



Devi Balika Vidyalaya – Colombo 8
3rd Term Evaluation - 2016

Science – Paper I

Grade - 11

Time : 01 hr.

❖ Select the most suitable answer.

01) Which one of the following is a monosaccharide?

- i. Maltose ii. Galactose iii. Sucrose iv. Lactose

02) A nucleotide is made by the combination of several components. Which one is not a component of nucleotide?

- i. Nitrogenous base iii. Nucleic acid
ii. Phosphate iv. Pentose Sugar

03) The biological molecule important for the protection of internal organs is,

- i. Lipids ii. Protein iii. Carbohydrate iv. Cellulose

04) Given below are some functions of mineral ions in human body.

- a) Important for the absorption of Vitamin B.
b) Essential for the production of Thyroxin hormone.
c) Essential for the production of Haemoglobin.

The mineral ions perform these functions respectively are,

- i. Iodine, Prosperous, Calcium iii. Potassium, Iodine, Iron
ii. Magnesium, Iron, Iodine iv. Calcium, Iodine, Iron

05) The disease cause by the deficiency of the hormone mentioned in b) is,

- i. Muscle pain iii. Increase in heart beat
ii. Limiting the growth iv. Limiting the mental development

06) A place where Glucose is reabsorbed in the human body is,

- i. In small intestine iii. In liver
ii. In duodenum iv. In proximal convoluted tubule

07) Given below are the organizational levels of the human body.

Cells → Tissues → Organs → Systems → Organism
(A) (B) (C) (D) (E)

The examples for A and C are,

- i. Blood vessels → Heart iii. Parenchyma cells → Leaf
ii. Leaf → branch iv. Root hairs → Root

08) Which one of the following is an example for a branched polymer?
i. Rubber ii. Polythene iii. Vulcanized rubber iv. Teflon

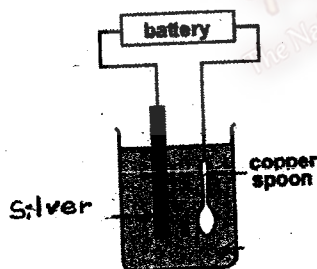
09) Select the correct statement on Mitosis.
i. Maintain a constant number of chromosomes.
ii. Contribute for the formation of variations.
iii. Forming haploid and diploid stages.
iv. Forming 4 cells at the end of the division.

10) A component present in the Glomerular filtrate of a healthy person is,
i. Blood cells ii. Albumin iii. Glucose iv. Globulin

11) The false statement about the nucleic acid is,
i. DNA molecule is a double helix structure
ii. C,H,O,N and P present in nucleic acids.
iii. Virus has DNA or RNA as their genetic material.
iv. The Nitrogenous base connects with Adenine is Thiamine

12) Which is not a result in genetic engineering?
i. Purification of bio water.
ii. Production of Gold rice by adding vitamin B
iii. Identification of criminals using the finger printing
iv. Production of genetically modified food by developing insect resistant, disease resistance varieties

Answer questions no 13 and 14 using the given diagram.



13) Which one of the following can be used to apply the metal on the spoon?
i. CuSO_4 ii. AgNO_3 iii. AuCN iv. H_2SO_4

14) Select the correct statement about the setup.
i. The spoon should connect as the Cathode.
ii. Cathode is the oxidation terminal.
iii. The piece of metal should connect as the Cathode.
iv. CuSO_4 should be used as the electrolyte.

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15) An observation can be seen in the dissociation of KMnO_4 is,

- i. Forming a green colour solution.
- ii. Forming a black colour powder.
- iii. Glowing a splinter.
- iv. All the above observations.

16) The component cannot be used to produce O_2 gas is,

- i. KNO_3
- ii. K_2MnO_4
- iii. KClO_3
- iv. H_2O_2

Answer questions no 17,18,19 using the given table.

Element	Atomic Number	Mass Number
A	9	16
B	7	14
C	6	12
D	11	23
E	6	13

17) Examples for isotopes are,

- i. A,B
- ii. B,D
- iii. C,E
- iv. D,E

18) Which of the following pair of elements can make an ionic compound?

