



Royal College - Colombo 07

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Grade 11-1st Term Examination – 2021

11 ශ්‍රේණිය - 1 වාර පරීක්ෂණය - 2021

කාලය : පැය 1
Time: One hour

Science - I

විද්‍යාව - I

34	E	I
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Name :-Class: -.....Index No :-

◆ Answer all questions.

◆ Mark a cross (x) on the number corresponding to your choice in the answer sheet provided.

01. What is the organell help to maintenance of water balance in cell.

- 1) Nucleus 2) Vacuole 3) Ribosome 4) Chromosome

02. What are the colours of highest absorb by green plants during photosynthesis.

- 1) blue and green 2) red and green
3) red and blue 4) green and yellow

03. Which of the following does not factor affecting the rate of chemical reactions.

- 1) Surface are of reactants 2) temperature at which the reaction occurs.
3) concentration of reactants 4) density of reactants.

04. Select the Quantities without measuring units.

- 1) mass and refractive index 2) weight and mass
3) refractive index and relative molecular mass 4) speed and velouty

05. What is the amphoteric oxide.

- 1) MgO 2) Al_2O_3 3) SiO_2 4) CO_2

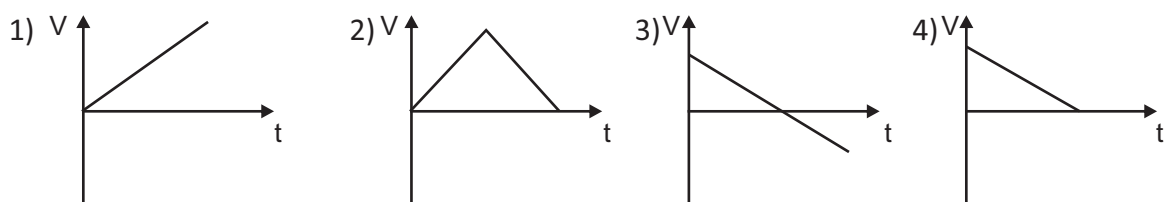
06. A child lifts a hag of mass 5kg to a vertical height of 3m during a 4s. What is his power.

- 1) $\frac{5 \times 10 \times 3}{4} W$ 2) $\frac{5 \times 13}{4} W$ 3) $\frac{5 \times 10 \times 4}{3} W$ 4) $\frac{10 \times 3}{4} W$

07. Which of the following microorganism group having a unicellular or multicellular species, can not produce food.

- 1) virus 2) algae 3) bacteria 4) fungus

08. Which group correctly indicates the variation of velocity with time an object was projected vertically upward and downward up to earth.



