වයඹ පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව

Provincial Department of Education - NWP

| 34 | E | I |

පළමු වාර පරීක්ෂණය - 11 ශ්‍රේණිය - 2020

First Term Test - Grade 11 - 2020

Name/Index No. : .... **Science - I** **Time :1 hour**

- Answer all questions.
- In each of the questions 1 to 40, pick one of the alternatives (1), (2), (3), (4) which you consider as correct or most appropriate.
- Mark a cross (X) on the number corresponding to your choice in the answer sheet provided.

(1) Which of the following is the most common chemical element in organisms by mass?
1. Hydrogen 2. Oxygen 3. Carbon 4. Nitrogen

(2) The non-flowering plant that produce spores.
1. Cycas 2. Drynaria 3. Pinus 4. Mimosa

(3) What is the standard unit for measuring power?
1. Watt 2. Joule 3. Volt 4. Ampere

(4) Which of the following oxides form an acidic solution with water
1. Na_2O 2. MgO 3. SO_2 4. Al_2O_3

(5) The living cell without nucleus is,
1. Tracheids 2. Sieve tube elements
3. Parenchyma 4. Collenchyma

(6) The plank moved in the opposite direction of the bird as it flew over a small plank on the water. What is the law that describe these phenomena?
1. Newton's 3rd low 2. Newton's 1st low
3. Archimedes Principle 4. Newton's 2nd low

(7) The electron configuration of a particular element is 2, 8, 7. What is the period and the group that element belong respectively.
1. 3 and III 2. 2 and vii 3. 3 and vii 4. 3 and i

(8) The structure that produces the human sperm.
1. Vass deferens 2. Epididymis 3. Prostrate gland 4. Seminiferous tubules

(9) What is correct answer for the equivalent resistance of P and Q in the above circuit.
1. 3Ω 2. 6Ω
3. 9Ω 4. 12Ω

Grade 11 Science NWP
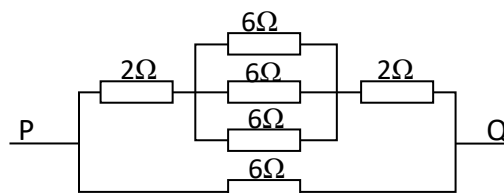
(10) What is the only choice for elements that get noble gas configuration by removing electrons?

1. H, O and N   2. Na, Mg and K   3. C, H and Cl   4. H, Li and C

(11) Which of the following vitamin is deficient in cell division?

1. Vitamin A   2. Vitamin B   3. Vitamin C   4. Vitamin D

(12) In the figure, a force of 3 N is applied to a wooden block placed on a rough table. What is the static friction frictional that would be generated if the black wooden block did not move?
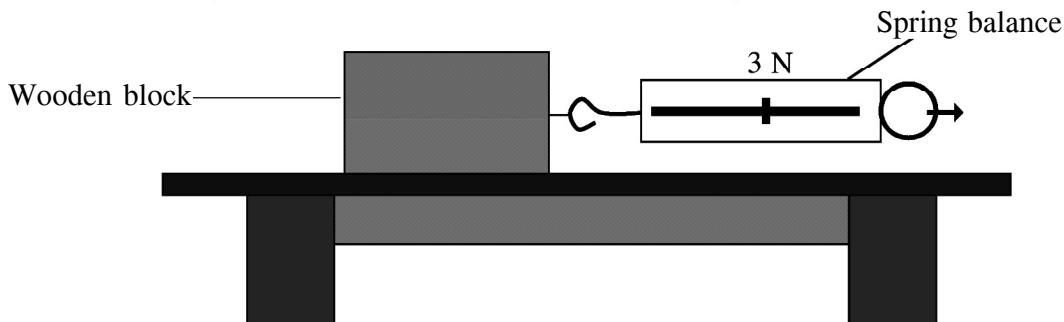
1. 3 N   2. 4 N   3. 12 N   4. 40 N

● The following equation shows that how to form an ion from a neutral atom of element M in a chemical reaction. Use this equation for questions 13 and 14.

$$M \rightarrow M^{2+} + 2e$$

(13) What change in the M atom take place when the M^{2+} ion is formed?

1. No of neutrons   2. No of protons
3. No of electrons   4. No of protons and electrons.

(14) What is the compound form by element M reacted with Cl_2?

1. MCl_2 2. M_2Cl 3. M_2Cl_2 4. MCl

(15) What is not a adaptation for cross pollination of a flower?

1. The positioning of stamens and stigma of a flower at a distance.
2. Androecium or Gynoecium is matured earlier
3. Large amount of pollen are produced in the anther.
4. Bearing of pistilate flowers and staminate flowers seperately.

(16) Consider the following about the living cells.

A. Cell wall is a common structure for all cells.
B. All living beings are consist with cells.
C. Cell is the basic structural and functional unit of the living beings

Which are the true of the above?

1. A and B only.   2. B and C only.
3. A and C only.   4. A, B and C all

● An object of 0.25kg in mass takes 5 s to fall to the ground form the top of a building in a vertical line. ($g = 10$ m s^{-2})

Use these informations to answer the questions 17 and 18

(17)   What is its velocity when it reaching the ground?

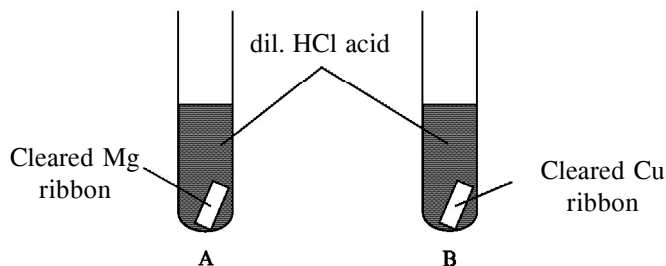1.   2.5 m s^{-1} 2.   25 m s^{-1} 3.   50 m s^{-1} 4.   75 m s^{-1}

(18)   What is the height of the building?

1.   50 m   2.   100 m   3.   125 m   4.   750 m

(19)   Below is a test setup to test how metals react with acids.