- i. A and B
- ii. C and D
- iii. B and D
- iv. C and E

19) The molecule has a triple bond is,

- i. A
- ii. B
- iii. C
- iv. D

20) The amount of Potassium which has the similar number of atoms present in 36g of Magnesium is, (Mg-24, K- 39)

- i. 19.5
- ii. 39
- iii. 58.5
- iv. 78g

21) Which of the following instance where the solvent extraction is used?

- i. Extraction of salt from sea water.
- ii. Removing chlorophyll pigments in plant leaves.
- iii. Production of petroleum fuel.
- iv. Separating Nitrogen from air.

22) What compound gives an acidic solution by reacting with water?

- i. NaCl
- ii. NaO
- iii. MgO
- iv. SO_2

23) $\text{CaCO}_3 \longrightarrow \text{CaO} + \text{CO}_2$ what is the amount of CaO produced by reacting 66kg of CO_2 according to this reaction?

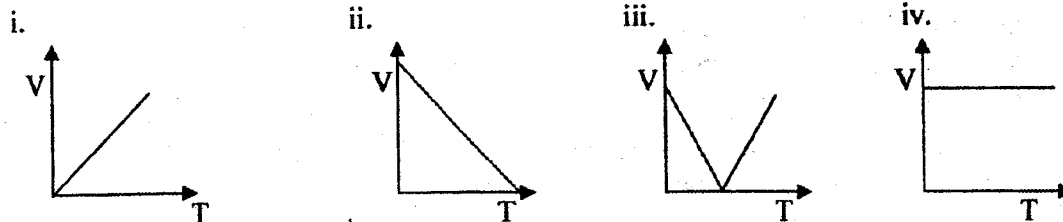
- i. 28Kg
- ii. 56Kg
- iii. 84Kg
- iv. 112Kg

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24) Which of the following factor affects the increment of solubility of a solute?

- i. Exist the solute as the powder
- ii. Increase the concentration of the solution.
- iii. Increase the temperature of the solution
- iv. Applying catalysts

25) The velocity time graph of a fruit falling from a tree is,



26) The weight of an object in air is 20N. The weight of the object when it is fully immersed in water is 8N. The up thrust of the object is,

- i. 3N
- ii. 15N
- iii. 12N
- iv. 18N

27) The false statement about the heat ray is,

- i. A type of electromagnetic wave.
- ii. Medium is not necessary for the propagation.
- iii. Cannot be reflected.
- iv. Has the velocity of the light.

28) The electrical equipment in house which is automatically switched off in lightening is,

- i. Trip Switch
- ii. Main Switch
- iii. Multi circuit breaker
- iv. Electric meter

29) An object kept beyond $2F$ in front of a convex lens is kept closer to the lens gradually. The instance where a virtual image is formed is,

- i. When the object is beyond $2F$
- ii. When the object is on F
- iii. When the object is in between F and $2F$
- iv. When the object is in between the lens and the mirror

30) The correct answer for 1KWh is,

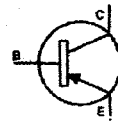
- i. $3.6 \times 10^6 J$
- ii. $3.6 \times 10^5 J$
- iii. $3.6 \times 10^7 J$
- iv. $3.6 \times 10^4 J$

31) The equipment used to smooth the rectified wave in full wave rectification is,

- i. Capacitor
- ii. Resistor
- iii. Transistor
- iv. Diode

32) Select the correct statement about the following equipment.

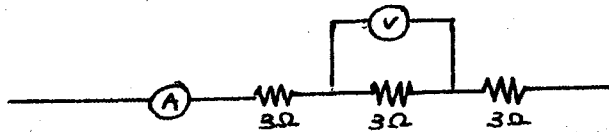
- i. This is a NPN transistor
- ii. B end is connected to a n type semiconductor
- iii. A positive voltage should supply to C end
- iv. The current enters from C end



33) The reason to increase the conductivity of intrinsic semiconductors is,

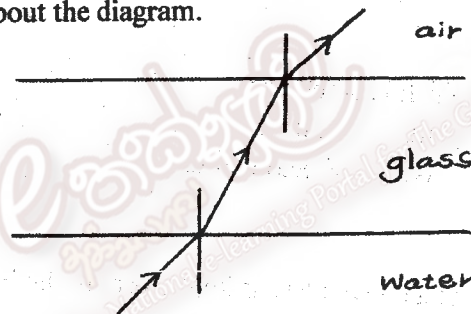
- i. Increasing the number of free electrons
- ii. Increasing the number of holes
- iii. Increasing both free electrons and holes
- iv. Decreasing both free electrons and holes

34) The measurement of the voltmeter given in the circuit is 6V. The ammeter reading is,



- i. 0.6A
- ii. 1.5A
- iii. 2A
- iv. 18A

35) Given below is a refraction of a light ray through two transparent mediums. Select the correct statement about the diagram.



