



Provincial Department of Education Northern Province



Second Term Examination 2022

Grade: 10

Science II

Time: 03 Hours

Index.No:.....

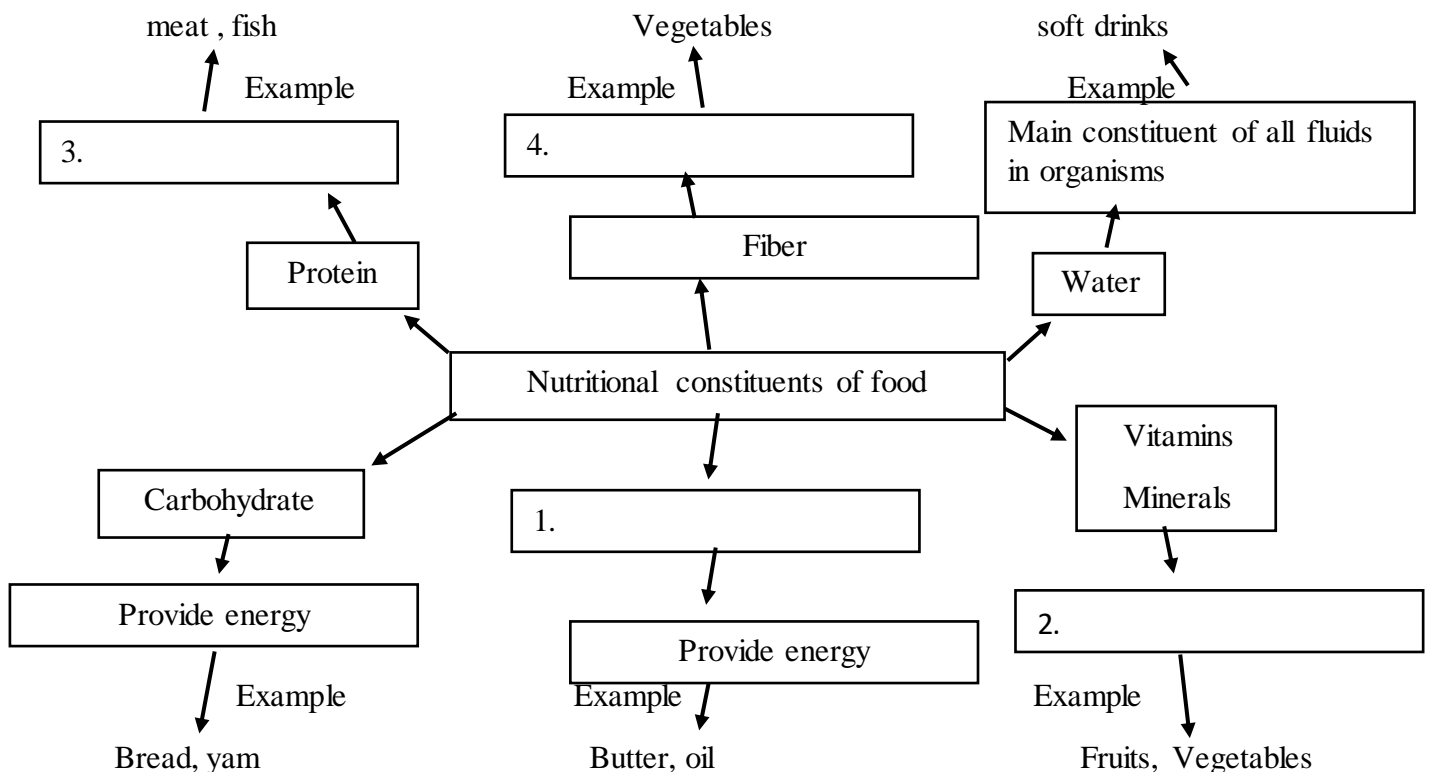
34 E II

Additional Reading Time : 10 Minutes

- ❖ Use Additional reading time to go through the question paper, select the questions decide on the questions that you give priority in answering.
- ❖ Write your answers in neat handwriting.
- ❖ Answer the **Four** questions in **Part A** in the space provided.
- ❖ Of the five questions in **Part B** answer **Three** questions only.
- ❖ After answering, tie part A and the answer script of part B together and hand over.

Part A

01) Given below is a concept map prepared by grade 10 students related to constituents of food.

