



PROVINCIAL DEPARTMENT OF EDUCATION - NORTH WESTERN PROVINCE

DIAGNOSTIC TEST - 2021

SCIENCE - II

Grade 10

Three Hours

Name / Index No. :

Instructions :

- Use clear hand writings.
- Answers for the questions in part A should be written on the paper itself.
- Answer only three questions out of the five questions given in part B. Use separate papers to answer.
- Attach the answer scripts of A and B together and hand over

Part A – Structured Essay

01.

A. Following figure shows a sliding boat used by small children’s for their entertainment. Two children’s in the boat are named as A and B. The mass of A child is 25kg. ($g = 10 \text{ m s}^{-2}$)

i. Calculate the weight of the child A. (02)

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.....

ii. If 10S was spent to reach the position of child A from the ground level,

a. Calculate the work done by the child

.....
..... (02)

b. Calculate the rate of doing woks or the power of child.

.....
..... (02)

c. What is the potential energy possess by the child A..... (01)

iii. Name 2 gaseous excretory products release from child A at position A .

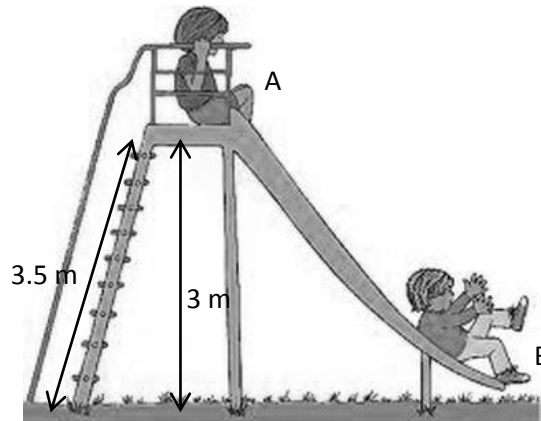
..... (02)

iv. What is the common living characteristic exhibited from the child A and B?

..... (01)

v. Is the metal iron or Aluminium suitable to make the sliding part of the sliding boat.?

..... (01)



vi. Give a reason to select the above metal as most suitable metal. (01)

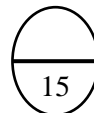
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vii. State following information about the Aluminium metal.

a. Atomic number - (01)

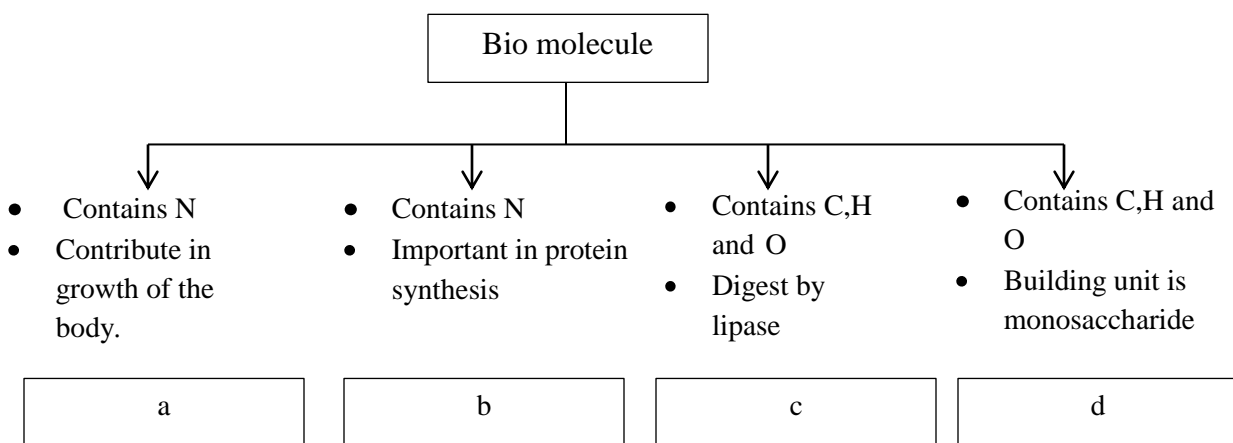
b. Number of energy levels in the atom - (01)

c. Electronic configuration of Al^{+3} - (01)



02.

A. There are four main organic compounds which form the living matter. They are known as bio molecules.



i. Identify and name **a,b,c** and **d** by studying the chart (04)

a. b.

c. d.

ii. Give an example for a compound of which the building unit is a monosaccharide.

