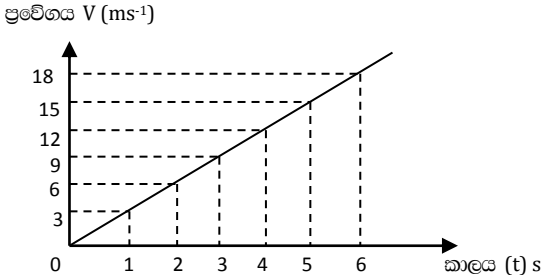
1. Which of the following is a vector quantity?
   (1) Distance (2) Speed (3) Time (4) Velocity
2. Beri – beri is caused due to the deficiency of vitamin which is essential for the formation of bone marrow and lipid metabolism. What is this vitamin?
   (1) Vitamin A (2) Vitamin D (3) Vitamin C (4) Vitamin B
3. Which of the following is known as tonoplast?
   (1) Vacuole membrane (2) Cell wall (3) Plasma membrane (4) Nuclear membrane
4. The number of protons, neutrons and electrons in $^{35}_{17}Cl^-$ respectively?
   (1) 17,18, 17 (2) 17,18,18 (3) 17,17,18 (4) 17,18,16
5. What is the main function of ribosomes?
   (1) production of secretory vesicles (2) Protein synthesis
   (3) Transportation of proteins (4) production of energy
6. Which of the following animal has 46 chromosomes inside the nucleus?
   (1) man (2) frog (3) sparrow (4) fly
7. The compound of which metal is used to produce antacid?
   (1) Mg (2) Na (3) Ca (4) K

Answer the question Number 8 and 9 in relation to the atomic structure of the element Y given below.




8. Select the correct answer that shows the period and group to which Y belongs
   (1) period 2 , Group III (2) Period 3, Group III
   (3) Period 2, Group II (4) Period 4 , Group III
9. What could be the element denoted by the letter Y
   (1) Mg (2) K (3) Ca (4) Al

10. Velocity time graph of a certain motion is shown in the figure below. The displacement in 6s is
    (1) 27m
    (2) 45m
    (3) 54m
    (4) 108m



11. (A) Has a magnitude. (B) Has a definite direction.
(C ) No definite magnitude. (D) No definite direction.
The correct statement in relation to velocity from A,B,C and D above
(1) Only A (2) only A and B (3) Only C and D (4) Only A and C

12. Which of the following ion has the same number of electron as ($Na^+$)
(1) $Cl^-$ (2) $O^{2-}$ (3) $Mg^+$ (4) $Ca^{2+}$

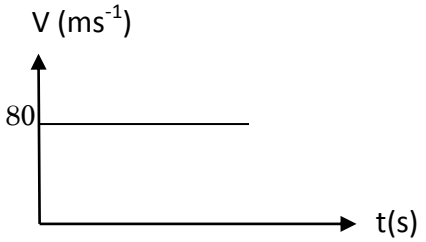
13. Electronic configuration of some elements is given below. Given symbols are not standard symbols.
A – 2,1 B – 2,3 C – 2,6 D – 2,7
Which of the following answer gives the valency of each element correctly?
(1) 1,3,2,1 (2) 1,3,6,7 (3) 1,3,1,2 (4) 1,5,6,7

14. Consider the situations given below.
A- Grooves are etched on the surface of tires.
B - Applying lubricators between the contact surfaces.
C – Inserting ball bearing and roller bearing between the contact surfaces.
What are the instance / s of increasing the friction between the contact surfaces from the above?
(1) Only A (2) only B (3) Only A and B (4) Only B and C

15. Three characteristics of a certain element are given below.
- Does not react with cold water, but reacts with hot water.
- Burns in air with bright white flame.
- Reacts with dilute acids and liberate hydrogen gas.

(1) Na (2) C (3) Mg (4) S

16.




The graph shows ,
(1) Motion of an object moving at uniform acceleration.
(2) Motion of an object moving at uniform deceleration.
(3) Motion of an object moving at uniform velocity.
(4) velocity time graph of an object at rest.

17. Which of the following organelle helps in the maintenance of water balance and support in the cell?
(1) Cell wall (2) cytoplasm (3) Golgi bodies (4) Vacuole

18. The process by which new cells are formed by the division is known as
(1) Cell differentiation (2) specialization (3) cell division (4) Regeneration

19. What is the momentum of an object of mass 2000000g moving at a velocity $20ms^{-1}$?
(1) 40 $kgms^{-1}$ (2) 4000 $kgms^{-1}$ (3) 40000$kgms^{-1}$ (4) 40000000$kgms^{-1}$

20. Which of the following is the correct formulae of the compound that contains only P and H?
(1) PH (2) $PH_2$ (3) $PH_3$ (4) $PH_4$

21. The correct chemical formulae of Calcium phosphate is
(1) $CaPO_4$ (2) $Ca_3PO_4$ (3) $Ca_2(PO_4)_3$ (4) $Ca_3(PO_4)_2$

22. 

The diagrams above show organelles present in cells. What is the name of the organelles A and B
(1) Mitochondrion, Golgi complex (2) Golgi complex , Rough endoplasmic reticulum
(3) Nucleus , Mitochondrion (4) Endoplasmic reticulum, Golgi complex

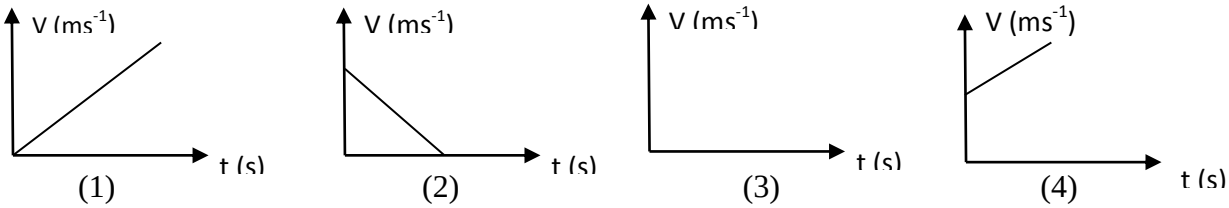
23. Which of the following gives the correct expression of momentum?
(1) mv (2) m/v (3) v/m (4) $m^2v$