09. Which of the following we compounds with ionic bonds.

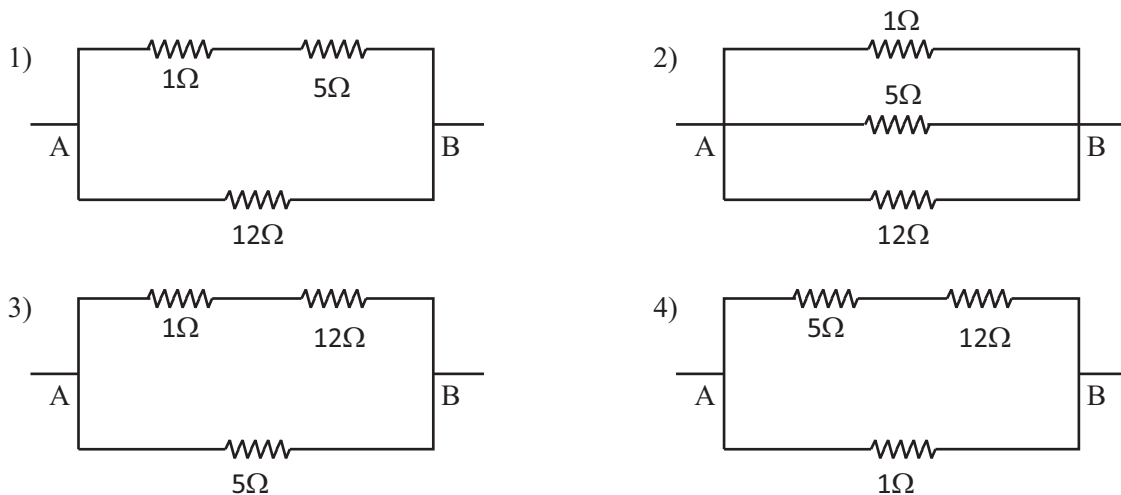
1) NaCl , KF

2) NaCl , HCl

3) NH_3 , CH_4

4) KF , H_2O

10. Select the circuit diagram which obtain a 45 equivalent resistance between A and B.



11. Oliver below are the functions of some mineral in the human body.

A. absorption of vitamins

B. synthesis of thyroxin hormone

C. synthesis of hemoglobin

Which answer gives minerals affect on each function respectively.

1. Iodine, Phosphorus, Calcium

2) Potassium, Iodine, Iron

3) Magnesium, Iron, Iodine

4) Copper, Iodine, Iron

12. Which of the following is the decomposition chemical reaction.

1) $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$

2) $\text{Zn} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$

3) $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

4) $2\text{H}_2\text{O} + 2\text{Na} \rightarrow 2\text{NaOH} + \text{H}_2$

13. Select the group of non following plant without seeds.

1) Pinus, Marchantia

2) Nephrolepis, Drynaria, Devadara

3) Pinus, Cycas, Drynaria

4) Marchantia, Poganatum, Salvinia

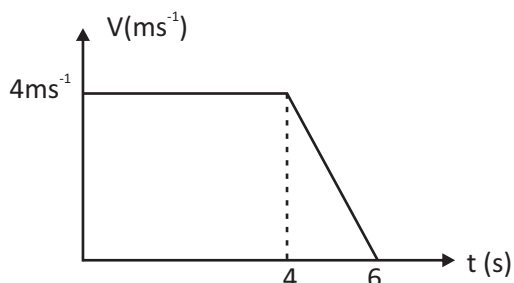
14. The velocity of an object with mass moving on a straight line was 4ms^{-1} at a certain instance its velocity changed to 14ms^{-1} after 5s. What is the unbalanced force exerted on the object.

- 1) 2.8N 2) 10N 3) 20N 4) 70N

15. What is the number of lone pair electrons around the N atom in ammonia.

- 1) 1 2) 2 3) 3 4) 4

16.



Here is shown the uniform velocity of an object with 1kg mass moving on a straight line was 4ms^{-1} at a certain instant and coming to rest after moving with uniform deceleration. What is the deceleration and momentum of an object before deceleration.

- 1) 2ms^{-2} , 4kgms^{-1} 2) 2ms^{-2} , 2kgms^{-1}
3) 8ms^{-2} , 1kgms^{-1} 4) 4ms^{-2} , 4kgms^{-1}

17. The following table indicates cross between two Heterozygous organisms.

Gametes	H	h
H	HH	Hh
h	Hh	hh

H - dominant character

h - recessive character

What is the phenotype ratio above all organisms.

- 1) 1 : 1 : 1 2) 3 : 1 3) 1 : 2 : 1 4) 1 : 3 : 1

18. Non combustible gas is,

- 1) H_2 2) CO_2 3) O_2 4) N_2

19. Chemical formula of urea is $\text{CO}(\text{NH}_2)_2$. What is the relative molecular mass of urea. (C = 12, N = 14, O = 16, H = 1)

- 1) 46 2) 62 3) 60 4) 44

20. Consider the following statements

A - Exhaled air contain more amount of CO_2 and H_2O vapour than Inhaled air.

B - Glucose convert to cellulose is a chemical purpose in plants and animal.

C - Sensitivity and excretion air characteristics can be observed in animal but not prominent in plant of the above, the most correct statement are,

- 1) Only A and C 2) Only B and C
3) Only A and B 4) All A, B and C

21. One mole is,

- 1) the amount of a substance that contains as many basic building units as there are atoms in exactly 12g of C - 12 isotope.
- 2) amount of substances contain equal number of particular to the number of atoms contain in 12g of any elements.
- 3) amount of substances contain equal number of particular to the number of atoms contain in 2g of H₂.
- 4) amount of substances contain equal number of carbon molecules in 12g of C - 12 Isotopes.