What is the correct statement of observation in this test.

dil. HCl acid

Cleared Mg ribbon

Cleared Cu ribbon

A   B

1.   Gas bubbles are evolving in tube A and gas bubbles are not evolving in tube B
2.   Gas bubbles are evolving in tube B and gas bubbles are not evolving in tube A
3.   The speed of evolving of gas bubbles in tube A is higher than the evolving in tube B
4.   The speed of evolving of gas bubbles in tube B is higher than the evolving in tube A.

(20)   The instance where can be applied the gene technology is,

1.   producing soda with CO_2
2.   producing alcohol with yeast
3.   producing bio gas by decomposition of the sewage
4.   producing rice with large amount of vitamin A

(21)   Figure P, Q and R shows the objects that moves in various velocities.

4 m s^{-1} 2 m s^{-1} 4 m s^{-1}

2M   M   M

P   Q   R
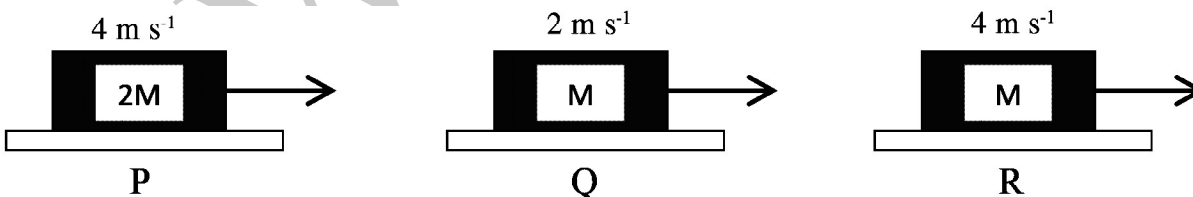
The answer that shows the highest and lowest momentum respectively.

1.   P and Q   2.   Q and R   3.   R and P   4.   Q and P

(22)   To prepare 500 cm^3 a solution of ethyl alcohol of composition 0.02 (V/V)   (C_2H_5OH)

1.   Weigh 10 cm^3 ethyl alcohol accurately and add 500 cm^3 of water
2.   Weigh 10 cm^3 of water accurately and add 500 cm^3 of ethyl alcohol
3.   Weigh 10 cm^3 ethyl alcohol accurately and add up to 500 cm^3 of water
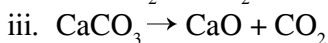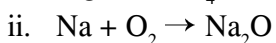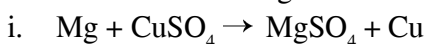4.   Weigh   10 cm^3 of water accurately and add up to   500 cm^3 of ethyl alcohol

(23) What is the proper example of natural growth propagation and appropriately illustrated.

Natural growth propagation	Ex.
1. Runners	'Maharavana raevula'
2. Under ground stems	Carrot
3. Bulbils	Kaladuru
4. Suckers	'Hana'

(24) The answer is in the order in which the wave length of electromagnetic waves is increase gradually from microwaves, x - rays, visible light and infra- red waves.
1. microwaves, infra- red waves, visible light, x - rays
2. x – rays, visible light, infra- red waves, microwaves
3. visible light, microwaves, x – rays, infra- red waves
4. infra- red waves, x – rays, microwaves, visible light

(25) Consider the following reactions.
i. $Mg + CuSO_4 \rightarrow MgSO_4 + Cu$
ii. $Na + O_2 \rightarrow Na_2O$
iii. $CaCO_3 \rightarrow CaO + CO_2$
What is correct order of reaction types for the examples for i , ii, iii reactions gradually.
1. Chemical combination, Decomposition, Single displacement
2. Double displacement, Combination, Decomposition
3. Combination single displacement, Decomposition
4. Single displacement, Combination, Decomposition

(26) What means by the growth of the unicellution organism of Parmecium.
1. Cell specification
2. Increasing the number of cells by dividing.
3. Reversible increase of cell dry weight.
4. Increase the volume and size of the cell.

(27) The diagram shows how a ray of light reflects on a plane mirror. The angle between what the plane mirror and the initial ray is 50^0 What is the angle between the initial ray and the reflected ray.
1. 40^0
2. 50^0
3. 80^0
4. 120^0

50^0
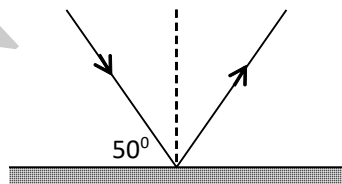
(28) Consider the following statements about a concentration of 0.25 mol dm^{-3} sulphuric acid.
A. The acid is ionized as $H_2SO_4(aq) \rightarrow 2H^+(aq) + SO_4^{2-}(aq)$
B. The total amount of H^+ and SO_4^{2-} ions are $0.75 \times 6.022 \times 10^{-23}$
C. Concentration of H^+ ions is 0.5 mol dm^{-3} and SO_4^{2-} ion is 0.25 mol dm^{-3}
The true statement is from the above is,
1. A and B only.
2. B and C only is true
3. A and C only is true.
4. A, B and C all.
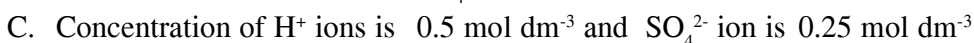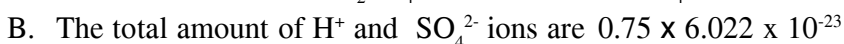
(29) Below are some of the features of an animal family.
   A. Triploblastic
   B. Coelomic and show sexual dimorphism.
   C. Body shows penta radial symmetry.
   Which group of animals includes the above charateristic.
   1. Mollusca   2. Coelenterata   3. Annelida   4. Echinodermata

(30) The place where the light source should be kept in front of the concave mirror to send the light beam to a long distance is,
   1. Focus   2. between focus and center
   3. Center   4. between focus and pole

(31) Select the number of protons, Nutrons and electrons in $^{14}_{7}N^{3-}$ accordingly.
   1. 7, 7, 4   2. 4, 7, 7   3. 7, 7, 4   4. 7, 4, 4

(32) Here are some statement about Causley agents of sexually transmitted diseases.
   A. Disease symptoms are appearing only in sexual organs.
   B. Can be effected by sexual inter cause or body fluid.
   C. Bacterea and viruses may be the disease causley agents.
   Correct statements from these is,
   1. Only A and B   2. Only B and C   3. Only A and C   4. A,B and C all

(33) An object is at the rest because of two forces are act on it in opposite directions. At this point what is the resultant force applied on the object.
   1. Zero   2. Equal to sum of two applied forces.
   3. Equal to difference of two applied forces.   4. Equal to the magnitude of large force.