24. Which of the following statement/s describe the Newton's second law?
a. Acceleration of an object is directly proportional to the unbalanced force.
b. Acceleration of an object is inversely proportional to the unbalanced force.
c. Accleration is directly proportional to the mass.
d. Accleration is inversely proportional to the mass.
(1) only a and d (2) only a and c (3) only b and c (4) only a, b, c and d

25. Chemical formulae of a compound is $X_2Y$.Which of the following pair of elements are suitable for X and Y respectively?
(1) Mg , Cl (2) K , O (3) Mg , O (4) K, Cl

26. What is the standard method of representing Deuterium Isotope?
(1) ${}^{1}_{1}H$ (2) ${}^{2}_{1}H$ (3) ${}^{3}_{1}H$ (4) ${}^{2}_{2}H$

27. What is the velocity time graph for a fruit falling from a tree?



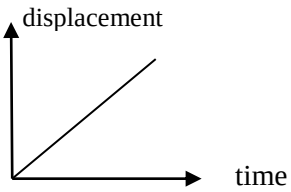
(1) (2) (3) (4)

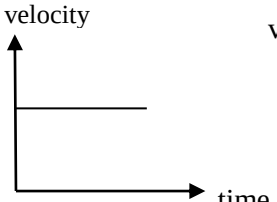
28. What is the element which is a constituent of amino acids and proteins that causes chlorosis in veins and between areas of veins?
(1) Sulphur (2) Iron (3) Calcium (4) Zinc

29. Which of the following elements would be the examples for metals, metalloids and non- metals respectively
(1) Na, Al, B (2) Mg, Ne, C (3) Na, Si, C (4) N,O, F

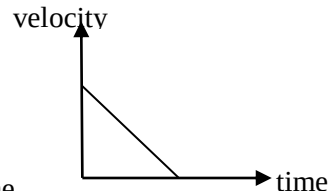
30. If an object gains an acceleration of $4ms^{-2}$ due a force of 16N, calculate the mass of the object.
(1) 0.25 kg (2) 4 kg (3) 16 kg (4) 64 kg

31. If the velocity of an object decreases uniformly from $16ms^{-1}$ to $4ms^{-1}$, calculate the deceleration of the object.
    (1) $-3ms^{-2}$ (2) $-3ms^{-1}$ (3) $3ms^{-2}$ (4) $3ms^{-1}$
32. An object has been projected vertically upwards with an initial velocity of $30\ ms^{-1}$.calcualte the maximum eight reached by the ball.
    (1) 10 m (2) 30m (3) 35m (4) 45m
33. The electronic configuration of a certain element ' X' is 2,8,8,1.What would be this element?
    (1) Ca (2) Mg (3) K (4) Na
34. Which of the following factor affects the limiting frictional force from the factors give below?
    (1) Nature of the contact surface (2) mass of the contact object
    (3) Volume of the contact object (4) Area of the contact surface
35. The displacement time graph for the motion of an object is given by the graph. Which of the following graph correctly represent the relevant velocity time graph of it?

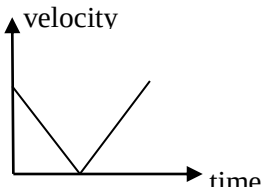


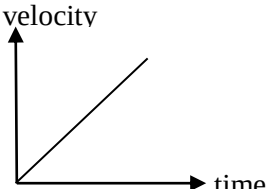
(1)



(2)



(3)



(4)

36. An object of 5kg falls vertically to the ground. What is the vector quantity that remains constant in this situation?
    (1) Velocity 2) Displacement (3) momentum (4) acceleration
37. Consider the following statement.
    A. The number of protons in isotopes is equal.
    B. The number of electrons in isotopes is not equal.
    C. The number of neutrons in isotopes are is not equal.
    What is the correct answer from the above statement/s
    (1) only A (2) Only B (3) Only C (4) Only A and C
38. Irreversible increase of the dry weight or size of the cell is known as
    (1) Cell development (2) Cell growth (3) Cell differentiation (4) cell specialisations
39. In which from does carbohydrate get stored in animal body?
    (1) As starch (2) As cellulose (3) As glycogen (4) As lactose
40. If the velocity of an object increases from $10\ ms^{-1}$ to $25\ m^{-1}$ in 5 seconds, calculate the acceleration of the object.
    (1) $3\ ms^{-2}$ (2) $4\ ms^{-2}$ (3) $5\ ms^{-2}$ (4) $-3\ ms^{-2}$

බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
**Department of Education – Western Province**

පළමු වාර ඇගයීම
**First Term Evaluation** } **2019**

| **ශ්‍රේණිය** **Grade** 10 | **විෂයය** **Subject** විද්‍යාව | පත්‍රය Paper II | **කාලය** **Time** පැ. 03 |
|---|---|---|---|

නම Name ..... විභාග අංකය Index Number .....

Answer the four questions in Part A, in the space provided. Of the questions in part B answer three questions only.

1. (A). Nimal had string hoppers, egg curry , bananas and milk tea for breakfast.

i). Based on the above food items,fill in the grid given below.

| **Food item** | **Main nutrient** | **Chemicals needed to identify** |
|---|---|---|
| ……. | Protein | ……..…… |
| Banana | ……. | ……. (2marks) |

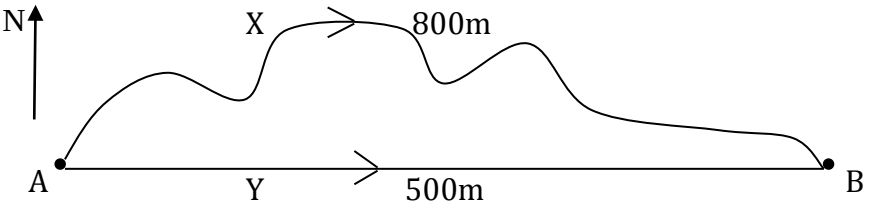
ii). a. Name the food item that contains disaccharide from the above list.