22. Select the incorrect statement.

- 1) 10g of solute contain in 100g of solutions. It's composition of mass fraction in 0.1.
- 2) Weight of an object in air is 20N. When it completely increased of water the aperiient weigh is 8N upthrust force assert by water is 12N.
- 3) two cows are tied to one past. One cow pull to North by force of 800N. White the other pull to east by force of 700N. Resultant force on the post is 1500N.
- 4) An object starting from rest acquires a velocity of 12ms⁻¹ after moving for 4s. Displacement of object is 24m.

23. What are the number of protons electrons and neutrons in $^{23}_{11}\text{Na}$ atom respectively.

- 1) 11, 11, 12
- 2) 12, 11, 11
- 3) 12, 11, 12
- 4) 12, 12, 11

24. Characteristics of some plant tissues are given below.

A - thin cell wall made up of cellulose.

B - contain living cell

C - inter cellular air spaces always between cell.

What are the characteristic / characteristics only in parenchyma tissue.

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

25. An object is equilibrium by 10N, 15N and P. Reactant force of 10N and 15N is 12N. Consider the following statements regarding the force P.

X - Value of P is 12N

Y - P is not aim to the point of intersection of line of action of 12N and 15N forces.

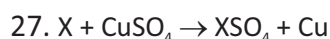
Z - Line of action of P passing through the point of intersection of line of action of 12N and 15N force.

Select the correct statements.

- 1) Only X and Y
- 2) Only X and Z
- 3) Only Y and Z
- 4) All X, Y and Z

26. What are the pair of elements with the highest electronegativity and the weight first ionization energy respectively

- 1) H, He
- 2) Fe, He
- 3) Cl, Ar
- 4) F, Ar



Which is the suitable metal for X in above chemical reaction.

- 1) Hg 2) Ag 3) Mg 4) Au

28. Consider the following statements presented rigorously plants.

A - Only the green plants do photosynthesis.

B - Green plants release CO_2 only in night time.

C - Plants release CO_2 in respiration and O_2 in photosynthesis through air pores and stomata.

D - In asexual reproduction of plant produce offsprings without participants of another plant.

Of the above, the correct statement are,

- 1) Only A and C 2) Only A and D 3) Only C and D 4) All A, B and C

29. Consider the following statements regarding application of electromagnetic waves.

A - Used penetrate thick sheets of steel as well as concrete slabs.

B - Used is ultraviolet binoculars and camera.

C - Used in places like banks to check hidden symbols in currency notes.

D - Used to examine the baggage of airline passengers without opening them.

Select the type of electromagnetic waves used in each occasion respectively.

- 1) Gamma rays, Infrared rays, Ultraviolet rays, X rays
 2) Ultraviolet rays, Visible light, Gamma rays, X rays
 3) Gamma rays, Ultraviolet rays, Infrared rays, Ultraviolet rays, X rays
 4) X rays, Gamma rays, Infrared rays, Ultraviolet rays

30. Given below is a chemical reaction in blast furnace during extraction of iron.



What is the amount of CO_2 gas releasing when reduction 160kg of Fe_2O_3

- 1) 44kg 2) 88kg 3) 152kg 4) 176kg

31. Which is the method of collection only H_2 gas out of H_2 , CO_2 and O_2

- 1) Downward displacement of water. 2) Upward displacement of air.
 3) Upward displacement of water. 4) Downward displacement of air

32. Given below are the application of hydrostatic pressure.

A - Vehicle hoists

B - Hydraulic jack

C - Mercury barometer

D - Hydraulic break system

of the above, the correct statements regarding the transmission of pressure through liquids.