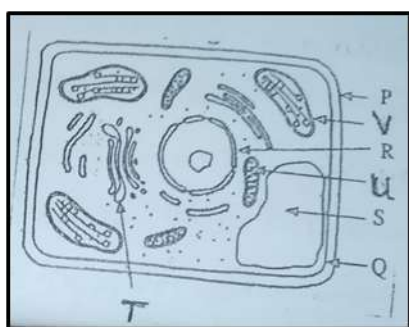


- I. Write the suitable correct words in the blank boxes. (04 marks)
- II. Consider the biological molecule present in fish,
 - a. Name the chemical substances present in the laboratory used to identify the presence of nitrogen :(02 marks)
 - b. What is the colour change for the above-mentioned food with the chemical you mentioned?(01 mark)
- III. What is the chemical substance used to identify nutrient which contain oil?

- (01 mark)
- IV. The structural unit of carbohydrate is monosaccharide. Glucose is one of the monosaccharides.
- a. Give the chemical formula for Glucose: (01 mark)
- b. Calculate the molar mass of glucose. (C - 12, O - 16, H - 1)
..... (02 marks)
- c. Write down the steps you should follow in laboratory to identify that glucose is one of the monosaccharides.
.....
.....
..... (02 marks)
- V. Give one importance of protein. (01 mark)
- VI. Give a specific property of water: (01 mark)

Total 15 marks

02) A. Diagram of a plant cell that is based on the observation under electron microscope is given below.

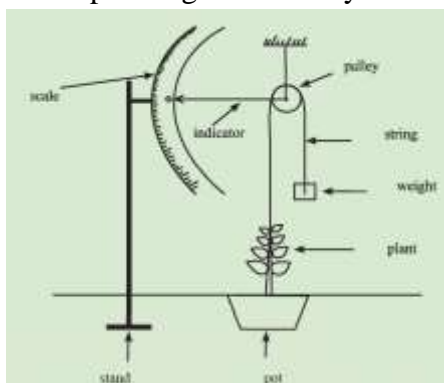


- i. Give one feature that differentiate plant cell from animal cell.
..... (01 mark)
- ii. Give two English letters that denote the organelle with double membrane. (02 marks)
- iii. Write down the English letters of the relevant cell organelles responsible for the following functions .

- a. Control all the metabolic activities in cell
b. Provide energy for metabolic activities
c. Synthesis, secrete, packing and transport secretary products.....
d. Contribute to maintain the shape of the plant cell..... (04 marks)

- iv. The steps that should be followed when observing cells of onion peel under microscope is given in incorrect order. Arrange them in correct order and number them in the space given.
- a. Cover the slide with cover slip without trapping air bubble.....
b. Place a thin layer of onion peel into the watch glass containing water.....
c. Place the onion peel on a clean slide where drop of water was placed using a brush.....
d. Observe in microscope under low power (02 marks)

B. A setup arranged to identify a characteristic of a living organism is given below.



- a. Identify the setup given (01 mark)
- b. which characteristic of living organism is identified using this setup?
..... (01 mark)
- c. The above mentioned characteristic of an organism undergoes in three steps. What are they?
..... (03 marks)
- d. What is the observation in this set up after few days?
..... (01 mark)

03) A. Information about some elements are given below in the table. This is not a standard symbol for those elements.

Elements	Characteristics
A	When heated with air, burn with bright flame
B	Used as filling gas in milk powder packets
D	Metalloid used in skin cream production
E	Metalloids used in solar cell production
G	Yellow colour solid. Appear in both crystalline and non-crystalline form
J	Preserved inside kerosene in laboratory. Produce yellow colour flame in flame test.

a. With the help of characteristics given above fill the periodic table in relevant cages with English alphabet letter that imply the element.

(03 marks)

b. Write down the electronic configuration of element G and give the group and period of that element.

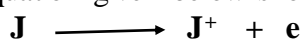
Electronic configuration:

Group: Period: (03 marks)

c. The solid residue obtained when heating element A in oxygen, dissolves little in water. When this solution is tested with litmus paper, which litmus paper shows colour change with the solution?

.....(01 mark)

d. Equation given below show the way of element J obtaining electronic configuration of noble gas.

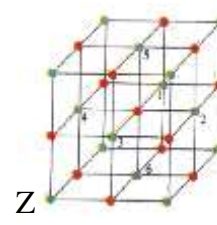
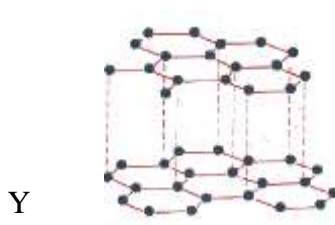


Underline the correct answer that show the electronic configuration of noble gas that J⁺ obtains.

