
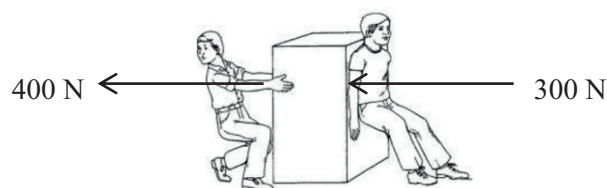


07. What is the correct statement regarding the meiosis?
- 1) Take place in diploid as well as haploid cells
 - 2) One mother cell produces two daughter cells
 - 3) Daughter cells are identical to the mother cell in every aspect.
 - 4) Daughter cell receive half number of chromosomes as the mother cell.
08. What is the relative molecular mass of $\text{CO}(\text{NH}_2)_2$ molecule ? (C= 12, H = 1, O = 16, N = 14)
- 1) 33
 - 2) 58
 - 3) 60
 - 4) 88
09. What is the acceleration occupied by an object with 2 kg mass, when a force of 20 N is applied?
- 1) 0.1 m s^{-2}
 - 2) 10 m s^{-2}
 - 3) 20 m s^{-2}
 - 4) 22 m s^{-2}
10. Who is the organisms without an organizational level as ?
- Cell → Tissue → Organ → System → Organism
- 1) Amoeba
 - 2) Earth worm
 - 3) Snail
 - 4) Human
11. The living forms which are difficult to recognize as living things and nonliving objects are
- 1) Bacteria, virus and yeast
 - 2) Virus, yeast and euglena
 - 3) Yeast, amoeba and sea anemone
 - 4) Amoeba, sea anemone and bacteria.
12. The living group of the organism shown in the following picture is,
- 1) Pisces
 - 2) Amphibia
 - 3) Reptilia
 - 4) Aves
- 
13. What is the alternative which contains elements can displace hydrogen from diluted hydrochloric acid?
- 1) Mg, Zn, Cu and K
 - 2) Mg, Zn, Hg and K
 - 3) Na, Zn, Au and Fe
 - 4) Mg, Zn, Fe and Na
14. When friction is created on a moving object by contact surfaces,
- 1) The static friction takes a constant value
 - 2) The dynamic friction takes a constant value
 - 3) The dynamic frictional force is slightly greater than the static frictional force
 - 4) The frictional force takes a minimum value at the limiting situation
15. The reaction occur in which way to give a minimum rate of reaction?
- 1) A strip of Mg react with diluted HCl acid.
 - 2) A strip of Mg react with concentrated HCl acid.
 - 3) A strip of magnesium is converted Into pieces and react with diluted HCl.
 - 4) A strip of magnesium react with diluted HCl which is kept In a hot water vessel.
16. The condition which occur due to the mutation of a gene responsible for making hemoglobin of an autosomal chromosome is?
- 1) Thalassimia
 - 2) Hemophilia
 - 3) Albinisms
 - 4) Red green colorblindness

17. Which is defined as sexual reproduction is
- 1) Reproduction takes place among animals
 - 2) Reproduction takes place among plants
 - 3) Production of a new organism by fertilization of gametes
 - 4) Production of new off springs by spores
18. What is the correct statement regarding the frictional force?
- 1) The frictional force of a road always acts as a barrier to the motion.
 - 2) When moving on a road with a constant velocity, the frictional force becomes zero
 - 3) When riding a bicycle, the frictional force by both wheels acts backwards
 - 4) When moving with a uniform velocity, the force given by the engine for motion is equal to the friction
19. When forming an ionic bond,
- 1) Only the donation of electrons takes place
 - 2) Only the reception of electrons takes place
 - 3) Donation and reception of electrons should take place
 - 4) Sharing of electrons should takes place and polarization must happen
20. Followings are three inherited characteristics which are seen among humans
- A. Dimpled cheek
 - B. Left handedness or right handedness
 - C. Syndactyly and polydactyly
- Rarely seen inherited characteristic out of them is / are,
- 1) A and B only
 - 2) B and C only
 - 3) A and C only
 - 4) C only
21. Protium, which is an isotope of hydrogen is standardly represented as ${}^1_1\text{H}$. The number of neutrons of protium is,
- 1) 0
 - 2) 1
 - 3) 2
 - 4) 3
22. Consider the following statements regarding the equivalent resistance of a circuit.
- A. The equivalent resistance increases when equal resistors are connected in series connection
 - B. The equivalent resistance decreases when equal resistors connected in parallel connection
 - C. The equivalent resistance decreases when un equal resistor are connected in series connection
- The correct statements our of them are,
- 1) A and B only
 - 2) B and C only
 - 3) A and C only
 - 4) A, B and C only
23. As shown in the diagram, two men's apply forces on an object which is kept on the floor. What is the resultant force created on the object? (Assume that forces of two persons act on the same line of action.)