- 1) A, B, C 2) B, C, D 3) A, C, D 4) A, B, D

33. Select the correct answer regarding the dispersal of fruits and seeds by a same method.

- 1) mango, orange, Kottamba, gammalu 2) Hora, thotela, Wara, Cotton
 3) Nagadarana, Wood apple, Balsam, rubber 4) Domba, Diya kadana, coconut, Apala

34. Which of following chemical compound is in green colour.

- 1) KMnO_4 2) CuSO_4 3) KClO_3 4) K_2MnO_4

35. Characteristics of a animal are given below.

- A - with pentadact limbs
B - cold blooded
C - water is essential to complete the life cycle.
D - passes a thin mucous skin with glands.

Which animal passes above characters.

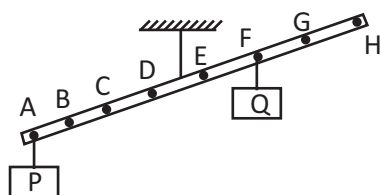
- 1) Newt 2) Sea dog 3) Sea horse 4) Crocodile

36. $x\text{H}_2\text{O}_2 \rightarrow y\text{H}_2\text{O} + z\text{O}_2$

Select the numbers with correct order for x, y and z respectively for balanced the above chemical reaction.

- 1) 1, 2, 1 2) 2, 2, 1 3) 2, 1, 2 4) 1, 2, 2

37. AH is a light uniform rod. P and Q are same weight with objects. What is the method used to equilibrium of AH



- 1) P object should be move to B
2) Q object should be move to E
3) P object should be move to D
4) Q object should be move to H

38. In female reproductive system where does fertilization and implantation occur respectively.

- 1) Cervix and Uterus 2) Fallopian tube and Cervix
3) Fallopian tube and Uterus 4) Uterus and Fallopian tube

39. Chemical formula of element M carbonate is M_2CO_3 . Chloride of M is,

- 1) MCl 2) MCl_2 3) M_2Cl 4) M_2Cl_3

40. Consider the following statements regarding the cross pollination in plants.

- A - It is helps to new varieties among the plants.
B - It in not helps to evaluation of organisms.
C - It is a step of sexual reproduction in plants.

of the above, the correct statements are,

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



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Grade 11-1st Term Examination – 2021

11 ශ්‍රේණිය - 1 වාර පරීක්ෂණය - 2021

කාලය : පැය 3
Time: Three hours

Science - II

විද්‍යාව - II

34 E II

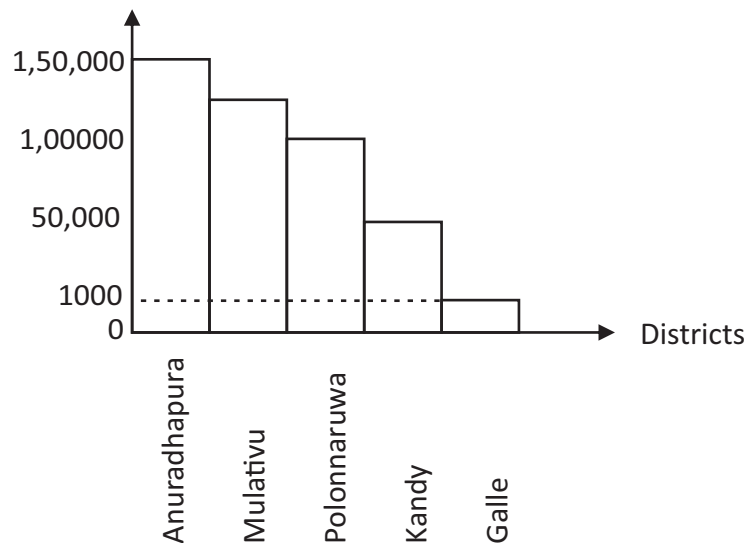
Name :-Class: -.....Index No :-

♦ Write the answers for all questions in part A and three questions out of five questions in part B.

PART A –Structured Essay Questions

- 1) A) Natural resources are the natural gifts received from the nature . Due to the poor planning of the resources people have faced with many difficulties such as water pollution, air pollution, soil pollution, deforestation , lack of soil fertility, spread of diseases.
Following is a graph showing the forest cover of different districts in Sri Lanka.