(He, Ne, Ar, Mg) (01 mark)

B. The lattice structure of three solid substances X, Y and Z are given in the figure.

i. Identify them and write down the relevant name in the given space.



..... (03 marks)

ii. In X, Y and Z,

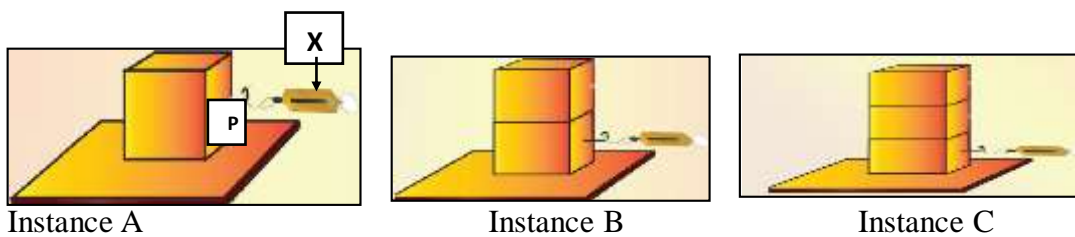
a. Which are ionic lattice structure:(01 mark)

b. Which conduct electricity in solid state :(01 mark)

c. Which has the hardest structure :(01 mark)

Total 15 marks

04) A. Given below figure shows the way in which a wooden cuboidal of weight 10N with uniform surface is kept and the way of force given by the instrument X on the wooden block. In the instance A, 20N force is applied.



- i. Identify the instrument X :(01 mark)
- ii. State whether the force applied on wooden block to move in instance B is less than or greater than the force applied on wooden block in the instance A.
.....(01 mark)
- iii. Write down the relationship between the mass and the acceleration of the substance given in the instances A and B:(01 mark)
- iv. If the force applied on wooden block in the instance C is 60N, To find the acceleration on that object,
 - a. Write the equation for that :(01 mark)
 - b. Calculate the acceleration using the above equation:
.....(01 mark)
- v. When considering the movement of wooden block in instances A and B, which factor affects the limiting frictional force is tested?(01 mark)
- vi. a. When the side P is changed to touch the surface and again the block is kept on the table as in instance A, and pulled using the instrument, the force used to pull was more than or less than or equal to 20 N?
.....(01 mark)
- b. State the reason for your answer.(02 marks)
- vii. State two ways used to reduce the friction in day to day activity.
.....(02 marks)

B. Figure shows a book at rest on a table.

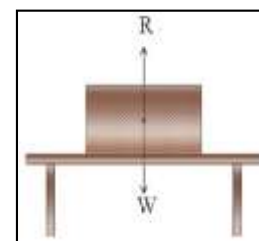
i. Name the two forces R and W.

R :

W :(02 marks)

ii. If, $W = 30\text{N}$, what is the value of R?(01 mark)

iii. State one condition for an object to be at equilibrium when three force acting on it.(01 mark)



Total 15 marks

Part B

05) A. Grade 10 students had a field visit to identify the information about organisms directly. Pictures of the organisms they observed are given below.