(34) Select the correct statements to prepare 1 mol dm^{-3} Sodium hydroxide solution.
   (Na = 23 O = 16 H = 1)
   1. Dissolve 40 g of NaoH in 500 ml of water.
   2. Dissolve 20 g of NaoH in 500 ml of water.
   3. Dissolve 40 g   of NaoH in small volume of water and run then top up the solution to 500ml by adding water.
   4. Dissolve 20g of NaoH in small volume of water and run then top up the solution to 500ml by adding water.

(35) Select the name of the disease which infected only to the males because of sex linked recessive gene.
   1. Albinism   2. Haemophilia   3. Thalassemia   4. Colour blindness

(36) The diagram shows balancing a fish on a blade of a knife, the factor that is affected to balance the fish on either side of the balance point.

   1. Equal weights
   2. Equal length
   3. Equal moment
   4. Equal masses
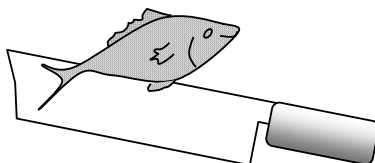
(37) Select the answer which contain the equal number of atoms to the number of atoms in 16g of Oxygen.
($H = 1$ $Mg = 24$ $Na = 23$ $N = 14$)

   1. 12 g of Magnesium   2. 2 g of Hydrogen

   3. 23 g of Sodium   4. 28 g of Nitrogen

(38) The same masses of iron is put in to the test tubes and arranged them as you can see in the figure.
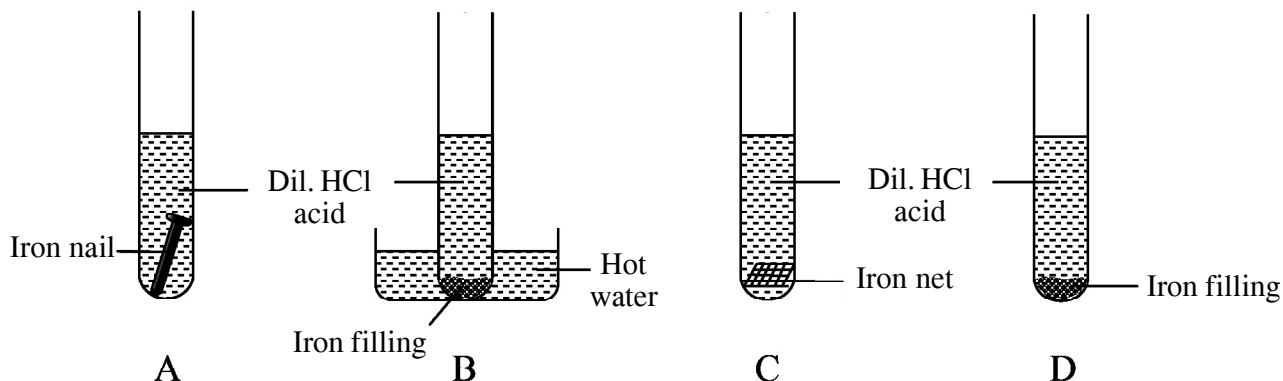
What does the sequence of increasing the reaction rate be correctly specified?

   1. A, D, C and B   2. A, C, D and B   3. B, C, D and A   4. B, D, C and A

(39) The diagram show how a fluorescent lamp is in balance, In here,

   1. $W = R_1 + R_2$

   2. $W = R_1 - R_2$

   3. $W = R_2 - R_1$

   4. $R_2 = W + R_1$
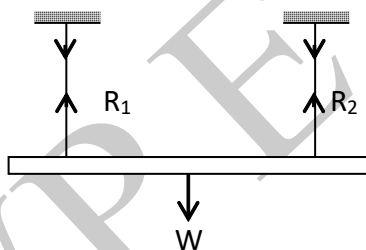
(40) One of the most controversial disease of the year 2020 is the corona virus infection. What is the most accurate clause to prevent this virus from becoming infected?

   1. By using of mouth and nose covers can be avoided.

   2. People should not stay in places where are too crowded.

   3. Doctors and government must control the disease.

   4. all people should contribute to control the spread of the disease.

Provincial Department of Education

Provincial Department of Education – NWP

| 34 | E | II |

Name/Index No. : .... **Science - II** **Time :3 hours**

Instructions :
- **Write your answers in neat handwriting.**
- **Answer four questions in part A in the space provided.**
- **Answer three questions in part B in a seperate paper.**
- **Tie part A and answer script of part B together.**

Part A - Structured Essays

01. (A) Below shows the image of a setup which had places at dark for 48 hours to identify one factor affecting the photosynthesis.
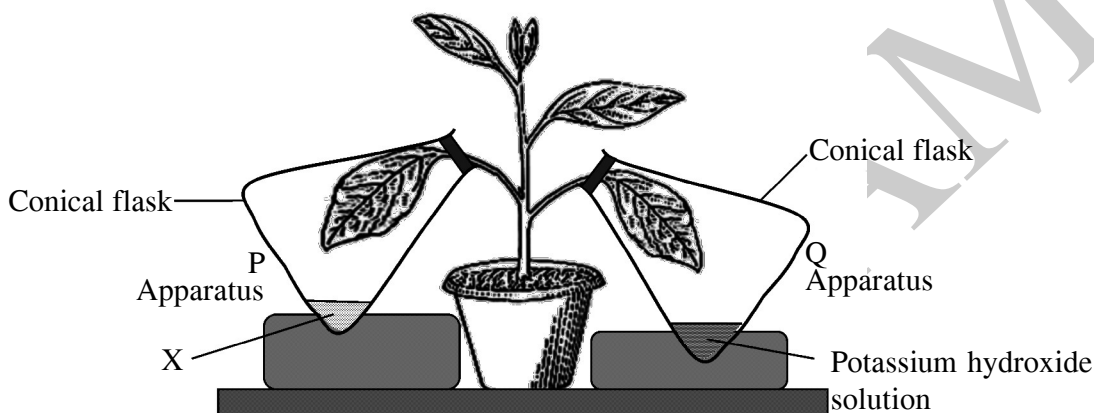
(i) Which factor that affect photosynthesis can be identified from this experiment?