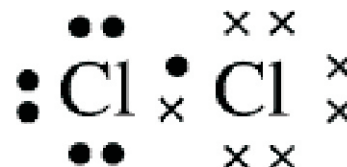
- 1) 0 N
- 2) 100 N
- 3) 400 N
- 4) 700 N



24. What is the correct statement regarding the number of atoms contained in 17 g of NH_3
- 1) There is a higher number of N atoms
 - 2) The number of H atoms is three times as the N atoms
 - 3) There is an equal number of N and H atoms
 - 4) The number of N atoms is three times as the H atom
25. ${}_{20}^{40}\text{Ca}$ atom removes two electrons and form an ion as Ca^{2+} . The number of protons, neutrons and electrons of that ion respectively are?
- 1) 20, 20 and 40
 - 2) 20, 20 and 38
 - 3) 20, 20 and 20
 - 4) 20, 20 and 18

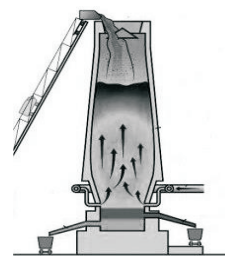
26. Following diagram shows how chlorine atoms share their electrons. It represents.

- 1) The bond formation of chlorine by a diagram
- 2) The dot cross diagram of chlorine molecule
- 3) Lewis dot diagram of chlorine molecule
- 4) Lewis structure of chlorine molecule



27. The diagram shows a Blast furnace. What is the decomposition reaction takes place in it out of the followings

- 1) $\text{C} + \text{O} \longrightarrow \text{CO}_2$
- 2) $\text{CaCO}_3 \longrightarrow \text{CaO} + \text{CO}_2$
- 3) $\text{Fe}_2\text{O}_3 + 3\text{CO} \longrightarrow 2\text{Fe} + 3\text{CO}_2$
- 4) $2\text{KMnO}_4 \longrightarrow \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{O}_2$



28. Consider the following statements regarding the conditions that must be fulfilled in equilibrium of two forces.

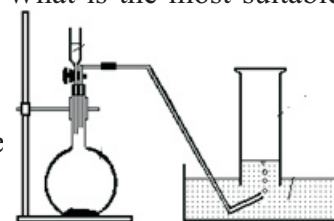
- A. Two forces must be equal in magnitude.
- B. The line of action of two forces must be parallel.
- C. Two forces must be opposite in direction

Correct statements out of them are

- 1) A and B.
- 2) B and C.
- 3) A and C.
- 4) A, B and C all

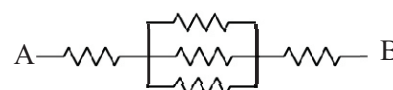
29. The diagram shows an apparatus used to produce CO_2 by reacting a mass of CaCO_3 as large pieces and small pieces in two occasions with diluted hydrochloric acids. What is the most suitable method to measure the rate of reaction of that instance?

- 1) Compare the mass of CaCO_3 consumed in a unit time.
- 2) Compare the mass of the volume of HCl acid consumed in a unit time
- 3) Compare the volume of CO_2 gas collected in a unit time
- 4) Compare the remaining CaCO_3 in a unit time



30. Five equal resistors of $6\ \Omega$ are connected as shown in the diagram. What is the equivalent resistance between A and B?