…… (1mark)

b. Name a type of disaccharide in the food item that you mentioned above

……. (1mark)

(B). The route taken by X and Y students to travel from town A to town B is given in the diagram below.




i). What is the distance travelled by X? . …… (1mark)

ii). Find the displacement of X. . …… (1mark)

iii). Y took 40 minutes to reach town B from town A. Find his velocity.

…… (2marks)

iv). The diagram given below gives out the changes regarding the motion of an object in relation to time and distance.

| Time (s) | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Distance (m) | 0 | 5 | 10 | 15 | 20 | 25 |

a. Draw the motion graph related to the above grid in the box provided. (2marks)

b. What is its speed in the first three minutes?(1mark)

…….

(C). The standard symbol of the sodium element is given below. Answer the questions based on it.

i). Write down the mass number of the sodium element. ……..(1mark)

ii). Write down the electronic configuration of the sodium. ……..(1mark)

iii). Mention the group and the period to which sodium belong in the periodic table. (1mark)

…….. ……..

2. (A). Protein is an important component in all the living cells. Also protein performs an important role in living bodies.

i). Name the four main elements in protein……..(1mark)

ii). What are enzymes?..... (1mark)

iii). What is the product formed due to action of amylase enzyme on carbohydrates?
……..(1mark)

iv). What is the substance that can be used in the laboratory when the amylase enzyme is not available? …….. (1mark)

v). a. Amylase and Iodine solution was added to a solution of carbohydrate and was kept for few minutes and observed. In this activity how do you identify that the function of the amylase enzyme has ended.
……
……(2marks)

b).When the function of amylase is over, name the reagent that is used to identify the product formed and write down the colour change.

……
……(2marks)

(B) i). What are the specific properties of water used in the following instances?

a. Contribution made to the respiration of aquatic organisms as $O_2$ (Oxygen) is dissolved in water…… (1mark)

b. When water turns in to ice it floats on water ……..(1mark)

c. Water is transported upwards through the trunk of tall tress ……..(1mark)

ii). Name the basic unit of the following bio molecules?

a. Carbohydrates …….. (1mark)

b. DNA …….. (1mark)

iii). What is the carbohydrate that is important in the formation of cell wall?

…….. (1mark)

iv). What is the common molecular formula of carbohydrates ?

…….. (1mark)

03. (A) The 8 consecutive elements of the periodic table is given below with their atomic number.

(The given symbols are not the true symbols of the elements)

| Atomic number | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|
| Element | A | B | C | D | F | G | H |

Answer the questions given below based only on the symbols given above.

i). What is the element that has the same electronic configuration as $F^{2-}$ ?..... (1mark)

ii). Write down a pair of element having valency 2 from the table.....(2marks)

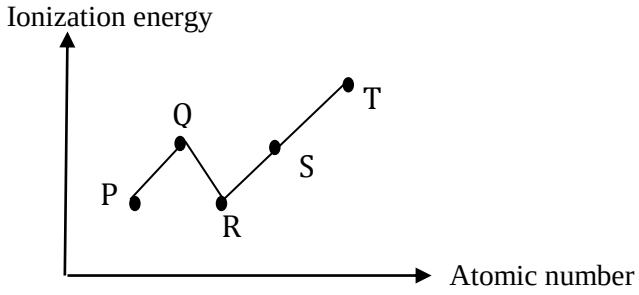
iii). which element exist as a noble gas at room temperature? ……(1mark)

iv). What is the element that reacts vigorously with water?.....(1mark)

v). The allotropic form of one of the above element conduct electricity. write down that element.

…….(1mark)

(B). P ,Q ,R ,S,T are five consecutive elements. Element T is Ar (Argon).The graph below shows variation of first ionization energy of the elements.




i). Write down the unit measuring ionisation energy. ……(1mark)

ii). Which element has the highest electronegativity? ……(1mark)

iii). Name two reasons for the element T to have high ionisation energy.

……
……(2marks)

iv). Write down the chemical formulae of the compound formed by the combination of R with Hydrogen.

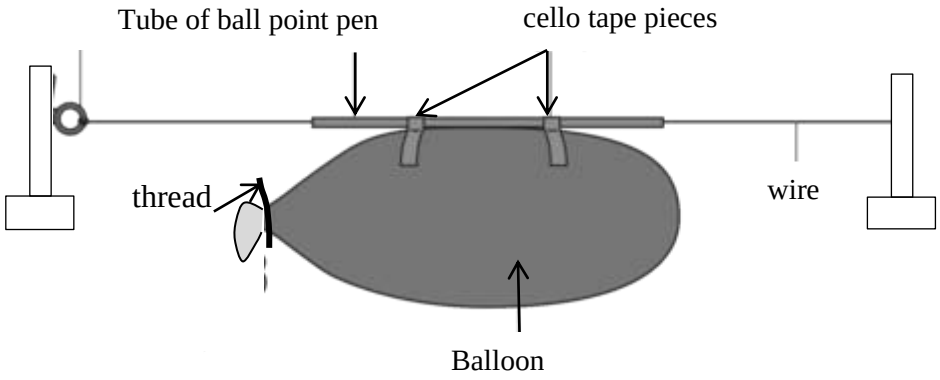
……(2marks)

v). What is the element that forms the most acidic oxide?. ……(1mark)

vi). Write down two observations that can be seen when burning R in air.