- i. The light ray bends towards the normal due to the high density of glass than air.
- ii. The light ray travel from glass to denser is bend away from the normal due to high density in air.
- iii. When a light ray travels from glass to air the angle of incidence is higher than the angle of refraction.
- iv. When increasing the angle of incidence in water the total internal reflection can be take place.

36) The following chart shows the motion of an object in a linear path.

Time(s)	0	1	2	3	4
Displacement(m)	0	4	0	4	0

The total distance travelled by the object is,

- i. 2m
- ii. 4m
- iii. 8m
- iv. 16m

37) Select the correct answer by the following statements.

A - Black surfaces absorb more heat rays.

B - The temperature of the black colour surfaces is high in day time.

- i. Statement A is correct and statement B explain the Statement A
- ii. Statement A is correct and the statement B does not explain the statement A
- iii. The statement A is incorrect.
- iv. Both A and B statements are incorrect.

38) Which of the following statement is correct about the artificial flavourings?

- i. They control the amount of sugar in blood.
- ii. The effect on health is very less.
- iii. Increase the taste, colour, flavour of food.
- iv. Increase the digestion of food and prevent acidic condition in stomach.

39) The effect of persistent organic pollutants is,

- i. Mutations occur in birth.
- ii. Retardation of mental development.
- iii. Weakening the function of reproductive systems.
- iv. All the above.

40) The temperature of our country during the months of July - September is very high. But, the sweating during that period is less. The scientific reason for this is,

- i. The relative humidity during that period is high.
- ii. The relative humidity during that period is less.
- iii. The speed of the wind is high during that period.
- iv. The body feels comfort by increasing the temperature.

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Science – Paper II

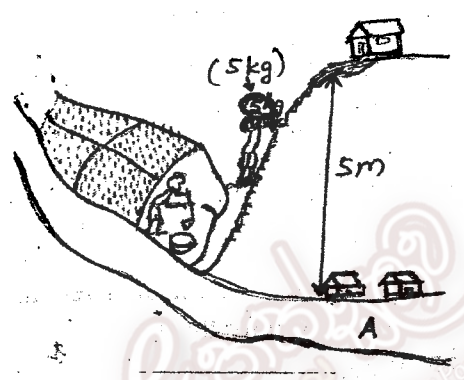
Grade - 11

Time : 03 hrs

- Answer all the questions in part A in the given space
- Select three questions from the part B and answer them.

Part A

01) The following diagram shows how a person take fertile soil necessary for his cultivation from a place which is close to his home.



- A) i. Write one reason for the fertility of soil in that place. (01)

 ii. He saw that water in area A in the surrounding water body is green in colour. (01)
 a) Write on human activity cause this problem. (01)

 b) What is this environmental problem? (01)

 c) Name two ions cause this condition. (01)
 1..... 2.....
- B) 1) The person who takes soil from that place said that there is a bad odour in that place. (01)
 i. Name the main gas cause this condition. (01)

 ii. Write the chemical formula of the gas and mention the type of bond in it. (01)

 iii. What is the importance of this gas for the energy crisis? (01)

2) This person got the help of another person to bring soil. He lifts one basket of soil once.

The time taken for that is 2 minutes.

- i. What is the energy stored in lifted soil? (01)
ii. What is the amount of energy stored in soil lifted once? (01)

.....
.....
.....
iii. Calculate the energy spent by a person to lift the soil once. (01)
(The mass of man is 50kg)

.....
.....
.....
iv. A student said that the efficiency of this activity is low. Propose a method to increase the efficiency of this activity.(01)

C) These people seemed too tired after some time. The respiratory rate was high too.

i. Write two other observations other than the above characteristic. (01)

.....
.....
ii. What is the advantage of high respiratory rate? (01)

.....
.....
iii. Write the blood pressure of a healthy person. (01)
B.P.