- 1) $6\ \Omega$
- 2) $18\ \Omega$
- 3) $14\ \Omega$
- 4) $30\ \Omega$



37. A hydrogen filled balloon is moving up, Consider the following statements regarding this,
- A) Up thrust created by air is greater than the weight of the balloon
 - B) Resultant force is exerted in upward direction

Out of these statements,

- 1) A is correct and B is incorrect.
- 2) B is correct and A is incorrect
- 3) A and B statements are correct
- 4) A and B statements are incorrect

38. A person is pushing a wheel barrow to 10m distance on a horizontal road by applying a continuous force of 500N. What is the work done by the person?

- 1) 0 J
- 2) 0.02 J
- 3) 50 J
- 4) 5 000 J



39. Followings are some properties of water

- A. Most of the substances are soluble in water
- B. Ice floats on water
- C. More heat should be supplied to convert liquid water in to the gas.

Out of them, the properties which help for the maintenance of life

- 1) A and B only
- 2) B and C only
- 3) A and C only
- 4) A, B and C only

40. Consider the following statements regarding the Covid 19 epidemic.

- A. It is not important to wear a mask by a person who is travelling in a closed motor vehicle.
- B. Hands should be washed by students when departing the school.
- C. Masks should be worn when suffering from cold or staying close to a patient with cold.

Out of these statements, the actions that should be taken to protect from Covid 19 epidemic are

- 1) A and B only
- 2) B and C only
- 3) A and C only
- 4) A, B and C all



Provincial Department of Education - North Western Province
Third Term Test 2020

Grade 10

Science II

Time - three hours

Name / Index number : _____

Instructions:-

Write your answers in neat hand writings.

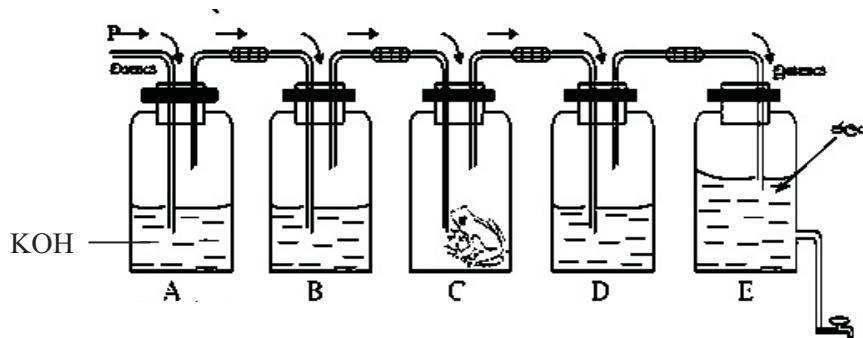
Answer the four questions in part A, in the space provided.

Answer only 03 questions out of five questions in part B. Use separate papers to write answers.

Attach part A and Part B answer script together and hand over.

Part A - Structured Essay

01. Respiration can be considered as a characteristic of life. The diagram shows an apparatus used to identify a gaseous product of respiration.



- i. What is the gaseous product expected to identify using the above apparatus?..... (01 m.)
- ii. Name the gaseous and the solid matter used by living beings to synthesize energy. (02 m.)
.....
- iii. When the tap connected to the vessel E is opened, the air enters from P end and travels through A, B, C and D vessels. The vessel A contains a KOH solution and the vessels B and D contain a solutions of lime water. State the purpose of putting those solutions in A, B and D vessels in the table given below.

Vessel	Liquid contain	Function
A	KOH	
B	Lime water	
D	Lime water	

- iv. Mention the observation and the reason when bubbling air through the limewater in B and D vessels.

Vessel	Observation	Reason for the observation
B		
D		

- v. What would be the observation when the air is bubbled through the lime water in A and D Vessels without putting a frog in vessel C as prepared in the above step? (02 m.)

.....

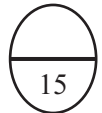
- vi. What is the organelle which produce energy in the process of respiration?..... (01 m.)

.....

- vii. If the amount of moles of KOH dissolved in the vessel A is 0.1, what is the mass of KOH dissolved.

(K= 39, O= 16, H= 1) (02 m.)

.....