……
……(2marks)

04. (A) The following set is arranged by the use of an air filled balloon, pieces of cello tape and a tube of a ball point pen.




i). Write two observations that can be seen when the thread holding mouth of the balloon is loosen. ……

……..(2marks)

ii). Show by arrows the direction of the movement of the balloon and the direction of the release of air form the balloon. (2marks)

iii). Name the Newton's law related to the motion of the balloon in the above activity.

……(1mark)

iv). Write down two changes that can be done in the above set up in order to increase speed of the motion of the balloon.

……

……..(2marks)

v). Name another situation that you see this phenomena in everyday life.

……..(2marks)

vi). Explain how the motion of this balloon take place.

……

……..(2marks)

(B). The weight of a certain object is 30N.($g = 10\ ms^{-2}$)

i). What is the mass of this object? ……(1mark)

ii). What is meant by mass of an object? ……..(1mark)

iii). What is the instrument used in the laboratory to measure the weight of an object

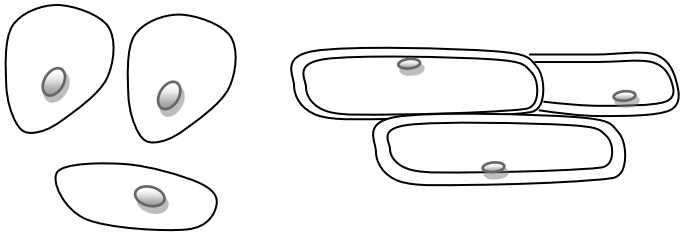
……(1mark)

iv). A fruit falls from a tree to the ground under gravitational force. Find the velocity of the fruit after 4 second. ……..(2 marks)

Part B

Answer 3 questions only from the questions 5, 6,7,8 and 9.

05. (A). All organisms are made up of single or multiple cells. a and b below shows two type of cells of organisms.

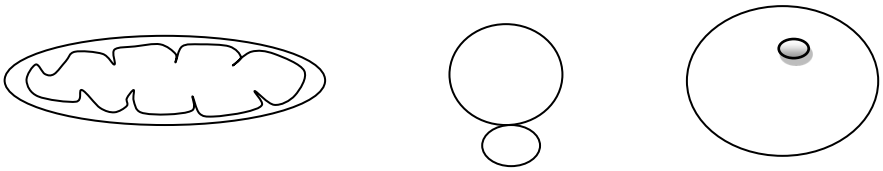


a. b.

i. Which letter denote animal cells form a and b? (1mark)

ii. Name a specimen that can be used to observe above cells (1mark)

iii. Identify and name the organelles given below. (3marks)



a. b. c.

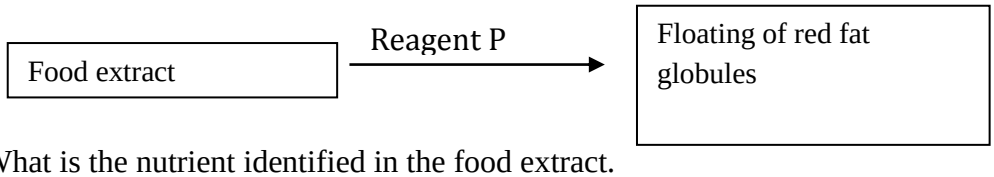
iv. Write separately the functions performed by a and c. (2marks)

v. What is the chemical substance by which the cell wall is made up of? (1mark)

vi. Name two characteristics found in a plant cell that you do not see in an animal cell. (2marks)

vii. Name two facts found in the cell theory. (2marks)

B) One step of an activity performed to identify a certain nutrient in a student's food is given below .




i. What is the nutrient identified in the food extract. (1mark)

ii Name the two elements that has contributed to the build-up of that nutrient. (2marks)

iii. Name the P reagent in the above diagram. (1mark)

iv. Name a lipid component that helps in the formation of cell membranes. (1mark)

v. Name the chemical substance and explain the observation you got in the activity to identify that water is present as a component in food. (2marks)

vi. Name a deficiency symptom that you see in plants due to the deficiency of the mineral calcium (1mark)

06. (A) All the elements of the third period in the periodic table are given below in jumbled order.

| S | P | Cl | Si | Na | Al | Ar | Mg |
|---|---|---|---|---|---|---|---|

(i). Write down the above jumbled elements in the correct order of the periodic table. (2marks)

(ii). Write down the chemical formula of the most basic and most acidic oxides from the above list. (2marks)

(iii). What is the safety precaution taken in storing the sodium metal? (1mark)

(iv). Write down the electronic configuration of the element which has 4 electrons in the valence shell from the above elements. (2marks)

(v). Write down two instances of using Si element. (2marks)

(B). A student put a small piece of sodium in to water under the direction of the teacher and made the observations.

(i). Write down two observations made by the student in the above activity. (2marks)

(ii). Mention two physical properties of sodium metal. (2marks)

(iii). Write down two physical properties of Sodium metal (2marks)

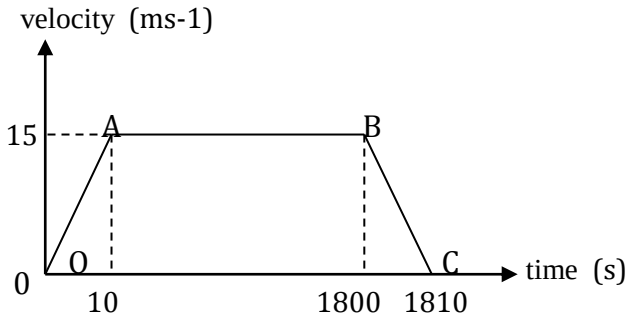
(C ). The different forms of the same element are known as allotropic forms.

(i). Write down two amorphous forms of carbon. (2marks)

(ii). Write down an instance of using amorphous from of carbon. ( 1mark )

(iii). Mention the allotropic form of the carbon with the highest density and write down a use of it. (2marks)

07. (A) The velocity time graph of a vehicle moving along a straight line is shown in the figure below.