.... (01)

(ii) Which is the hypothesis used when arranging this experimental setup?

.... (02)

(iii) Name the normal experiment and control experiment according to your hypothesis

Control Experiment :- .... Normal Experiment :- .... (02)

(iv) According to the 'P' and 'Q' leaves of the setup.

    a) Write a factor which remains constant.

      .... (01)

    b) What is the variable factor of this experiment?

      .... (01)

(v) What is the first step taken to commence the activity according to the above setup?

.... (01)

(vi) What is the purpose of using aqueous potassium hydroxide to the setup "Q"?

.... (01)

(vii) Which is the compound used as "X" of the setup "P"

.... (01)

(viii) Write two types of ions presented in $KOH_{(aq)}$ / Aqueous Potassium hydroxide solution

.... (02)

(ix) Below shows the setup which is used to identify the type of bonds of matter "X" and $KOH_{(aq)}$ which are used in the above activity.

Carbon rods

Matter X

Setup 1

Carbon rods

Potassium hydroxide solution
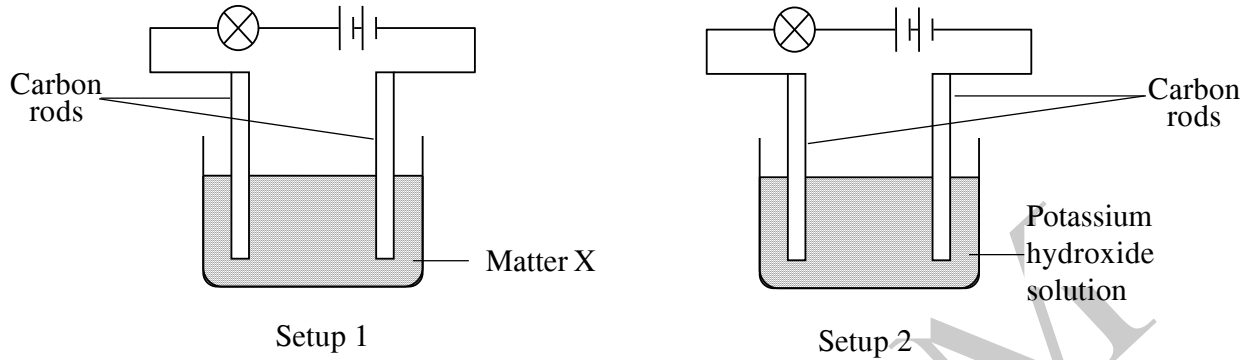
Setup 2

a) What are the observations for lighting up the bulbs in both setups?

1. Setup :- .... (01)

2. Setup :- .... (01)

b) Identify the type of bonds of "X" matter in setup (1).

.... (01)

02. (A) Both "P" and "Q" are animals tissues and "R" is a structural unit of an animals tissue.

y   x

P   **Q**   **R**
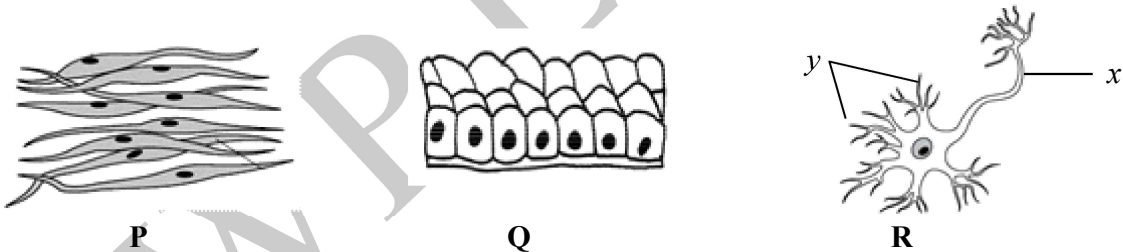
(i) Name the tissues "P" and "Q"

P .... (01)

Q .... (01)

(ii) a) What is the structural unit mentioned by "R"?

....(01)

b) Name the "x" and "y"

x .... (01)

y .... (01)

(iii) Which is the tissue not carrying a blood supply from "P" and "Q"?

.... (01)

(iv) Name a place where filtration is occured by that tissue.

.... (01)

(B)   Below shows a typical cell of human.
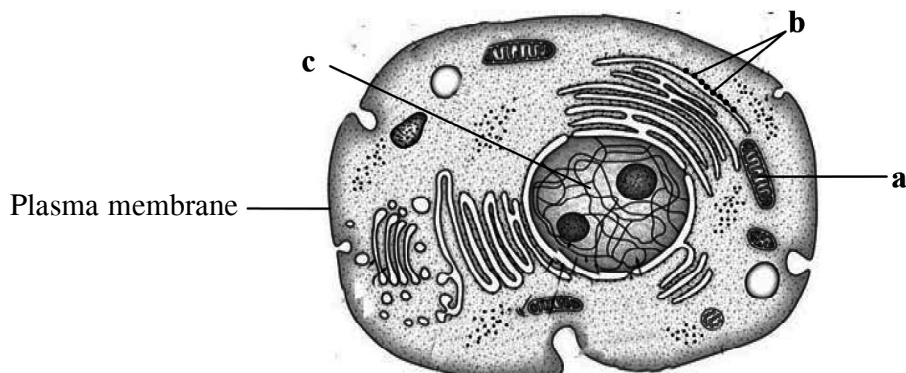
(i)   Fill the table below. Using the organelles which labeled as a, b, and c.