A



B



C



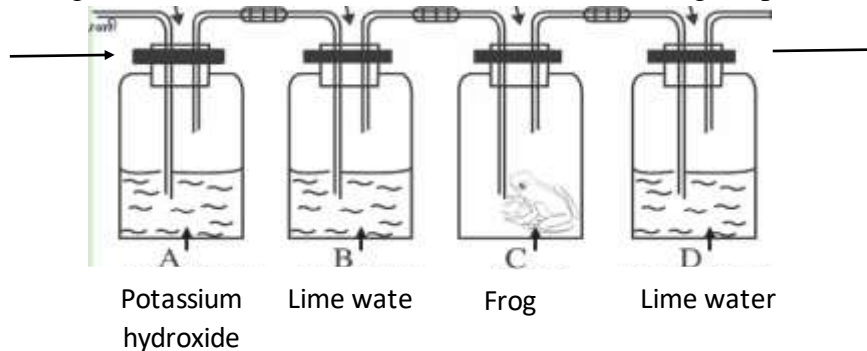
D



E

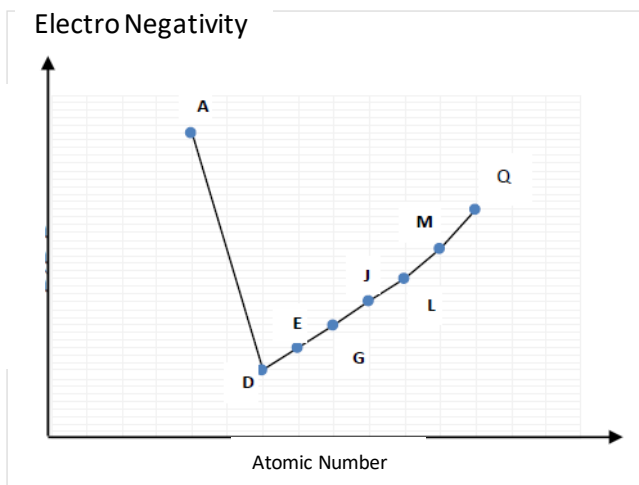
- i. Write down the relevant english alphabet letter of the animals on opposite of the relevant characteristic given below.
 - a. Body divided into head, body mass and muscular foot.
 - b. Glandless dry skin, respire through lungs.
 - c. Heart is three chambered, wet skin with mucus.
 - d. Tube feet related with water vascular system is present.
 - e. Have exoskeleton made of chitin and have joined appendages.
- ii. Which are vertebrate among the given organisms?
- iii. Write down the component that is used to made up the exoskeleton of organism C of?
- iv. What is the contribution of organism C for the existence of plant?

B. Given set up is arranged to show that carbon dioxide is released during respiration.



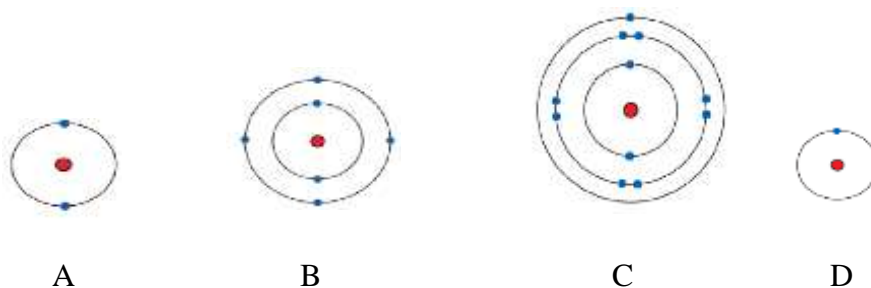
- i. What is the purpose of using structure A in this experiment?
- ii. What are the observations in structure B and D? Give reasons for your observations?
- iii. What should be combined with this set up to increase the speed of air entering into this setup?
- iv. Is it possible to place a plant instead of the frog in the above experiment? Give reason for your answer.

06) Given below is the graph representing the electronegativity of consecutive elements from 2nd and 3rd period of periodic table. The standard symbol of the elements are not given. Answer the following questions based on this information.



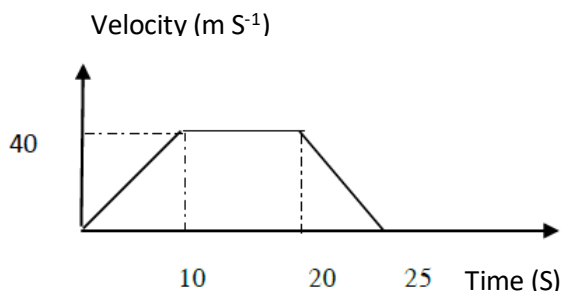
- i. On which measuring scale does the electronegativity is measured?
- ii. What is the symbol of element that has low electronegativity in this graph?
- iii. Of the periods given in the graph, the electronegativity of which group of element is not mentioned here?
- iv. What is the atomic number of element L?
- v. What is the valency of element E?

B. The structure of electronic configuration of four elements are given below. The given symbols are not the standard symbols of elements.



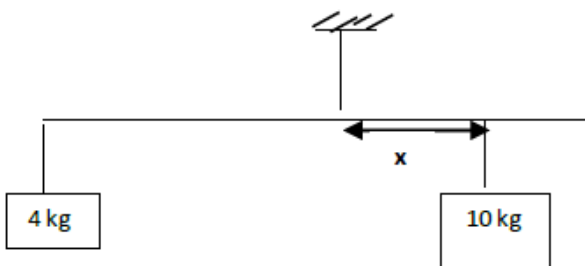
- Mention the atomic number of the above elements.
- Which is the noble gas with completely filled last orbital?
- Give the Lewis dot(•) cross (×) diagram for the compound produced by the combination of elements B and D.
- Which element do not have neutron?
- If the number of neutrons in element C is 12, give the symbol for that element in standard notation.

07) A. Velocity – Time graph showing motion of an object in a straight path is given below.