..... (01)

iii. Write two chemical compounds used in an experiment to check the presence of N in the bio molecule

(a) (02)

iv. State how the bio molecule (b) is important for the existence of living cell in addition to the protein synthesis. (01)

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.....

B. Water exist as an inorganic compound in living matter in addition to the bio molecules.

i. It is essential to remove excretory matters and dead materials to maintain the life of living beings. Which property of water is important for this process? (01)

.....

ii. Mention how the cooling property of water is important to maintain the life of human.

..... (01)

iii. Name two types of inorganic compounds in living matter other than water.

(02)

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C. Following chart shows a way of dividing chromosomes in the nucleus during the cell division.

i. What is the number of chromosomes denoted by X ?

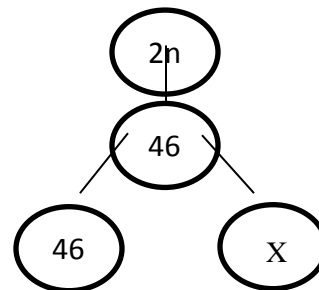
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ii. What is the type of cell division shown by the diagram?.

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iii. State the type of cell division take place in developed organisms
In the formation of gametes where the number of chromosomes
In gamete mother cells become half.

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03. The electronegativity values of several consecutive elements of second and third periods of the periodic table are shown in the graph. (Consider that the symbols are not standard symbols)

i. Draw in the graph how electronegativity vary

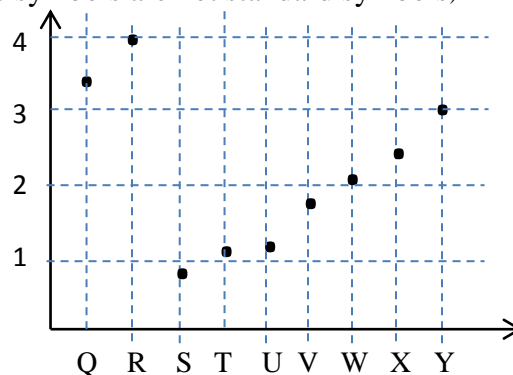
(01)

ii. Name the two elements with highest and Lowest electronegativity according to the graph.....

(01)

iii. What is the element with highest electronegativity Out of the elements with atomic number 1 to 20 ?

..... (01)



iv. What is the scale that gives the value of electronegativity?

(01)

.....

v. State how electronegativity vary when moving right along a period and moving down along a group.

(02)

.....

vi. Write the electronic configuration of the element T.

(01)

.....

vii. If element T forms the oxide when burnt in air, write the balanced chemical equation for the reaction.

..... (02)

B. It can be identified that there is a pattern of changing the properties of metals, non metals and metalloids in addition to the first ionization energy by studying the periodic table.

i. Briefly define what is known as first ionization energy? (02)

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ii. What is the element with highest first ionization energy?. (01)

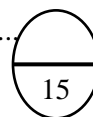
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iii. Write a physical property and a chemical property of a metal respectively. (01)

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iv. Out of the elements in third period, give one example for element which make acidic, basic and neutral oxides respectively. (02)

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04.

The velocity of a motor vehicle when enters a straight high way is 30 km h^{-1} . It moved with a constant acceleration for two minutes and acquired a velocity of 90 km h^{-1} . After that it moved with the same velocity for another 20 minutes and moved another 2 minutes with a deceleration and stopped to pay charges.

i. Represent the movement of the motor vehicle in the following velocity- time graph. use velocity as km h^{-1} and time as hours. (1minute = $1/60$ hours)



ii. What is the distance travelled by motor vehicle with a constant velocity? (03)

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iii. The velocity of the motor vehicle was mentioned in the receipt of payment. What are the quantities used to calculate the above value? (02)

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iv. What is the duration of motion where force exerted by engine becomes equal to the frictional force of the road?. (01)

.....

v. In first two minutes of motion the force exerted by engine has increased gradually. If the nature of the surface of road is equal, state whether the frictional force against the motion decrease, increase or no change?. (01)

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vi. State a method to (a) increase and (b) decrease the friction of motor vehicles. (02)

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vii. After payment, the motor vehicle was moved with an acceleration of 5 m s^{-2} . If the mass of motor vehicle with passengers is 1500 kg, what should be the force that exerted by engine to move the vehicle. (Calculate without considering the frictional force) (03)

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viii. It is must to wear seat belts when driving the motor vehicle. Explain the reason for this briefly.

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(01)