02. A. The diagram shows a longitudinal section of a typical flower.

Label the parts of the flower shown by the following letters.

- A.
 B.
 C.
 D.
 E.
 F.



- i. What is the letter which indicates the structure produce male gametes or pollens (01 m.)

- ii. Write using the letters o the path which the male nucleus of a pollen grain is travelled till the fertilization takes place..... (01 m.)
- iii. Write an adaptation shown by E for pollination by insects. (01 m.)

- iv. What is the use of the structure G ? (01 m.)
- v. If this flower shows the adaptations for cross pollination, state a such adaptation (03 m.)

B. Fruits are formed after fertilization of ovules. Dispersal of those fruits and seeds important for the existence of the plant.

i. Write an adaptation shown by plants mango, Hora and rubber for dispersal of seeds. (03 m.)

a. Mango -

b. Hora -

c. Rubber -.....

ii. State four requirements for seed germination. (02 m.)

.....

.....

iii. Dormancy or seeds not being germinated although the required factors are fulfilled. Write a factor which affect this condition (01 m.)

.....



03. Following table shows the information of some elements. The symbols given are not real and use only those symbols to answer the questions.

Element	P	Q	R	S	T	U
Atomic number	3	5	6	8	9	11

i. What are the two elements of the periodic table belong to the same group (01 m.)

ii. Name the period and the group in which the element U belongs (01 m.)

iii. Write the formula of the compound formed by combining elements U and T..... (01 m.)

iv. Out of the elements given in the table, name a metal, metalloid and a non metal. (03 m.)
 Metal: Metalloid: Non metallic element :

v. If the atomic mass of the element U is 3.818×10^{-23} g and the value of atomic mass of carbon atom is mass unit is 1.66×10^{-24} g What is the relative atomic mass of the element U? (02 m.)

vi. If the relative atomic mass of element S is 16. Of the element S
 a. What is the molar mass ? (01 m.)
 b. What is the mass of two moles ? (01 m.)
 c. What is the number of atoms in three moles? (01 m.)

vii. Provide following information regarding the element S

- a. Number of electrons :
- b. Electronic configuration :
- c. In order to show the nature of bond created by sharing electrons.



Dot cross diagram



Lewis structure



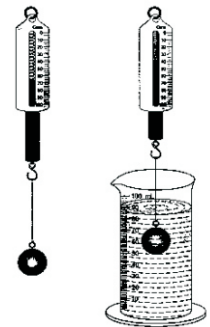
04. A. The diagram shows how a metallic sphere is hanged in a newton balance and that sphere is submerged in a graduated vessel caontining water. (Density of water = $1000 \text{ kgm}^{-3} / 1 \text{ g cm}^{-3}$)

i. If the reading was raised from 100 cm^3 when the metallic sphere is submerged in water.

a. Express the mass of raised volume of water by g and k.g.
 (01 m.)

b. What is the weight of this volume of water?
 (02 m.)

c. What is the up thrust created by the metallic sphere
 by water? (02 m.)



ii. If the volume of water in the vessel is replaced by a similar volume of coconut of coconut oil and the metal sphere is submerged again. State whether the following measurement get decrease, increase or no change relative to the prevoius value.

(03 m.)

a. The raised volume of coconut oil :

b. The reading of newton balance :

c. The upthrust created by coconut oil :

iii. Following shows readings of the newton balance of the above three instances.

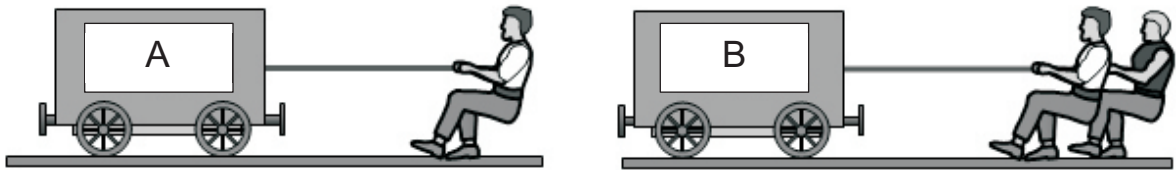
4 N

4.1 N

5 N

Out of this, what can be the weight of the metallic sphere? (01 m.)