(i). According to the graph, State the nature of motion in OA, AB and BC (3marks)

(ii) What is the maximum velocity of the train? (1mark)

(iii). Calculate the rate of the change in velocity of the vehicle during first three seconds. (2marks)

(iv) Calculate the displacement from A to B (2marks)

(B). (i). What are the two instance of applying an unbalanced external force on the vehicle according to the graph? (2marks)

(ii). State the two facts of the Newton's second law. (2marks)

(iii). Calculate the force acting on the vehicle during first 10 seconds if the mass of the vehicle is 1200kg. (2marks)

(C) (i) .What is the advantage of wearing seat belts by the passengers travelling in vehicle? (2marks)

(ii). Calculate the momentum of the vehicle during the motion from A to B (2marks)

(iii). Calculate the weight of the above vehicle. (2marks)

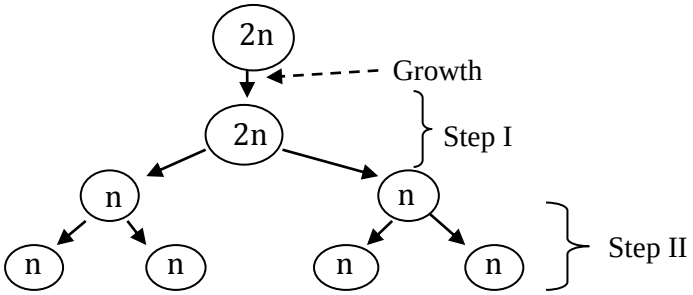
08. (A) A cell has the ability to grow as well as to multiply .New cells are formed by the Multiplication.

(i). What is known as cell division? (2marks)

(ii). Write down separately the number of chromosomes transferred by mother and father in the formation of human zygote. (2marks)

(iii). What is known as a pair of chromosomes which contains same hereditary information? (1mark)

(B).A rough sketch of the steps of the division of a certain cell is given below.




(i). What is the type of cell division shown above? (1mark)

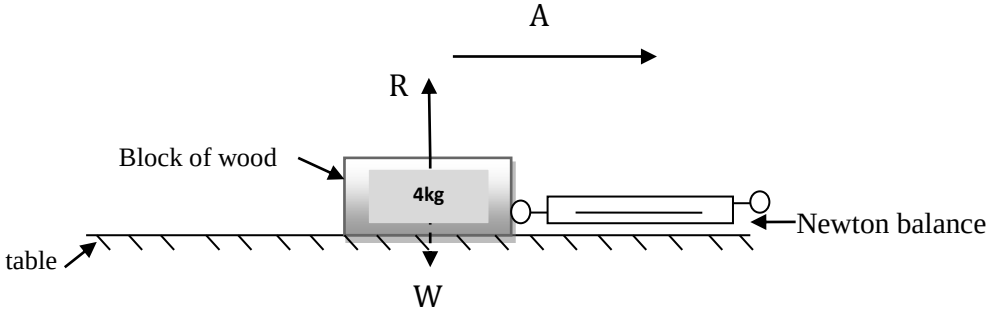
(ii). Name a place in the human body where the above division could takes place (1mark)

(iii). What is the other type of cell division other than the one shown above (1mark)

(iv). Write down two importances of the type of cell division mentioned (i) above (2marks)

(v) Write down separately type of cell division in step I and step II in figure above (2marks)

(C).In a practical activity done on friction,a block of wood was placed on a table and a force was exerted on it after which the readings of the newton balance was taken. When the reading of the newton balance was 15N , the block of wood began to move slightly.




(i). what is the type of friction acting on the block of wood before it begins to move? (1mark)

(ii). When the force acting on the block of wood is increased,

a). The block of wood stared to move. What is the name used to identify the maximum frictional force that is created between the two surfaces in this instance. (1mark)

b) What is its value? (1mark)

(iii) What is the weight of the above object? (1mark)

(iv) What is the perpendicular reaction (R) exerted on the above object? (1mark)

(v). What is the unbalanced external force on the block of wood when the reading of the newton balance is 20N? (1mark)

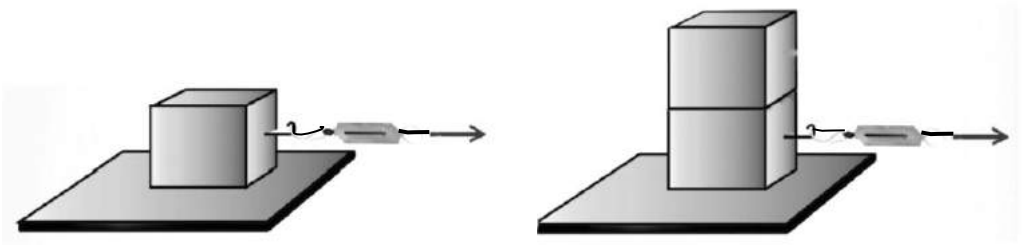
(vi). Calculate the acceleration when 20N is exerted on the block of wood. (2marks)

09. (A) The table below shows the placement of some elements of the periodic table. They are not standard symbols. Answer the questions given below based on the symbols given in the table.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | S |
| P | | | | | Q | R | |
| | T | | | | | U | V |
| W | | | | | | | |

(i) What are the two factors on which the periodic table is constructed? (2marks)
(ii). What is the element from the above that has the lowest first ionization energy? (1mark)
(iii). What is the electronic configuration of Q? (1mark)
(iv). Write down the formulae of the compound formed between T and U. (2marks)
(v). What is the reason for including P and W in the group I? (1mark)
(vi). Which element has the highest electronegativity between R and U ? (1mark)
(vii). The atom U has 12 protons and 12 neutrons. Write down the standard symbol of U. (2marks)

(B). Frictional forces are exerted between the contact surfaces when operating machines. An activity done to test the effect of one factor on friction is shown by the figure (1) and (2)



(1) (2)