Size of the land by Hectares (ha)



- i) Name the districts with the highest and lowest forest cover respectively.
Highest :----- Lowest :-----
(02 marks)
- ii) Calculate the difference between these two districts correctly and mention .

(01 mark)
- iii) Select two damages due to poor planning of natural resources.

(01 mark)
- iv) Mention a method of oceanic pollution and a bad affect of it .

(02 marks)
- v) What is the main role of the forest related to the atmosphere ?

(01 mark)

- (B) Salt production is a major industry conducted by using sea water as a natural resource in Sri Lanka.
- i) Mention two geographical and environmental factors to be considered before starting a saltern in a certain area .
-
- (02 marks)
- ii) Write down the chemical compound precipitated in each of the following tank in a saltern.
- Large , shallow tank =-----
- Medium tank =-----
- Small tank =-----
- (03 marks)

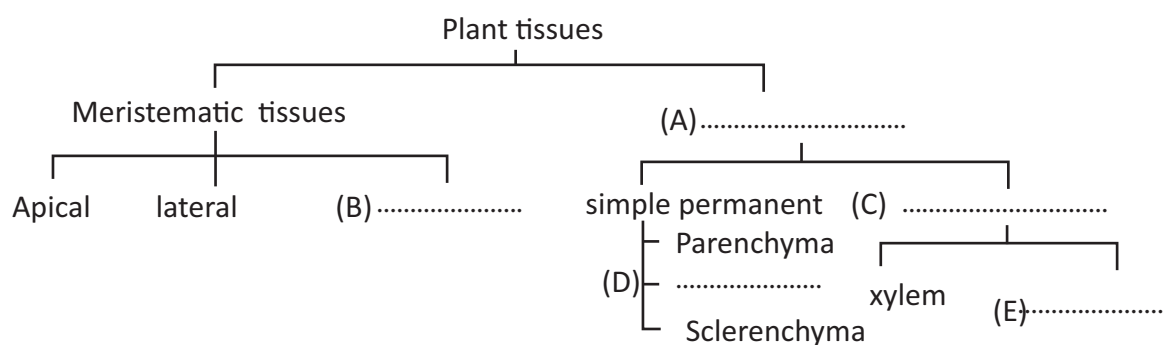
(C) Fill in the blanks in the following table.

Process of separation	Method of separation
a) mixture is heated and the components are separated in a specially arranged tower.	
b) a solute dissolved in a solvent is extracted to a second solvent with a higher solubility.	
c) separation of volatile components using a special paper strip where the mixture is placed on it .	

(03 marks)
- 15 MARKS -

(02) A group of cells with a common origin and adapted to perform a specific function or functions is considered as a tissue.

(A) plant tissues can be classified according to their structural and functional characteristics as in the following chart.



i) Write the correct type of tissue for each of the above blanks in the chart.

- (A) -----
- (B) -----
- (C) -----
- (D) -----
- (E) -----

(05 marks)

ii) Write down a characteristic and a function of the tissue E.

characteristic =-----

function =-----

(02 marks)

- iii) some of the organelles found in a parenchymatous cell under the electron microscope is given in the following table. Fill in the blanks of the table appropriately.

Name of the organelle	Function of the organelle
a) nucleus	
b) chloroplast	
c)	Production of secretory substances and packing them
d)	Maintaining the osmotic balance and turgidity of the cell.

(04 marks)

- iv) Following are the three major steps of an experiment conducted in order to find the presence of stored starch in a plant leaf. Write down the reason for each of the following step to follow.

a) boiling the leaf in water ----- (01 mark)

b) boiling the leaf in alcohol in a water bath-----
----- (01 mark)

c) adding few drops of iodine onto the boiled leaf-----
----- (01 mark)

- 15 MARKS -

- (03) (A) Part of the periodic table is given in the following chart . Symbols used in the chart are not the standard symbols. Use the given symbols to find the answers for the questions below.