Letter	Name of the Organell	Function of the organell
a	....	....
b	....	....
c	....	Controling the living functions of a cell

(05)

(ii).   Which is the bio molecule contained in the structure "c" that involve to transmit the genetic information?

....   (01)

(iii). The chromosomes inside the structure "c" is under the mitosis. Write the favorable and unfavorable instances of mitosis.

a)   Favorable instance

.... (01)

b)   Unfavorable instance

.... (01)
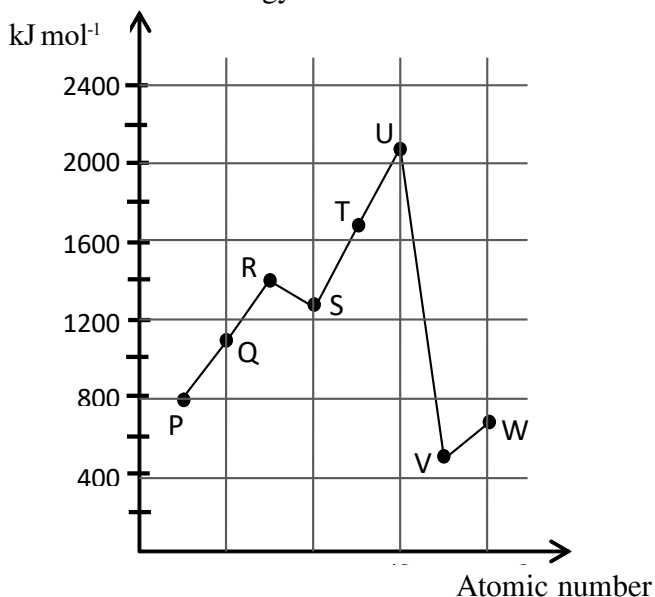
03.   (A)   P, Q, R, S, T, U, V, and W are the adjacent elements of the periodic table and given are not their symbols.

W belong the 3rd period. The first ionization energies of those elements are give below in a graph.

(i)   What is the unit of measuring ionization energy?

....

(01)

First ionization energy
kJ mol^{-1}

Atomic number

(ii).   Define first ionization energy.

....

....

....(02)

(iii)   Identify the above elements which suitable to below descriptions and fill the blanks by their chemical symbols.

    a)   Element with maximum first ionization energy   ....   (01)

    b)   Element with valency 2   ....   (01)

    c)   Element with maximum electronegativity   ....   (01)

    d)   Element with the electronic configuration of 2, 8   ....   (01)

(iv)   Write the chemical formulae which is formed by the element "V" and "S"

    ....   (01)

(v)   Draw the lewis structure of atomic compound which is formed "Q" with Hydrogen / H.   (01)

(B)   Three atoms are expressed below.

$$^{35}_{17}x, \quad ^{37}_{17}y, \quad ^{39}_{19}z,$$
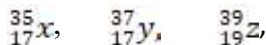
(i)   What are the isotopes from above atoms?

    ....   (02)

(ii)   Mention a characteristic that can be used to identify above atoms as isotopes.

    ....   (01)

(iii)   Mass of an atom of z is 6.476×10^{-23} g Atomic mass unit is 1.67×10^{-24}. Hence find the relative atomic mass of "Z"

    ....

    ....

    ....   (03)

04. Below table shows the variation of the velocity of a Motor - Bike with the time which travels in a linear path. Mass of the bike is 200kg and the child is 50kg.

Time t (s)	0	4	8	12	16	20	24	28	32
Velocity v (m s^{-1})	0	10	20	30	30	30	30	15	0

(i) Plot the velocity time graph for above motion.
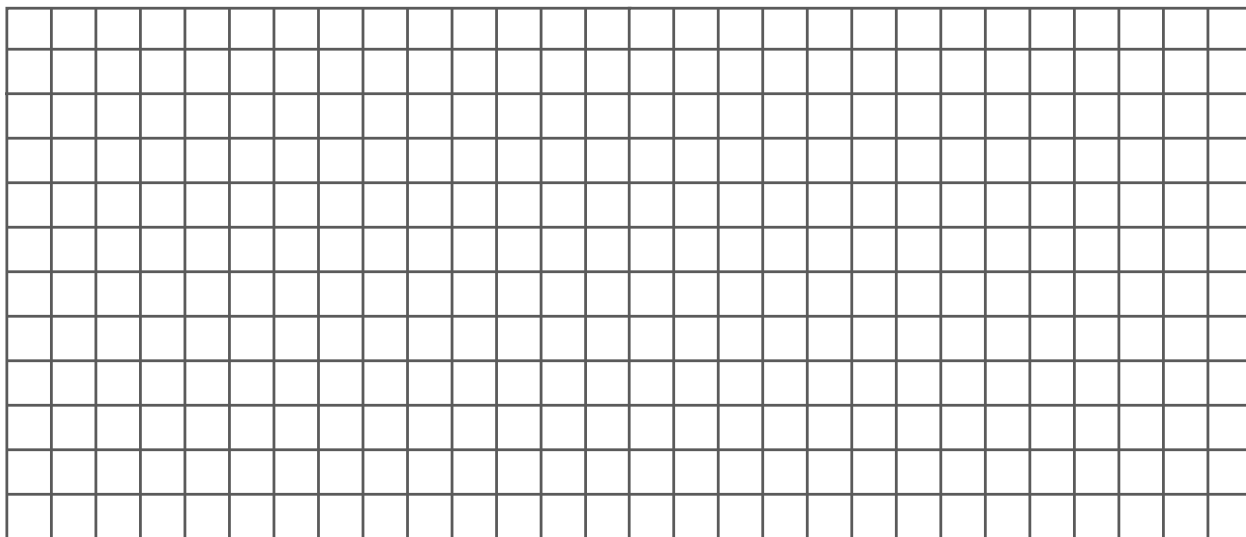
(ii) Mentions the motion of the Bike for following time periods.

    a) from 12s to 24 s .... (01)

    b) from 24s to 30 s .... (01)

(iii) What are the Newton Laws that related with below instances.

    a) Bike is at rest before the moving.