(i). The affect of which factor on friction has been tested by the this activity? (1mark)
(ii). Name a factor that should be kept constant in this activity. (1mark)
(iii). What is known as dynamic frictional force? (2marks)
(iv). Write down two disadvantages due to effect of frictional force (2marks)
(v). Write down the method of increasing the frictional force during following instances
(a). Climbing of trees.
(b). Surface of the tire (2marks)
(vi). Briefly explain the reason for the increase of vehicle accidents on steep roads on rainy days (2marks)

බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
මේල් මාකාණක් කල්විත් තිණෙක්කළම්
Department of Education - Western Province

පළමු වාර ඇගයීම
First term Evaluation 2019

පිළිතුරු පත්‍රය
Marking Scheme

| ශ්‍රේණිය தரம் Grade | විෂයය பாடம் Subject | පත්‍රය வினாத்தாள் Paper |
|---|---|---|
| 10 | විද්‍යාව | I,II |

## I කොටස

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 4 | 11 | 2 | 21 | 4 | 31 | 3 |
| 2 | 4 | 12 | 2 | 22 | 2 | 32 | 4 |
| 3 | 1 | 13 | 1 | 23 | 1 | 33 | 3 |
| 4 | 1 | 14 | 1 | 24 | 1 | 34 | 1 |
| 5 | 2 | 15 | 3 | 25 | 2 | 35 | 1 |
| 6 | 1 | 16 | 3 | 26 | 2 | 36 | 4 |
| 7 | 1 | 17 | 4 | 27 | 1 | 37 | 4 |
| 8 | 2 | 18 | 3 | 28 | 1 | 38 | 2 |
| 9 | 4 | 19 | 3 | 29 | 3 | 39 | 3 |
| 10 | 3 | 20 | 3 | 30 | 2 | 40 | 1 |

(1x40 = 40)

## II කොටස

## A කොටස

01. A. (i) – බිත්තර හොඳි ⟶ NaOH වැඩිපුර, $CuSO_4$ බිංදු කිහිපයක්

- සුක්‍රෝස් ⟶ බෙනඩික් ද්‍රාවණය + තනුක $H_2SO_4$ අම්ල බිංදු කිහිපයක් (ල:2)

(ii) a. ඉදුණු කෙසෙල් (ල:1)

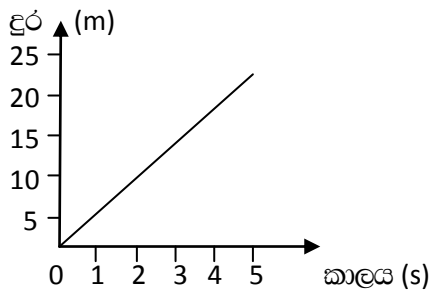
b. සුක්‍රෝස් (ල:1)

B. (i) 800 m (ල:1)

(ii) 500m (ල:1)

(iii) ප්‍රවේගය = $\frac{\text{විස්ථාපනය}}{\text{කාලය}} = \frac{50\not{0}\text{ m}}{4\not{0}\text{ s}} = 12.5\ ms^{-1}$ (ල:2)

(iv) a. (ල:2)



b. වේගය = $\frac{\text{දුර}}{\text{කාලය}} = \frac{15\ m}{3\ s} = 5\ ms^{-1}$ (ල:1)

c. (i) Na වල ස්කන්ධ ක්‍රමාංකය =23 (ල:1)

(ii) Na = 2,8,1, (ල:2)

(iii) කාණ්ඩය –I ආවර්තය – 3 (ල:1)

02. A. (i) C,H,O,N (ල:1)

(ii) ජීවීන් තුළ සිදුවන පෙව රසායනික ප්‍රතික්‍රියා වල ශීඝ්‍රතාව වැඩි කිරීම සඳහා අවශ්‍ය වන ජීවීන් විසින්ම නිපදවනු ලබන විශේෂිත ප්‍රෝටීන් (කාබනික උත්ප්‍රේරක) එන්සයිම ලෙස හැඳින්වේ. (ල:1)

(iii) මෝල්ටෝස් (ල:1)

(iv) ප්‍රරෝහණය වන මුංවැනි බීජ අඹරා පෙරා සාදාගත් ද්‍රාවණයකි. (ල:1)

(v) a. ක්‍රමයෙන් මිශ්‍රණයේ බිංදු වලට අයඩීන් එකතු කරන විට වර්ණය නිල් පැහැයේ සිට ක්‍රමයෙන් දුඹුරු පැහැයට හැරීම මගින් / අයඩීන් සමඟ වර්ණ විපර්යාසයක් සිදු නොකිරීම මගින්. (ල:2)

නිල් → කොළ → කොළ කහ → තැඹිලි → ගඩොල් රතු අවක්ෂේපය (ල:2)

B. (i) a. ද්‍රාවක ගුණය (ල:1)

b. ජලය මිදීමේදී සිදුවන අසමාකාර ප්‍රසාරණය (ල:1)

C. ජලයේ ප්‍රබල සංශක්ති හා ආශක්ති බල තිබීම (ල:1)

(ii) A- කාබෝහයිඩ්‍රේට - මොනොසැකරයිඩ (ල:1)

B- DNA - නියුක්ලියොටයිඩ (ල:1)

(iii) සෙලියුලෝස් (ල:1)

(iv) $C_x(H_2O)_y$ (ල:1)

03. A . (i) H (ල:1)

(ii) F, B (ල:2)

(iii) H (ල:1)

(iv) A (ල:1)

(v) D (ල:1)

B. (i) $kJmol^{-1}$ (ල:1)

(ii) S (ල:1)

(iii) - T උච්ච වින්‍යාසයක් ඇති මූලද්‍රව්‍යයක් නිසා එහි පිරුණු අවසාන ශක්ති මට්ටමෙන් ඉලෙක්ට්‍රෝනයන් ඉවත් කිරීමට අපහසු වීම. (ල:2)

- අවසාන ශක්ති මට්ටමේ ඇති ‘e’ න්‍යෂ්ටියට දක්වන ආකර්ෂණය ඉතා වැඩි වීම.