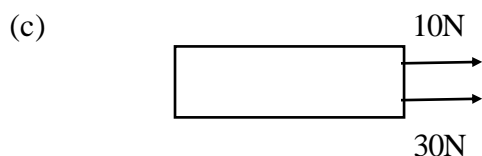
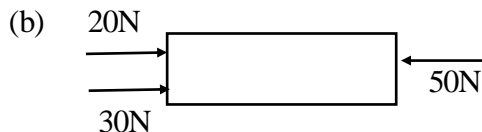
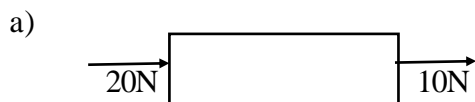
- What can be said about the motion of the object in first 10 seconds?
 - What is the time taken for the vehicle to travel with a constant velocity?
 - If the object comes to rest by applying break, what is the deceleration ?
 - What is the total distance travelled by the object?
- v. The mass of the object is 100 kg. What is the external force exerted on the object for the first 10 seconds?

B. A rod AB of length one meter was balanced by hanging on its center.

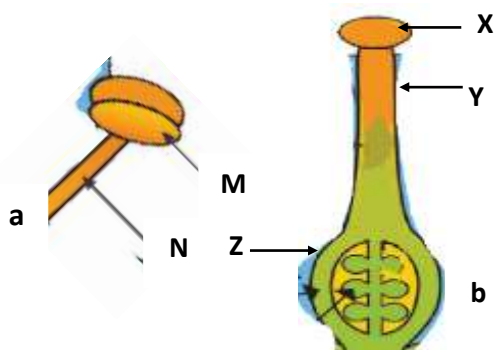


- What are the factors determining the moment of force
- If the rod to be in balanced , what should be the distance that 10kg mass should be hung from the center of the rod?
- Give an example for the moment of force application in day to day life.

C. Calculate the resultant force for the given instances.

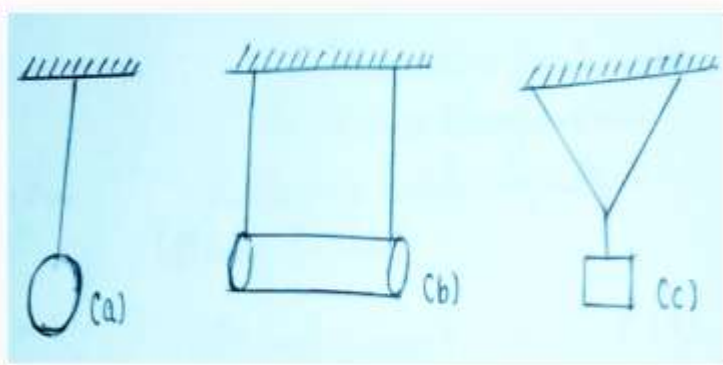


08) A. The process by which an organism produces another organism of same type is known as reproduction. The main parts of sexual reproduction in plant are given below.



- i. Identify the parts a and b.
- ii. How do we call the deposition of gametes on X from M?
- iii. How does the part Z change after fertilization?
- iv. How do we call the process by which fruits are formed without fertilization?
- v. State how the given plants do asexual reproduction.
 - a. Gotukola
 - b. Begonia

B. Equilibrium of three objects in different instances are given below.



- i. In the figure a and b, indicate weight (W) and tension (T).
- ii. Which of the instance/s shows/shows the object in equilibrium with three forces acting on it?
- iii. State the conditions for the equilibrium of object in instance b.
- iv. Find the tension in instance b if the weight of the plank is 20N.

v. State an instance related to fig(b) in day to day life.

09) A.



Smooth surface

Rough surface

The above activity was designed to identify a factor that affects limiting frictional force...

- i. Which factor affecting limiting frictional force is identified using the above activity?
- ii. At which instance the limiting frictional force is high?
- iii. Name the type of frictional force acting on the following instances.
 - a. The frictional force acting on an object which starts to move
 - b. The frictional force acting on an object before it starts to move.
- iv. Give two ways used to reduce the friction in day to day life.
- v. Give 2 disadvantages of friction.

B. i. Write down the chemical formula of the compounds given below.

- a. Sodium carbonate
- b. Magnesium hydroxide

ii. Calculate the molar mass of the following compounds. (C-12, O-16, H-1, S-32)

- a. CH_3COOH
- b. H_2SO_4

iii. What is the amount of substance in 11g of CO_2 ?

iv. What is the number of molecules present in the sample mentioned in above (iii)?

v. What is the number of atoms present in a substance that has mass equal to the relative atomic mass of that element?