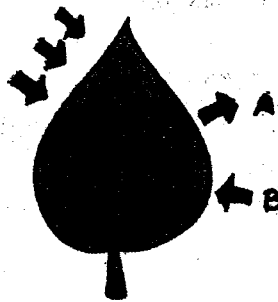
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iv. The action of hormones are very important to ready the body for a sudden situation.

a) Name that hormone and the endocrine gland which it is secreted. (01)

.....
b) Write two changes in the human body can be seen in this instance. (01)

.....
(Total= 15 marks)

02) A) The following diagram shows the factors essential for a process take place in the green leaves.



1. What is the process take place in the above green leaf? (01)

.....

2. Name the factors given as A and B. (01)

A. B.....

3. What are the other factors essential for this process which are not mentioned in the diagram? (01)

i..... ii.....

4. Write the balanced chemical equation for the process take place in the green leaf. (01)

.....

5. A complex tissue is needed to transfer one of the above factor to the plant leaf. (01)

i. What is that tissue?

ii. Mention a living and nonliving cell in that tissue. (01)

a. Living cell-.....

b. Nonliving cell-.....

6. Draw a set up which can be used to prove that the factor B is essential for this process.(01)

B) Reproduction is an important process for the existence of living beings.

1. Name the vegetative reproductive structures of the following plants. (02)

i.Pine apple-..... iii.Termeric-.....

ii.Leeks-..... iv.Bread friut-.....

2. Write two characteristics of stock and scion used in grafting. (01)

Stock

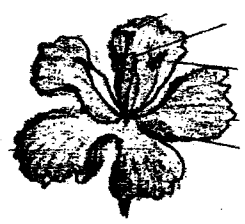
Scion

stock

i.....

ii.....

3. Given below are some diagrams of flowers.(05)



(A)



(B)



(C)



(D)

- i. Name a bisexual flower.....
- ii. Name an asexual flower.....
- iii. The flower shows the self sterility.....
- iv. The flower does not show an adaptation to prevent self pollination.....
- v. Why is the cross pollination is more beneficial?

4. Fertilization of ova in human reproduction take place in the upper part of the fallopian tube, Write two adaptations of sperms to perform their function. (01)
(Total=15marks)

03) A) Given below are some information about element 'X'

Atomic number - 19

Mass number - 39

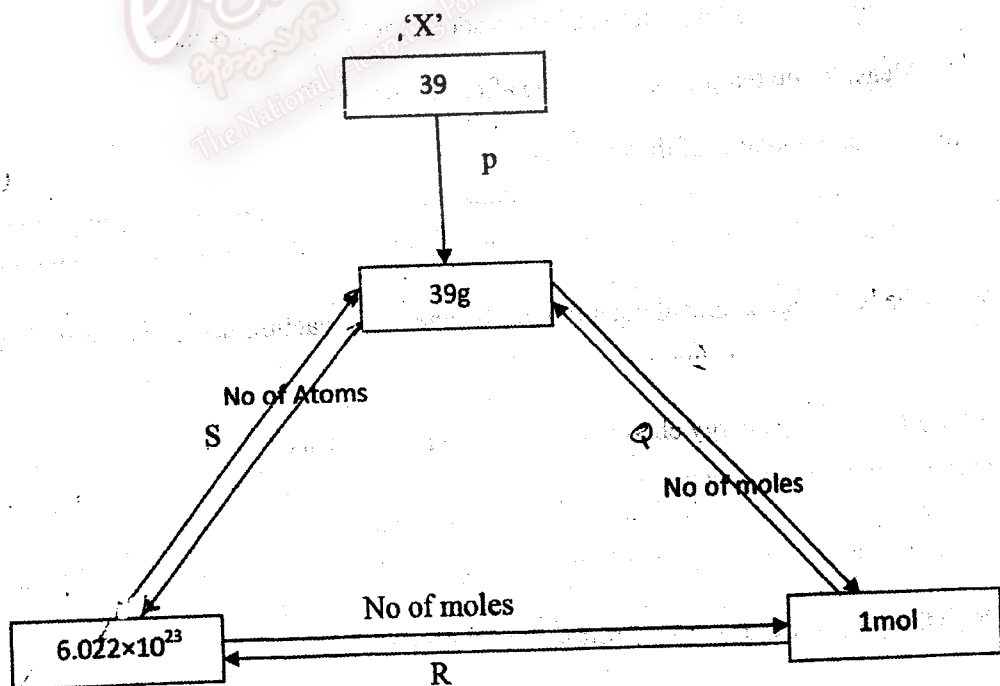
Relative atomic mass - 39

i. Write the electronic configuration of the element. (01)

ii. What is the number of neutrons present in 'X'? (01)

iii. Write the atomic number and the mass number according to the standard method. (01)

iv. Write the correct symbols for the blanks in this chart. (02)



P

Q

R

S

B) Given below are the electro negativities of some elements.