(iv) R= 2 H= 1 = $H_2R$ (ල:2)

(v) S (ල:1)

(vi) නිල් දැල්ලක් සහිතව වාතයේ දැවීයාම.
කටුක ගන්ධයක් දැනීම. (ල:2)

04. A. (i) වාතය පිටවී යන දිශාවට විරුද්ධ දිශාවට බැලුනය කම්බිය දිගේ ගමන් කරන බව.
ක්‍රමයෙන් බැලුනය හැකිළෙන බව / ප්‍රමාණය කුඩා වන බව. (ල:2)

(ii) ⟶ බැලුනය චලනය වේ (ල:2)
⟵ වාතය පිට වේ

(iii) නිව්ටන්ගේ 3 වන නියමය (ල:1)

(iv) පෑන් බටයක් වෙනුවට බීම බටයක් භාවිතා කිරීම (ල:2)

වඩාත් සිහින් කම්බියක් භාවිතා කිරීම

(v) ඔරුවක් පදින විට / පිහිනීමේ දී (ල:1)

(vi) බැලුනයේ කට ගැට ගසා ඇති නූල බුරුල් කරන විට වාතය පිටවී යන අතර (ක්‍රියාව) එවිට ඊට විරුද්ධ අතට බැලුනය කම්බිය දිගේ ගමන් කිරීම (ප්‍රතික්‍රියාව) සිදුවේ. (ල:2)

B. (i) 3 kg (ල:1)

(ii) වස්තුවක ස්කන්ධය යනු එම වස්තුවෙහි අඩංගු පදාර්ථ ප්‍රමාණයයි. (ල:1)

(iii) නිව්ටන් දුනු තරාදිය (ල:1)

(iv) ත්වරණය $= \frac{\text{ප්‍රවේග වෙනස}}{\text{කාලය}}$

$10ms^{-2} = \frac{V-0}{4s}$

$V = 10 \times 4 = 40ms^{-1}$ (ල:2)

## B කොටස

05. A. (i) a (ල:1)

(ii) කොපුල් සෛල (ල:1)

(iii) a - මයිටොකොන්ඩ්‍රියා

b - රයිබසෝම

c - න්‍යෂ්ටිය (ල:3)

(iv) a- ශක්තිය නිපදවීම C - සෛලයේ ජීව ක්‍රියා පාලනය කිරීම (ල:2)

(v) සෙලියුලෝස් (ල:1)

(vi) සත්ත්ව සෛලයක – සෛල බිත්තියක් නිබීම / හරිතලව නිබීම / විශාල මධ්‍ය රික්තකයක් නිබීම (ල:2)

(vii) - ජීවයේ ව්‍යුහමය මෙන්ම කෘත්‍යමය ඒකකය සෛලයයි.

- සියලුම ජීවීන් සෑදී ඇත්තේ එක සෛලයකින් හෝ සෛල වලිනි.
- නව සෛල ඇතිවන්නේ කලින් පැවති සෛලවලිනි. (ල:2)

B. (i) ලිපිඩ (ල:1)

(ii) මේද අම්ල හා ග්ලිසරෝල් (ල:2)

(iii) සුඩාන් III ප්‍රතිකාරකය (ල:1)

(iv) පොස්පො ලිපිඩ හා කොලොස්ටරෝල් (ල:1)

(v) කොබෝල්ට් ක්ලෝරයිඩ් – වර්ණය නිල්පැහැයේ සිට රෝස පැහැයට හැරීම මගින්. (ල:2)

(vi) පත්‍ර අග්‍රස්ථය මිය යාම. (ල:1)

06. A. (i) Na, Mg, Al, Si, P, S, Cl, Ar (ල:2)

(ii) වඩාත් භාෂ්මික – $Na_2O$ වඩාත් ආම්ලික $Cl_2O_7$ (ල:2)

(iii) පැරෆීන් තෙල් තුළ හෝ භූමිතෙල් තුළ ගබඩා කර ඇත (ල:1)

(iv) Si – 2,8,4 (ල:1)

(v) සූර්ය කෝෂ සෑදීමට / පරිඝනක උපාංග සෑදීමට / ට්‍රාන්සිස්ටර් සෑදීමට / ඩයෝඩ සෑදීමට (ල:2)

B. (i) Na කැබැල්ල ජලය මතුපිට පාවීම.

වේගයෙන් ප්‍රතික්‍රියාකර 'ෂූ' හඬක් ඇති කරමින් කහ පැහැති දැල්ලක් සහිතව දැවී යාම. (ල:2)

(ii) පිහියකින් වුවද කැපිය හැකි තරම් මෘදු ලෝහයක් වීම.

- විද්‍යුත් සන්නායක වීම.
- තාප සන්නායක වීම.
- ජලයට වඩා ඝනත්වය අඩු වීම. (ල:2)

(iii) රන් හා රිදී නිස්සාරණයට අවශ්‍ය සෝඩියම් සයනයිඩ් නිපදවීමට.
- කහ පැහැති ආලෝකය විහිදුවන විදුලි ලාම්පු සඳහා .
- ඩෙනිම් කලිසම් රෙදි වර්ණ ගන්වන ඉන්ඩිගෝ වැනි සායම් වර්ග නිපදවීමට.
- ටයිටේනියම් සර්කෝනියම් වැනි ලෝහ වල සංයෝග වලින් ලෝහය වෙන්කර ගැනීමට.
- සෝඩියම් සංරසය සෑදීමට. (මෙයින් ඕනෑම 2 ක් ) (ල:2)

C. (i) අඟුරු / ලාම්පු දැලි / ගල් අඟුරු (ල:2)

(ii) කළුපාට තීන්ත වර්ග නිපදවීමට / රබර් වල පිරවුම් කාරකයක් ලෙස (ල:1)