I							VIII
	II	III	IV	V	VI	VII	F
			A			B	
		D	G				C
E							

- i) write the symbol of the most suitable element that matches with the given description in the table.

a) element with the highest first ionization energy.	
b) one form of it conducts electricity though it is a non-metal	
c) an element that forms an amphoteric oxide	
d) element with the highest electro- negativity	
e) element used to make transistors and diodes.	

(05 marks)

(B) Nitrogen gas reacts with hydrogen gas to form ammonia gas. Industrially this is manufactured by Haber process.

(i) Balance the following equation by the inspection method.



ii) To increase the rate of the gas production of the gas by above method. Suggest a suitable change to be made in the following instances.

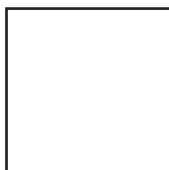
(a) the pressure of the gases should be

(b) should be used as a catalyst (02 marks)

iii) Mention the type of the above chemical reaction

..... (01 mark)

iv) Draw the dot and cross diagram of the ammonia molecule



(02 marks)

(C) Chemical formula of glucose molecule is $\text{C}_6\text{H}_{12}\text{O}_6$

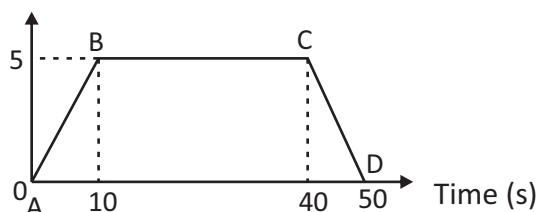
(i) number of Carbon , Hydrogen and Oxygen atoms in a glucose molecule respectively are,

C=..... H=..... O=..... (03 marks)

- 15 MARKS -

(04) Following is a displacement – time graph (s- t graph) for the motion of a certain object.

Displacement (m)



(i) Describe the motion of the object in each of the following instances .

(a) AB =.....

(b) CD =..... (02 marks)

(ii) What is the major difference you identify between the motion of AB and CD ?

.....
..... (01 mark)

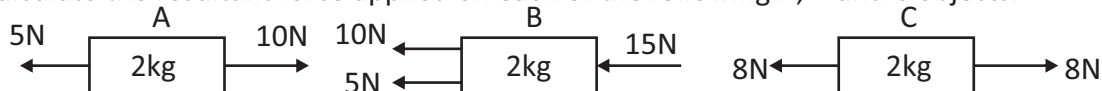
(iii) Calculate the velocity of the object in first 10 seconds

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

(iv) Calculate the total distance and the total displacement of the object separately

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

- (B) (i) Calculate the resultant force applied on each of the following A, B and C objects.



 ----- (03 marks)

- (ii) Calculate the acceleration of the object in the instance B

 ----- (02 marks)

- (C) Following is a part of the electro- magnetic spectrum.

A	B	VISIBLE LIGHT	ULTRA- VIOLET WAVES	C	GAMMA WAVES
---	---	---------------	---------------------	---	-------------

- (a) considering the types of electro- magnetic waves write down the suitable type of electro- magnetic waves represented by the letters A, B and C.

A =-----
 B =-----
 C =----- (03 marks)

- 15 MARKS -

PART B – ESSAY TYPE QUESTIONS

- (5) (A) All living organisms depend on food for their survival. They complete their food requirements by different methods.

- Living organisms are divided into two groups on the basis of their mode of nutrition. Name those two groups and give an example for each. (02 marks)
- Production of food by green plants is called photosynthesis. Write down a balanced chemical equation for it. (02 marks)
- A student has observed evolving of air bubbles from an aquatic plant which is completely submerged in water in the day time. He wanted to collect and identify the gas evolved.
 - Draw a labeled diagram for the above requirement to collect the gas. (03 marks)
 - What is the gas evolved in this instance ? how do you identify that gas ? (02 marks)

- (B) There is a huge diversity in the living world. Scientists have introduced several methods to classify and identify the organisms at several periods.