Element	Li	Be	B	C	N	O	F	Ne
Electronegativity	1	2	3	4

i. Complete the chart using the correct values. (01)

ii. Name the scale which the electro negativity is mentioned. (01)

.....

iii. How the electro negativity change along a group? (01)

.....

iv. Name the element have the highest electro negativity. (01)

.....

v. Draw the structure of water molecule and explain the structure using the electro negativity. (01)

.....
.....
.....

C) The followings are steps of a laboratory activity.

- 10cm³ of HCl acid was out in a beaker and measured the temperature of the liquid Using a thermometer.
- 20cm cleaned Magnesium strip was added into the above beaker.
- Measure the temperature of setup after the reaction.

i. Write two observations of the experiment. (01)

.....
.....

ii. Write the balanced chemical equation for the chemical reaction take place here. (01)

.....

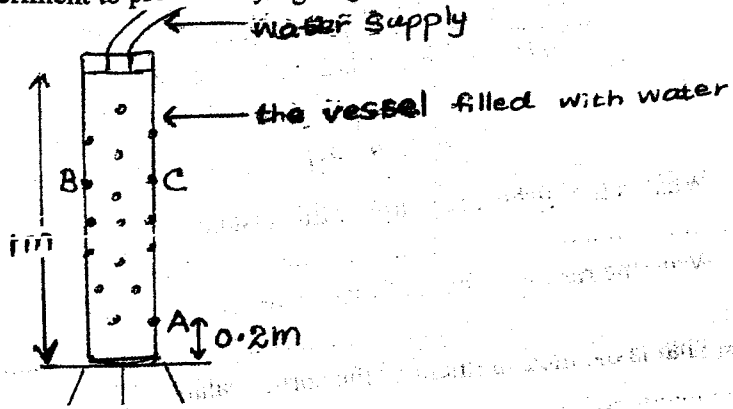
iii. Briefly explain the energy change take place in reactants and products. (01)

.....
.....
.....

iv. Draw the energy diagram for the chemical reaction. (01)

04) A student did a simple experiment to prevent drying of grass in his home garden using the knowledge that he learnt.

A)



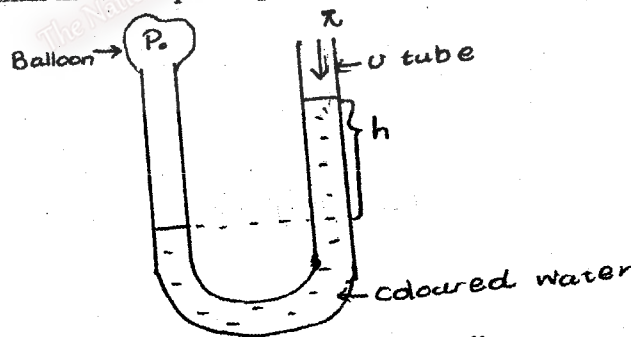
i. Draw a diagram to show how the water spray out of the setup. (01)

ii. Write the reason for changing the distances where the water is ejected in each hole. (01)

iii. Why the holes B and C spray water to a similar distances. (01)

iv. Write the observation which the equipment is rotated with a high speed. (01)

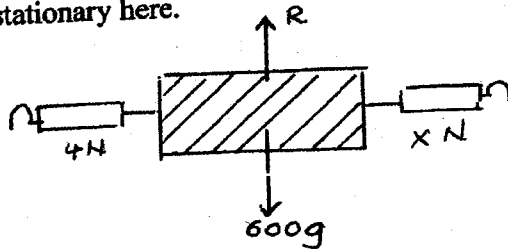
v. The following diagram shows a U tube and a balloon is connected to one end of the tube. Give an evidence using the diagram to show that the pressure inside the balloon is higher than the atmospheric pressure. (01)



vi. Write a statement for the pressure inside the balloon. (01)

vii. Water is filled up to the top of the vessel given in the first diagram. Find the pressure near the hole A. (02)

B) 1) Given below is an experiment done by a group of students to check the equilibrium of forces. The object is stationary here.