(iii) දියමන්ති – ආභරණ සෑදීමට / මැණික් කැපීමට / විදුරු කැපීමට /යන්ත්‍ර සූත්‍ර වල හා තරාදි වල ගෙවී යන තැන්වල විවර්තති ලෙසට. (ල:2)

07. A. (i) OA – ඒකාකාර ත්වරණය , AB – ඒකාකාර ප්‍රවේගය , BC – ඒකාකාර මන්දනය (ල:3)

(ii) $15ms^{-1}$ (ල:1)

(iii) ප්‍රවේගය වෙනස් වීමේ සීඝ්‍රතාවය (ත්වරණය) = $\frac{\text{ප්‍රවේග වෙනස}}{\text{කාලය}} = \frac{15.0\ ms^{-1}}{10\ s} = \underline{1.5\ ms^{-2}}$ (ල:2)

(iv) A-B දක්වා සිදුවූ විස්ථාපනය = AB කොටසේ වර්ගඵලය
= 1790s x 15 ms-1 = <u>26850 m</u> (ල:2)

B. (i) OA සහ BC (ල:2)

(ii) - වස්තුවක ඇතිවන ත්වරණය එයට යොදනු ලබන අසමතුලිත බලයට අනුලෝමව සමානුපාතික වේ.
- එසේම එම ඇතිවන ත්වරණයට වස්තුවේ ස්කන්ධයට ප්‍රතිලෝමව සමානුපාතික වේ. (ල:2)

(iii) F = m x a
F = 1200 kg x $1.5\ ms^{-2}$
<u>F = 1800 N</u> (ල:2)

C. (i) තිරිංග යෙදූ විට විසිවීමෙන් වැළකීමටය. (ල:2)

(ii) ගම්‍යතාවය = m x v
= 1200 kg x $15\ ms^{-1}$
= <u>$18000\ kgms^{-1}$</u> (ල:2)

(iii) රථයේ බර = 1200 kg x $10\ ms^{-2}$
= <u>$12000\ kgms^{-1}$</u> (ල:2)

08. A. (i) නව සෛල සෑදෙන පරිදි යම් සෛලයක සිදුවන සෛලීය ද්‍රව්‍ය බෙදීමේ ක්‍රියාවලියයි. (ල:2)

(ii) මවගෙන් වර්ණ දේහ 23 ක් හා පියාගෙන් වර්ණ දේහ 23 ක් ලැබේ. (ල:2)

(iii) සමජාතීය වර්ණදේහ යුගලක් ලෙසිනි. (ල:1)

B. (i) ඌනන විභාජනය (ල:1)

(ii) ඩිම්බ මාතෘ සෛල වල / ශුක්‍රානු මාතෘ සෛලවල / ප්‍රජනක මාතෘ සෛල වල (ල:1)

(iii) අනුනන විභාජනය (ල:1)

(iv) පරම්පරාවෙන් පරම්පරාවට වර්ණාදේහ සංඛ්‍යාව නියතව පවත්වා ගනීම.
වර්ණාදේහ වල ඇතිවන වෙනස්වීම් හෙවත් ප්‍රභේදන පරිණාමයේ දී වැදගත් වීම. (ල:2)

(v) 1 වන අවස්ථාව - ඌනන විභාජනය
2 වන අවස්ථාව - අනුනන විභාජනය (ල:2)

C. (i) ස්ථිතික ඝර්ෂණ (ලැ:1)

(ii) a. සීමාකාරී ඝර්ෂණ බලය (ලැ:1)

b. 15 N (ලැ:1)

(iii) වස්තුවේ බර (W) = 4 kg x 10 $ms^{-1}$

= <u>40 N</u> (ලැ:1)

(iv) 40 N (ලැ:1)

(v) 20 N – 15 N = 5 N (ලැ:1)

(vi) F = m x a

5 N = 4 kg x a

a = 50 N

4 kg

<u>a = 1.25 $ms^{-2}$</u> (ලැ:2)

09. A. (i) පරමාණුක ක්‍රමාංකය හා ඉලෙක්ට්‍රෝන වින්‍යාසය (ලැ:2)

(ii) W (ලැ:1)

(iii) Q = 2, 6 (ලැ:1)

(iv) T U

2 1

$TU_2$ (ලැ:2)

(v) P හා W වල අවසාන ශක්ති මට්ටමේ අඩංගු ඉලෙක්ට්‍රෝන ගණන එකක් වීම / එම මූලද්‍රව්‍ය වල සංයුජතා ඉලෙක්ට්‍රෝන එකක් පමණක් වීම. (ලැ:1)

(vi) R (ලැ:1)

(vii) $^{24}_{12}T$ (ලැ:2)

B. (i) වස්තු අතර ඇතිවන අභිලම්බ ප්‍රතික්‍රියාව. (ලැ:1)

(ii) පෘෂ්ඨයේ ස්වභාවය. (ලැ:1)

(iii) වස්තුවක චලනය වීම ඇරඹුනු විට පවතින ඝර්ෂණ බලය ගතික ඝර්ෂණ බලයයි. (ලැ:2)

(iv) - ශක්තිය අපතේ යාම / ශබ්දයක් ඇතිවීම / යන්ත්‍ර කොටස් ගෙවී යාම.

- උෂ්ණත්වය වැඩිවීම (යන්ත්‍ර කෙටෙස් රත්වීම) / වැයවන ඉන්ධන ප්‍රමාණය වැඩි වීම. (ලැ:2)

(v) a. ලණු / කපු රෙදි වලින් තැනූ වළල්ලක් භාවිතා කිරීම.

b. කට්ටා කැපීම. (ලැ:2)

(vi) ඝර්ෂණය අඩු වී ලිස්සායම නිසා වැනි ගැළපෙන පිළිතුරකට ලකුණු දෙන්න. (ලැ:2)