04. B. The diagrams A and B show two situations where a force is applied on an object.



A- Exerts a 500 N force. No movement

B- Exerts a 600 N force. Movement just begins.

i. Out of the static, limiting and dynamic friction, how is the frictional forces created in these two situations can be defined. (02 m.)

A -

B -

ii. Is that the force exerted in the above two situations. less than , greater than or equals to the frictional force acted oppose to them ? (02 m.)

A Situation :

B situation :.....

iii. If the force exerted by a person in B situation is 500N what is the force exerted by the other person ? (01 m.)

.....

iv. Show with an arrow in the diagram A how the frictional force is created when the person exerts a force in A instance. (01 m.)

Part - B

05. A. Carbohydrates, proteins, lipids and nucleic acids can be stated as organic compounds which make up the living matter. Following table shows some information regarding these organic compounds.

Compound	Constituent elements		Building unit
Carbohydrate	Carbon, Hydrogen,	A	Glucose
Protein	Carbon, Hydrogen, Oxygen	B	Q
Lipids	A, C, D	-	R
Nucleic acids	Carbon, Hydrogen, Oxygen	B, E	S

- i. Name the elements A,B,C,D and E correctly (03 m.)
- ii. What are building units stated as Q,R and S (03 m.)
- iii. Name the reagents used to identify the following compounds and state the observations in the presence of the above compounds. (06 m.)
 - a. Starch
 - b. Protein
 - c. Lipid

B. Pay your attentions to the living creatures given in the following pictures. Write answers using given organisms only.



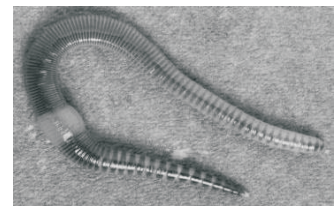
Thilapia



Scorpion



Hydra



Earth worm

- i. Classify the above organisms as vertebrates and invertebrates. (02 m.)
- ii. Who is the diploblastic organism? (01 m.)
- iii. Write separately the living groups of the above four organisms. (01 m.)
- iv. Write a feature which is present only in the group in which the scorpion belongs, but not in the other three organisms. (01 m.)

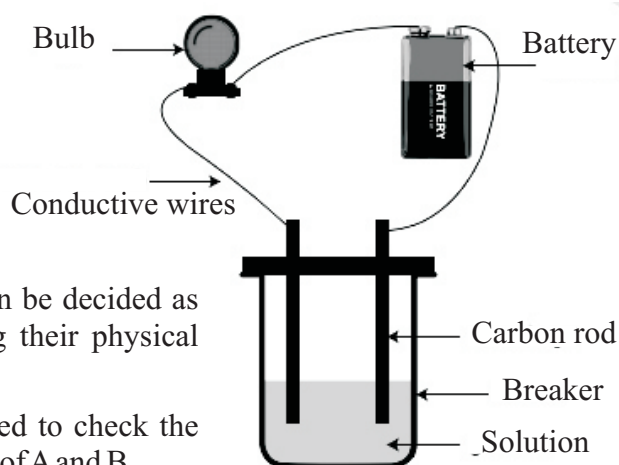
(Total marks 20)

06. A. Consider the following 20 elements. Answer the following questions using these elements.

He, B, H, Na, Mg, C, Li, N, Ca, S, Ar, K, Si, P, Be, O, Al, F, Ne, Cl,
--

- i. Arrange the above 20 elements according to the atomic number from 1 to 20. (02 m.)
- ii. Write all the elements which have the valency 2 (02 m.)
- iii. What is the formula of compounds formed by Mg with Cl and O. (02 m.)
- iv. What is the element with highest electronegativity (01 m.)
- v. Select and write the element having highest first ionization energy (01 m.)
- vi. Write two elements which naturally exist as di atomic molecules (02 m.)

- B. A group of students planned an activity to identify the nature of bonds in ionic and covalent compounds. There were compounds namely A, B, C and D used in the experiment. The compounds A and B were in solid state and C and D were in liquid state.