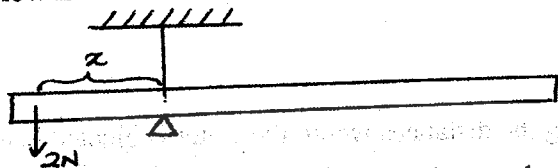


i. What is the surface reaction of this instance? (01)

ii. Write the resultant force of the above forces. (01)

iii. What is the measurement of the spring balance X? (01)

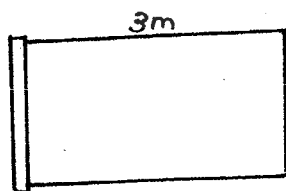
2) Given below is a balanced meter ruler.



i. What is the requirement to balance the above ruler? (01)

ii. Calculate the value of X. (01)

iii. A person put a force to open a gate of a house and another person put a force to close it. 75N force was applied from 2m distance to open the gate and 100N force was applied from 1.5m to close it.



i. Find the moments of forces exerted by the them. (01)

When opening -

When closing -

ii. Mention whether the gate is open or close at the end.(01)

1.....

Part B

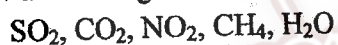
05) A) The organisms are classified under three domains according to the Carl Woese. (02)

- i. Name those two domains and mention a characteristic for each. (02)
- ii. Write the kingdoms belong to the Domain Eukaria and name example for each. (02)
- iii. Answer the questions using the information given in the table.

Characteristics	Habitat
External ear lobes and hairs on body	Live in terrestrial, aerial and aquatic environments
The body is not segmented. Possess an external or internal skeleton.	Live in terrestrial and aquatic habitats
Radial symmetrical and show many morphological forms	Live in water
Three chambered and partially divided heart	Live in land and water

- a) What are the groups of organisms which A and B belong to? (01)
- b) Name the morphological forms of C group of organisms. (01)
- c) Write two similarities of A group and Aves. (01)
- d) Name a terrestrial and an aquatic organism belongs to B group. (01)
- e) Write two characteristics unique to Chordates. (01)

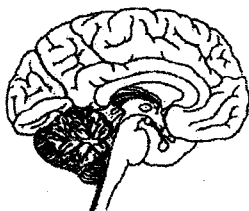
B) Given below are some gases cause environmental problems.



Answer the given question using the given gases.

1. What are the gases which affects the fish live in water bodies? (01)
2. Show the above problem by a balanced chemical equation. (01)
3. Write the gas cause cataracts and skin cancers. (01)
4. What is the gas which affects the increment of sea water level. (01)
5. Write two solutions can be done to minimize the harm cause by the above problem. (01)

C) 1) Given below is a rough sketch of human brain.



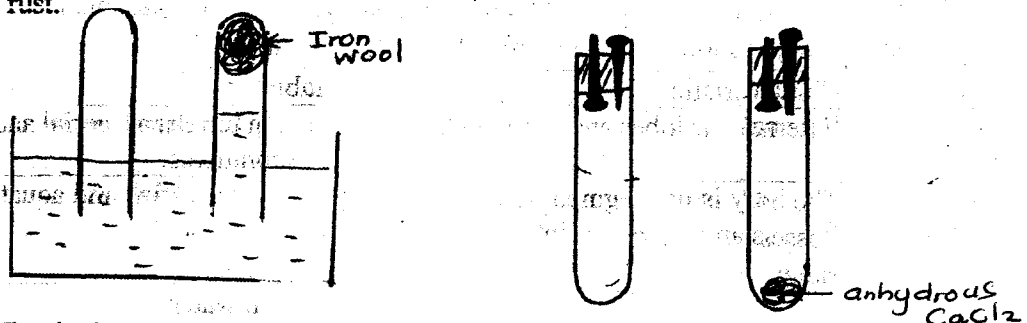
- i. What is the part responsible for respiration and heart beat? (01)
- ii. Where does the gland which regulates the body temperature is situated? (01)
- iii. What structure is important in putting a thread to a needle? (01)
- iv. Write the pathway of a reflex arc. (01)

2) i. Name a genetic disease caused by the autosomal genes of human. (01)

ii. Write a method to prevent genetically transmitted diseases. (01)

06) Tarnishing the metals like Iron, Steel when exposed to air is called rusting.