    ....(01)

    b) When accelerating the bike.

    ....(01)

(iv) Find the acceleration of bike within first 12 s using the graph.

    ....

    ....(02)

(v) Find the force exerted on the bike above instance.

    ....

    ....(02)

(vi)   Find the kinetic energy of bike with in the time 12 s to 24 s

....

....

....(02)

(vii) Find the total displacement of the object?

....

....

....(03)

Grade 11 - Science - Part - B

05. (A) The followings are some steps of a monohybrid cross which has done to identify the shape of the seed of an experiment about the inheritance done by Mendel.

   A. Do a cross pollination in between pure breeds with round seeds and wrinkled seeds.
   B. The all plants of F_1 generation were round seeds.
   C. Allow self- pollination to take place within F_1 generation.
   D. The F_2 generation was received 574 with round shaped seeds and 1850 with wrinkled shaped.

   (i) What is the contrasting character which has used in above monohybrid cross?   (01)
   (ii) For the shape of the seeds in F_1 generation,
       a. What is the dominant characteristic?   (01)
       b. What is the recessive characteristic?   (01)
   (iii) How did you decide the answers to a and b in the above (iii)   (01)
   (iv) Using R and r as appropriate to the shape of the seeds,
       a. Write down the genotypes of the generation P.   (02)
       b. What is the ratio in between round and wrinkled seeds in F_2 generation?   (01)
   (v) What are the genotypes of round seeds in F_2 generation?   (02)
   (vi) Write down the phenotype which can be observed in F_2 generation except F_1 (01)

   (B) The reproduction is the essential process to the continuity of the plant life. The following outline is for the reproduction process of the plant.
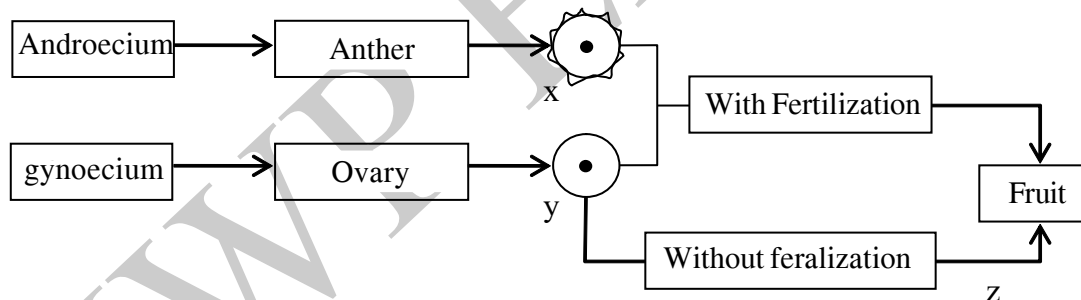
   (i) Name the x and y structures.   (02)
   (ii) The structure represent by x,
       a) Deposits on which part of the gynoecium?   (01)
       b) What is the name of the process of that deposition?   (01)
   (iii) Briefly explain the word fertilization   (01)
   (iv) What is the part of the fruit that y becomes after fertilization.   (01)
   (v) What is the name of the process that producing fruits as in the "z"   (01)

   (C) A twig of an orange plant has grafted to the wood apple plant.
   (i) Name the scion and the stock respectively   (02)
   (ii) Write down an important characteristic that can lead to the use of a wood apple plant for the grafting.   (01)

06. (A) K, L and M are three types of solvents. A student sketched the spread of the components when they are mixed together.
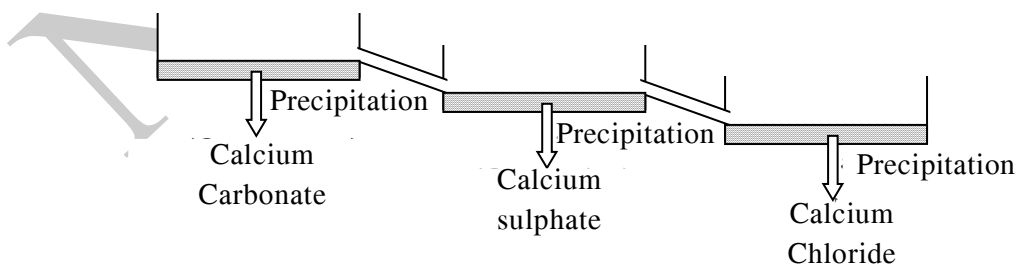
○ M
● L

L+M

K

L

P   Q
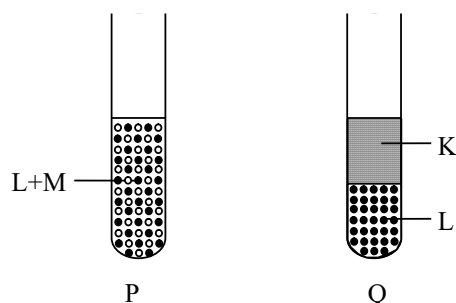
(i) What is the homogenous mixture? (01)

(ii) Briefly explain the reason for the selection of the above mixture as the homogenous one according to the figure. (01)

(iii) Iodine is well dissolved in K solution and slightly dissolved in L solution. If the solvent used for the activity are water. thinner and alcohol,

     a) Name the suitable solvents to K and M (02)

     b) What could be said about the polarity of the L and M solvents? (01)

(B) The following figure shows one step of a laboratory experiment which has done to separate the Iodine from aqueos solution of iodine.