- Write one advantage of classification of living organisms. (01 mark)
- What are the domains found in the classification system introduced by Carl Woese ? (02 marks)
- Following are some animals in kingdom-Animalia.
 - Jungle fowl , cockroach , gecko , jelly fish, *Nereis* (rag worm) and sea horse
 - Classify the above animals as vertebrates and invertebrates. (03 marks)
 - Mention another common characteristic for all vertebrates except the vertebral column. (01 mark)
 - Mention one specific characteristic shown by the animals of the group to which *Nereis* belongs (01 mark)

- (C) Flower is the sexual reproductive organ of the flowering plants. (02 marks)
- (i) Draw a labeled diagram of the gynoecium. (01 mark)
- (ii) Tissue culture is an artificial vegetative reproductive method of plants. Mention one advantage of it. (01 mark)

- total 20 MARKS -

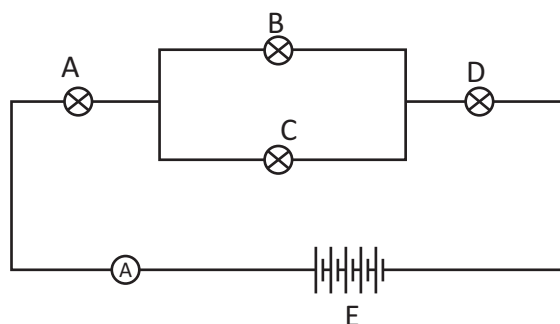
- (06) (A) When the composition of the atmosphere is considered it is clear the air around us is a mixture of several gases. Compositions of nitrogen, oxygen and carbon dioxide can be expressed as percentages but it is difficult to express the composition of hydrogen gas as a percentage. The amount of hydrogen gas in the atmosphere can be expressed as ppm or parts per million.
- (i) What is the most abundant gas in the atmosphere? (01 mark)
- (ii) Write the amount of it as a percentage. (01 mark)
- (iii) Write two uses of the above gas. (02 marks)
- (iv) Oxygen gas consists of diatomic oxygen molecules. Calculate the relative molecular mass of an oxygen molecule ($O = 16$)
- (v) Name a chemical substance used in the laboratory to prepare oxygen gas (01 mark)
- (vi) Write down a balanced chemical equation for the production of oxygen gas by using the above chemical substance. (02 marks)

- (B) (i) Following are the symbols of some metals. Write down them according to the ascending order of their reactivity.
Ca, Fe, Al, Na, Mg, Zn, Pb (01 mark)
- (ii) Name the metals that react fast with cold water out of the above metals and write down a balanced chemical equation for that reaction. (02 marks)

- (C) 250 ml of 1 mol dm^{-3} NaOH aqueous solution was needed for a certain chemical reaction. ($Na = 23, O = 16, H = 1$)
- (i) Calculate the mass of NaOH needed to prepare the above solution (02 marks)
- (ii) Name two glass equipments used to prepare the above solution. (02 marks)
- (iii) The above solution is known as a standard solution. What is meant by it? (02 marks)
- (iv) Write down the procedure used to prepare a standard solution by four steps. (03 marks)

- total 20 MARKS -

- (07) (A) following is a circuit diagram of an electric circuit prepared by a group of students. Resistance of each bulb is 3Ω .



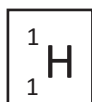
- (i) E is a battery which consists of five (05) cells. voltage difference of each cell is 1.5 V.
- (a) Mention the method used to connect the cells together in the battery. (01 mark)
- (b) Calculate the total voltage difference of the battery? (01 mark)
- (ii) Mention the Observation separately when bulb A and bulb C are burnt out. (04 marks)

- (iii) Calculate the equivalent resistance of the bulbs ? (02 marks)
- (iv) Name the instrument given as Ⓐ and calculate the reading of it ? (03 marks)
- (v) LDR is a light sensitive resistor. Activity of them changes with the light intensity.
 - (a) Explain the change in the resistance of a LDR with the light intensity. (02 marks)
 - (b) Name the chemical substance used to form this special types of resistors? (01 mark)