A) Given below are two experimental setups prepared by students to study the factors affecting the rust.



I. What is the reason to put anhydrous CaCl_2 into tube b? (01)

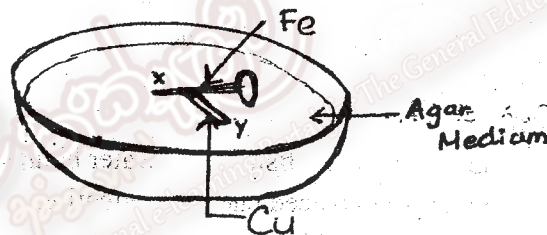
II. Write two observations for set up a and b. (02)

III. Mention the factors essential for rusting respectively according to the observations. (01)

IV. Write the oxidation and reduction reactions that take place in rusting. (02)

V. Write the chemical name of iron rust and the chemical formula of it. (01)

B) The following set up was made by a student for the further study of rusting.



i. Name the colours that can be observed near X and Y. (01)

ii. What is the place where the iron nail gets rust? (01)

iii. Explain the reason. (01)

iv. Briefly explain the function of Potassium Ferricyanide. (01)

v. Cathodic protection is done to prevent the rusting of metals.

a) What is cathodic protection? (01)

b) Draw two setups that can be used to show this method in the laboratory using two metals. (02)

C) Given below is the activity series used to decide the extraction method of metals.

K, ...2..., Ca, Mg, ...2..., Zn, ...3..., Sn, Pb, H, Cu, Hg, ...4..., Au

I. Name the metals suitable for 1, 2, 3 and 4. (02)

II. What is the non-metal present here? (01)

III. What is the method used to extract metal 1? (01)

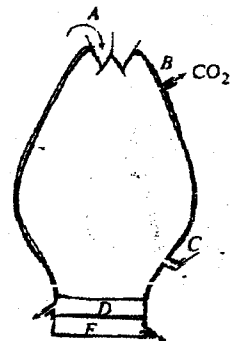
IV.

a) Name this furnace.

b) For what is this used for?

c) What are raw materials used for this?

d) Write two advantages of slag collected here.



(01)

(01)

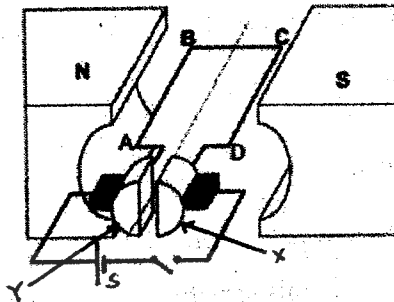
(01)

(01)

(Total = 20marks)

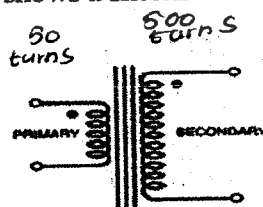
07)

A) Given below is a rough sketch of a direct current motor.



- i. What is the direction of the current through the coil? (01)
- ii. a) Name the direction of the force exerted on coil, (01)
b) What is the law used to find the above direction? (01)
- iii. Write the functions of X and Y. (02)
- iv. Mention the energy transformation take place here. (01)
- v. Write two factors affecting the speed of movement of the conductor. (02)
- vi. What will happen to the movement of the coil if the terminals of the battery is changed? (01)

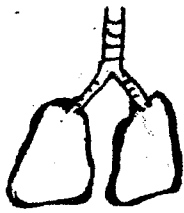
B) The following diagram shows a sketch of a transformer.



- i. What type of a transformer is it? Give reasons for your answer. (02)
- ii. Give an example for an instance where this transformer is used. (01)
- iii. Write the relationship of the number of turns of the primary and secondary coils and the voltage of the primary and secondary coil. (01)
- iv. Calculate the voltage can be taken from the secondary coil when 230V current is supplied to the primary coil. (02)
- v. Find the current flow through the secondary coil if 10A current is flow through the primary coil. (02)
- vi. Write the ratio between the currents flow through the primary and secondary coils. (01)

08)

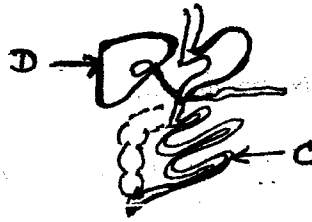
Given below are few organs belong to some systems in human body.