Aqueous iodine solution

CCl_4

X
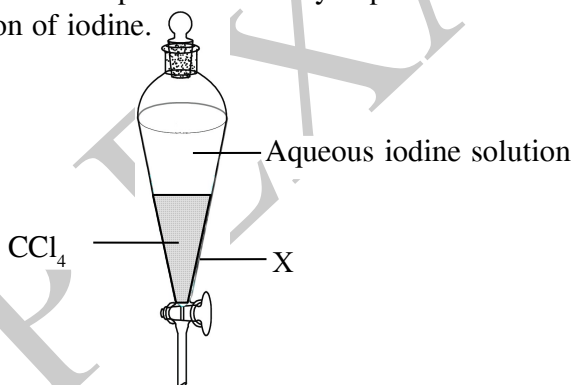
(i) a) Name the device X. (01)

     b) Name the above method which has taken to separate the iodine. (01)

(C) Following is a figure regarding to the structure of a saltern and the chemicals deposited in each tanks.

Precipitation

Calcium Carbonate

Precipitation

Calcium sulphate

Precipitation

Calcium Chloride

(i) Write down the chemical formulae of the Calcium sulphate. (01)

(ii) Write down the descending order of the solubility of the chemicals deposited in the tanks. (01)

(iii) Salt extracted from the 3rd tank dissolves when exposed to the air. What is the reason for it. (01)

(iv) There are 29.25 g of salt has dissolved in 250 cm³ of salt solution taken from the second tank. (Na = 23, Cl=35.5)

     a) Find out the formula mass of the sodium chloride. (01)

     b) What is the number of moles of sodium chloride in 250 cm³ solution. (02)

     c) Calculate the concentration of the solution. (03)

     d) Write down four steps in order to make the above sodium chloride solution in laboratory. (04)

07. (A) As shown in the figure a ball of metal hanging from a string is pulled aside and released to collide with a metal plate. The two positions of the metal ball are shown as (i) and (ii)
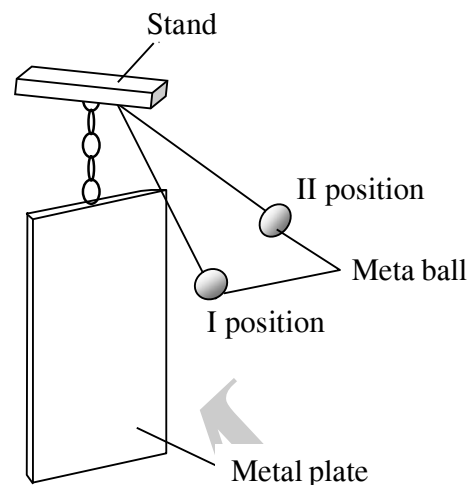
(i) At which point more force is applied to the metal plate? (01)

(ii) What is the characteristic of sound that causes the voice to differ from each other in two situations? (01)

(iii) What is the character of sound wave which depends on that characteristic? (01)

(iv) The following image shows a sound wave associate with the sound created due to collision of the metal ball.
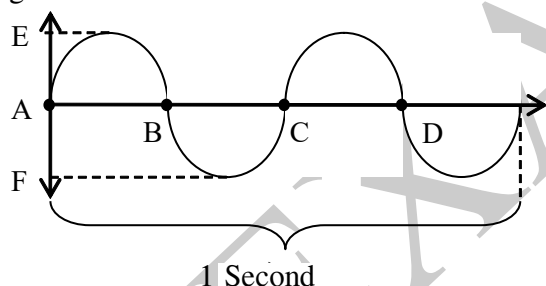
a) Write the wave length and the amplitude respectively by using the English letter given in the image. (02)

b) What is the frequency of the wave? (01)

c) Find the velocity of the wave if the distance in between A and B is 0.5m. (01)

(v) What is the device that can be used to demonstrate transvers and longitudinal waves in laboratory? (01)

(vi) Write two characteristics of light waves which can be taken to differ it from the above wave created through the activity. (02)

(B) A mercury barometer, which is immobilized in a fully air tight glass chamber is shown in the figure given below. A tap has fitted to the tube x. It can be used to open and close the chamber. The height of the column is 76 cm at the sea level when the tap is open.
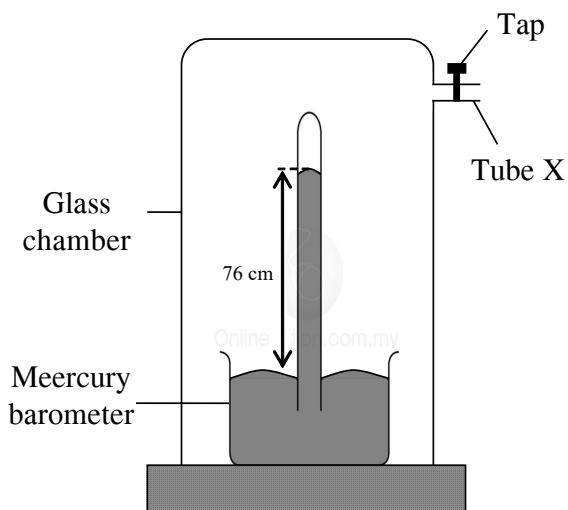
(i) Note the change of the height of the mercury column in each of the following cases.

a) Close the tap (01)

b) Insert air in to the chamber. (01)

c) Removing air from the chamber. (01)

(ii) What is meant by 76 mercury centimeters (76 cm Hg) of atmospheric pressure at sea level. (02)

(iii) When the barometer with the glass chamber was taken to a top a mountain with the height of 250m, the height of the mercury column was 5 cm. Find out the atmospheric pressure at the top of the mountain. (Density of the mercury 13600 kg m^{-3} , g = 10 m s^{-2}) (03)

(iv) If the mass of the barometer is 2.5kg, find out the gravitational potential energy at the top of the mountain. (02)
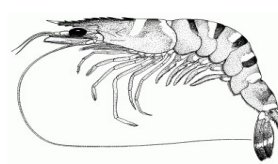
9

08. (A)   Following are the picture of some organisms observed by grade 10 students in a field visit.
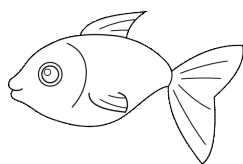

Fish   Algae   Prawn

One student said that classification is important to identify these organisms.

(i)   Write down an other important of classification of organisms other than the student mention.