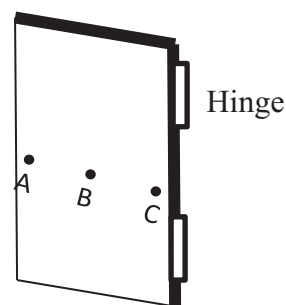
- i. Name the two compounds which can be decided as covalent compounds by considering their physical state? (02 m.)
- ii. Following type of apparatus was used to check the conductivity of the aqueous solutions of A and B.

The bulb in the external circuit was lighted up when A is used as the aqueous solution.

The bulb in the external circuit didn't get lighted up when B is used as the aqueous solution.

- a. Out of the A and B compounds name the Compound with ionic bond and covalent bond respectively (02 m.)
- b. If a fused liquid is used instead of the aqueous solution of A What would be the observation regarding the glowing of The bulb? (01 m.)
- c. State repectively whether the solid state of compounds A and B conduct electricity or not. (02 m.)
- d. State the observation regarding the glowing of the bulb when C and D compounds are used as the aqueous solutions. (02 m.)
- e. Write a reason of using carbon electrodes for the experiment. (01 m.)

07. A. A turning effect can be made by applying a force on an object. The force applied for this depends on the distance from the axis of roation to the line of the action of force.

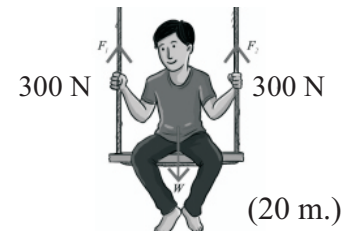


- i. Following diagram shows three places where force is applied to turn a door. What is the point to which a higher force should be applied to turn the door? (01 m.)
- ii. The distance from the rotational axis of two hinges to the Point A is 90 cm. If the minimum force to turn the door. From the point is 5N, Calculate the moment of the force. When turning the door. (03 m.)
- iii. If the distance from axis of rotation to the point B is 45m. Calculate the minimum force should be applied to turn the door from the point B. (02 m.)
- iv. What is suitable place fix a handle to open and to close the door out of A, B, C points. (02 m.)
- v. State whether a couple of force creates or not in the following situations where a moment of force is created. (03 m.)
 - a. Turning the padel of a bicycle.
 - b. Turning the handle of a bicycle with both hands.
 - c. Turning the steering wheel of a vehicle with a single hand.

- B. If an object remains at rest when the forces are applied, the external forces exerted on the object are said to be at an equilibrium. Following diagram shows such an instance.



- i. Write three requirements to be fulfilled to remain the rope at rest. although the people are applying forces. (03 m.)
- ii. If the resultant force exerted by the people in Side A is 1500 N and all the people in side B exert equal forces.
 - a. What is the resultant force exerted by people in the side B? (02 m.)
 - b. What is the force exerted by a person in the side B? (01 m.)
- iii. The diagram shows how a child is rest on a swing.
 - a. What is the resultant force created on the swing ? (01 m.)
 - b. What is the mass of the child ($g=10\text{ms}^{-2}$)



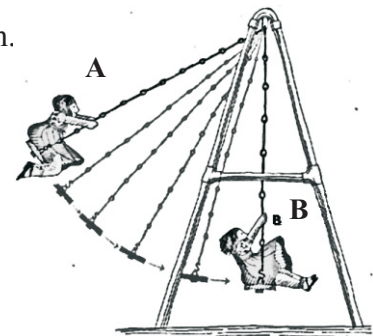
08. A. In the process of human reproduction, the fertilization of male gametes with female gametes take place in the female reproductive system.
- i. Write the names of male gametes and female gametes respectively. (02 m.)
 - ii. Name the place where fertilization of male gamete with a female gamete takes place? (01 m.)
 - iii. Simply explain the words fertilization and implantation. (02 m.)
 - iv. If the number of chromosomes in male gametes is 23, state the number of chromosomes in female gamete and zygote respectively. (02 m.)
 - v. Simply explain how meiosis is important for the process of human reproduction. (02 m.)
 - vi. Name a hormone which helps to regulate the menstrual cycle of females. (01 m.)