A



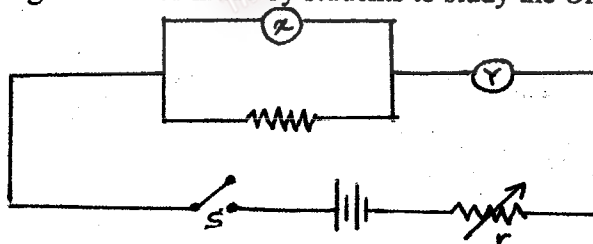
B



E

- i. Name the systems which A, B, C and D belong to. (02)
- ii. a) Name the capillaries which connects A and B. (01)
 b) Write one difference between those capillaries. (01)
- iii. Write two adaptations of A to increase the efficiency of the above process. (01)
- v. a) What is the substance produces in organ D and transfer to E? (01)
 b) Why is it considered as an excretory substance? (01)
 - i. a) Name the structure which reduces the volume inside the organ A. (01)
 b) Write the activity take place inside this structure. (01)
 - ii. Write two functions of tube C to perform it's function. (01)
 - iii. forming bladder stones is a disease associated with system E.
 - a) Write the chemical formula of this substance. (01)
 - b) Write two habits can prevent this disease. (02)
- iv. The combination of all the above systems can be given by one word. What is it?(01)

B) The following circuit was made by students to study the Ohm's Law.



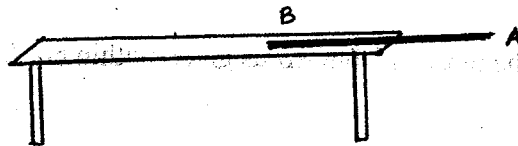
- i. Write the functions of X and Y instruments. (01)
- ii. What is the advantage of connecting the equipment R to the circuit? (01)
- iii. Write the measurements should be taken to prove Ohm's law. (01)
- iv. Draw a graph to show the relationship between these two measurements. (Name the axes correctly) (01)
- v. What is the factor should be keep constant during this experiment? (01)
- vi. Write a statement for the law which was proved by this experiment. (01)
- vii. The total resistance of this circuit is 15Ω . The voltage of cells is 3V. Find the current flow through the circuit. (01)

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(Total = 20marks)

- 09) A) A student project 200g ball vertically upward with 50ms^{-1} initial velocity. (Gravitational acceleration is 10ms^{-2})
- What is the momentum of the ball when it starts its motion? (01)
 - What is the velocity of the ball when it reached the maximum height? (01)
 - Draw the velocity time graph for the motion of the ball from the instance where it is projected to the instance where it reached the ground again. (02)
 - Find the maximum height which the ball reached. (02)
 - What is the potential energy obtained by the ball at the maximum height? (01)

- B) A student kept a meter ruler on the table and put a force on the ruler from the end A and released it as given in the diagram.



- Draw the displacement time graph for each vibration. (01)
- Use X and Y letters to show the maximum vibrations of the above graph. (01)
- Mark the wavelength of the wave as λ in the graph. (01)
- Briefly explain the amplitude of the wave using A, X and Y. (01)
- The metal ruler did 200 vibrations in 10 seconds, Find the frequency. (01)

- C) 1) Given below are some observations of an experiment done by the science teacher to check the solubility of solutes. A, B and C solvents were used for this. NaCl and I_2 are used as solutes.

Solute \ Solvent	A	B	C
NaCl	(a) Clear Solution	(b) NaCl	(c) NaCl
I_2	(d) Light Colour Solution	(e) Brown Colour Solution	(f) Clear Solution

Use the given letters to answer the questions.

- The solution dissolves more I_2 (01)
- The most polar solvent..... (01)
- Unsaturated solutions..... (01)
- The solvent has only C-C and C-H bonds..... (01)
- What factor affecting the solubility can be explained by a,b,c and d,e,f solutions.(01)

- 2) Temperature is one factor affecting the rate of reactions.

- Name two other factors affecting the solubility of the rate of reactions. (01)
- Draw the setups of the experiment used to show the effect of temperature on rate of reactions using iron nails. (02)