(01)

(ii)   What is mean by classification of organisms?   (01)

(iii)   a)   What is the domain of the all three organisms observed by students?   (01)

        b)   Mention one main characteristic that can be used to distinguish the above domain from the other two domains.   (01)

(iv)   Of the observed organisms, the two animals can be classified in to two main groups of animals. what is the internal characteristic which can be used to do that?   (01)

(v)   Fish has included in the Pisces in the classification. Write a feature that cans only be seen in the group of Pisces which can be taken to do that.   (01)

(vi)   a)   What is the group of animal that prawn belongs to?   (01)

        b)   Write an external characteristic of the animals in this group which is used to protect the internal body parts.   (01)

(vii)   In the classification,

        a) What is the kingdom where the algae belongs?   (01)

        b) Wrtie an example for heterotrophic unicellular organism.   (01)

(B)   The following figures shown three different liquids which are used to done an experiment about up thrust. The mass of the wooden block is 0.5kg and it does not absorb the water.
(Density of the Y = 900 kg m^{-3} g = 10 m s^{-2})

A   B   C
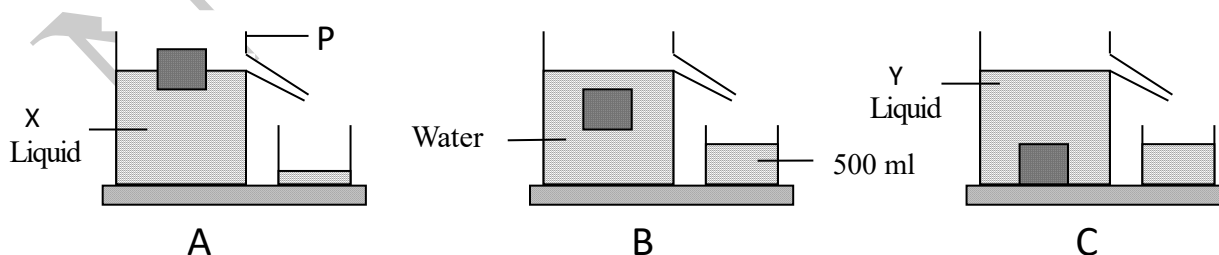
(i)   What is the device P used in above activity?   (01)
(ii)   Which liquid has the equal density to the wooden block?   (01)
(iii)   What is the weight of the wooden block?   (01)
(iv)   What is the relationship in between the weight and the upthrust in the situation "C"   (01)

(v) The D wooden block was raised slightly according to the figure by using a Newton spring balance.

    a) If the displaced liquid volume is 500ml, what is the mass of the liquid? (02)

    b) What is the upthrust that "Y" liquid is given on the wooden block? (02)

    c) What was the reading of Newton balance at the situation "D"? (02)
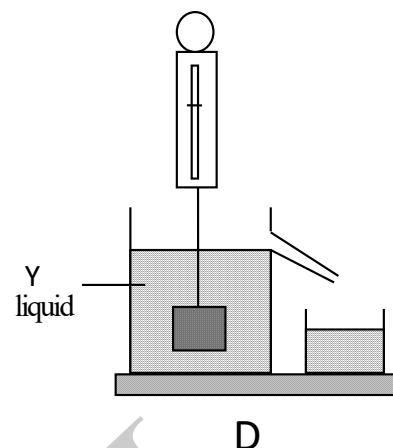
09. (A) A student placed three X, Y and Z metals belonging to the activation series separately in to three tubes containing heated distilled water. Than the air bubbles released from the tube with Y metal. The tubes with X and Z did not change. When the X and Z put into the dil. Sulphuric acid, X was dissolved by releasing a gas Z did not change.

(i) What is the gas released from tube with metal Y? (01)

(ii) Prepare X, Y and Z respectively to the activity series. (01)

(iii) From the above metals,

    a) Which one is bunt with a bright flame? (01)

    b) What is the colour change that occurs when the above mentioned residue of the metal is dissolved in distilled water and blue and red litmus are added to it? (01)

    c) What is the reason for the colur change? (01)

(iv) Write down the methods of extraction in order of the x, y and z metals. (03)

(v) a) Select the metal among Y and Z which can be taken to displace the x from the X_2SO_4 aqueous solution. (01)

    b) Write down the reason for the above "a" (01)

(B) The following figure is shown an apparatus created by using two similar diameter nichrome and aluminum wire for the study of several factors affecting to the resistance. The following are some of the cases in which the key "S" touches the metal wire during the activity.

Case 1 - P and R

Case 2 - P and Q
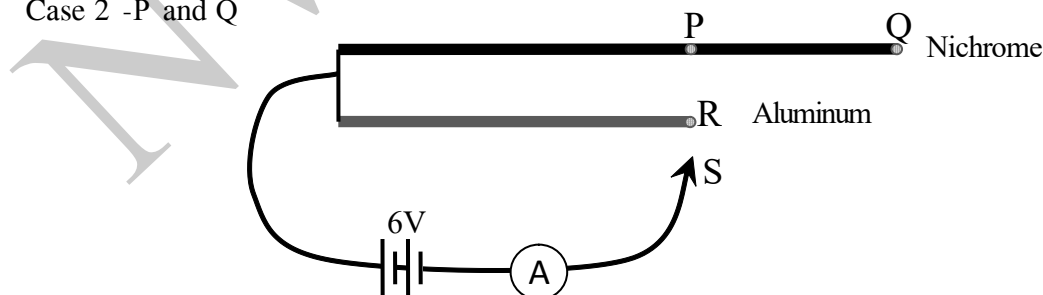
(i) Write the name of how the cells are connected in the apparatus. (01)

(ii) Write down the factors which are investigated during the cases 1 and 2 which affected to the resistance (02)

(iii) What is the factor that should be kept in constant when planning the activity? (01)

(iv) When touch P and R in case 1, the ammeter reading was I_1 and I_2, Write them in ascending order. (01)

(v) When touch S and Q, the ammeter reading was 0.5 A. Calculate the resistance of the wire. (03)

(vi) By copping the figure, mention the way of connecting a volt meter in order to measure the voltage among P and Q. (02)