- (B) Objects show different behaviour patterns in different fluids.
- (i) Mention the Archimedes law that explains the behaviour of objects fluids. (02 marks)
 - (ii) Weight of a certain object is 20 N. The apparent weight of it is when it completely immersed in water is 5 N.
 - (a) Calculate the upthrust applied by water on the object (01 mark)
 - (b) What is the weight of water displaced by the object when it is completely immersed in water ? (01 mark)
 - (c) Hydrometer is a scientific instrument that is designed according to the Archimedes law. Write down two day – to – day applications of the hydrometer. (02 marks)
- total 20 MARKS -

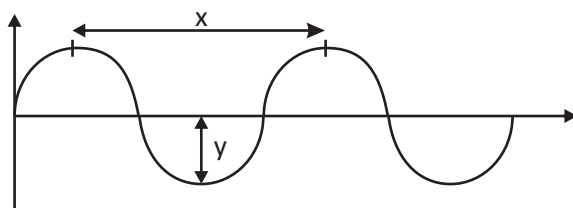
- (08) (A) Birth of a new organism is an important incident to the living world.
- (i) Name the type of male gamete and female gamete respectively used in the human reproduction. (02 marks)
 - (ii) Mention the method of cell division used in the gamete formation and write one other use of that cell division method. (02 marks)
 - (iii) Write two functions of the female reproductive system. (02 marks)
 - (iv) Name one pituitary hormone in females that controls the menstrual cycle. (02 marks)
- (B) A boy child passed away due to over bleeding followed by a minor injury in the leg and found to be a sex-linked recessive gene was the reason for the over bleeding .
- (i) Mention the disease condition found here that was caused by the sex- linked recessive gene? (01 mark)
 - (ii) If the sex-linked recessive gene for this condition is “ h ” , what is the genotype of the dead boy child ? (01 mark)
 - (iii) Mention another disease caused by a sex- linked recessive gene in humans. (01 mark)
- (C) Light rays can be subjected to both reflection and refraction.
- (i) Mention the two laws of reflection. (02 marks)
 - (ii) When an object is placed 1 m away from a plane mirror and in front of it find the distance between the object and the image formed (01 mark)
 - (iii) Write two characteristics of the images formed by the plane mirrors (02 marks)
 - (iv) A hand lens is used to read small printed letters in a label.
 - (a) Mention the type of lenses in the hand lens (01 mark)
 - (b) In between which two points of the lens should we need to keep the label to read the small letters clearly ? (02 marks)
 - (c) Draw a ray diagram to illustrate the path of light rays when a hand lens is used to burn a dry piece of cotton wool . (02 marks)
- total 20 MARKS -

- (09) (A) Atoms of the same element with different mass numbers are known as “Isotopes”. there are three isotopes for hydrogen and one of it is given by the following symbol.



- (i) What is the name of the above isotope of hydrogen ? (01 mark)
- (ii) Write down the number of protons , electrons and neutrons found in the above atom. (03 marks)
- (iii) (a) Relative atomic mass of magnesium is 24. Calculate the amount of magnesium by mole in 12 g of it. (01 mark)
- (b) Calculate the number of magnesium atoms in the above amount ? (02 marks)
- (iv) Write down a balanced chemical equation for the combustion of magnesium in air. (01 mark)
- (v) Calculate the mass of magnesium oxide formed by the complete combustion of 120 g of magnesium in air .(Mg = 24 , O = 16)

- (B) Following is a graph produced by a cathode ray oscilloscope according to a wave form produced by a tuning fork.



- (i) Identify X and Y in the above diagram . (02 marks)
- (ii) Time taken for the above waves to form was 2 seconds. Calculate the frequency. (01 mark)
- (iii) If the velocity of the above wave in air is 330ms^{-1} , find the value of X ? (02 marks)
- (iv) Write two ways the above wave differs from an electro- magnetic wave (02 marks)
- (v) When the same frequency is played on a piano and a violin the difference of the sound can be identified clearly. What is the characteristic of sound used to identify the above sounds? (01 mark)
- (vi) Write two factors that affect the frequency of a sound produced by a musical instrument with strings ? (02 marks)

- total 20 MARKS -