- B. A and B of the diagram show two positions passed by a child with 40kg mass when swinging ($g=10\text{ms}^{-2}$)

The vertical height to the position A from the ground is 2m

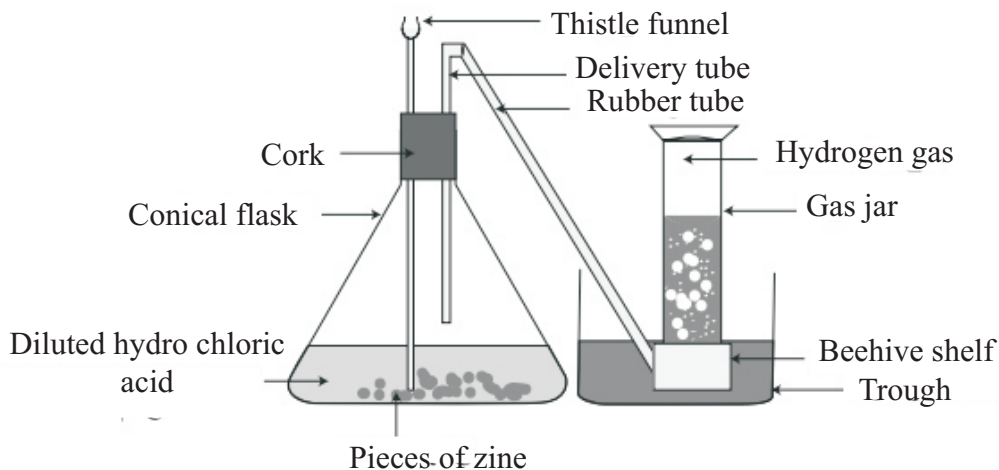
The vertical height to the position B from the ground is 1m.

- i. What is the potential energy of the child at the position of A? (03m.)
- ii. What is the potential energy of the child at the position B? (01m.)
- iii. What are the positions having highest and lowest kinetic energy out of A and B positions? (02m.)

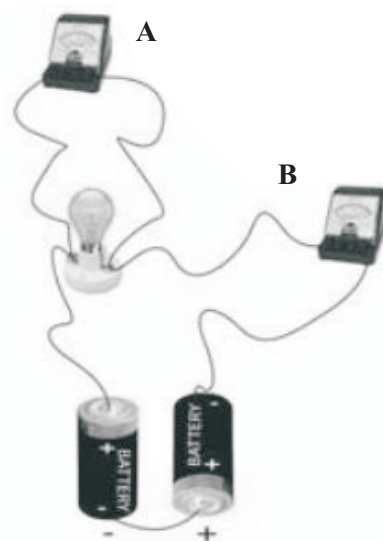


- C. A ripen fruit with the mass of 250g falls on to the ground from a tree of 5m height
- What is the kinetic energy of the fruit at the moment of touching the ground? (02m.)
 - What is the velocity occupied by the fruit at the moment of touching the ground? (02m.)
- (20 marks)

09. A. The diagrams an apparatus used to collect the hydrogen gas in the laboratory.



- State the reactants and products relevant to the production of hydrogen gas. (02m.)
 - Write the balanced chemical equation for the reaction takes place (02m.)
 - What is the reaction type of the above reaction based on the reactants and products? (01m.)
 - Write two observations when the reaction takes place (02m.)
 - Write two properties of hydrogen gas (02m.)
 - Explain in brief how the produced gas is identified as hydrogen. (01m.)
- B. The diagrams shows how 2 dry cells, a bulb, ammeter and a voltmeter is connected by wires.
- Name the instruments A and B connected to the circuit. (02m.)
 - Based on which fact you identified the instruments A and B of the circuit? (02m.)
 - What is the method of connecting dry cells in the circuit? (01m.)
 - It was stated that the reading of the ammeter as 0.2 A and the reading of the Volt meter as 2V. Calculate the resistance of the bulb filament. (03m.)
 - What is the relationship between the current flowing through the circuit and the potential difference?
 - If another identical bulb is connected in parallel connection to the bulb connected in the above circuit. state the observations in the brightness of the bulbs.



(20 marks)