ASIAN GRAMMAR SCHOOL
1st TERM ASSESSMENT – 2019
SCIENCE
GRADE – 11

Name...............................   Class..................
Prepared by Ms. Sandini Perera   **Duration: 1 Hour**

➢ **Answer all the questions.**
➢ **Select the correct or the most appropriate answer (1-4) for the questions from 1 to 40.**
➢ **Put (x) in the relevant circle**

1. Which of the following bio-molecule contributes to transmit hereditary characters?
   (1).Protein   (2).Carbohydrates   (3).Lipid   (4).Nucleic acid

2. Which of the following is a solid-solid homogeneous mixture?
   (1).Alcohol solution   (2).Stainless steel
   (3).Salt solution   (4).Mixture of stone, sand and cement

3. The usual site of implantation is the,
   (1).fallopian tube   (2).uterus   (3).Vagina   (4).urethra

4. Of the following which cells are found only in the phloem tissue?
   (1).Sieve tubes and companion cells   (2).Vessel cells and sieve tubes
   (3).Sieve tubes and tracheid   (4).Tracheid and parenchyma cells

5. A multi nucleated cell,
   (1).Cardiac muscle cell   (2).Phloem parenchyma cell
   (3).Skeletal muscle cell   (4).Smooth muscle cell

6. The correct statement regarding the protein present in the body of organisms is,
   (1).Sugars are one kind of Protein   (2).Proteins are made up of fatty acids
   (3).Helps to maintain the body temperature   (4).Involve in homeostasis

7. The reading of aneroid barometer is 102000 Pa when the aero plane flies in the sky. What is the height of Mercury column in Mercury barometer that exerts the same pressure as the above pressure?
   (Density of mercury = 13600 $kgm-3$, Gravitational acceleration = 10 $ms-2$)
   (1).0.76m   (2).1.03m   (3).1013m   (4).0.75m

8. Select the reactant X in the following chemical reaction?

   $$2\ Zn(s) + X \longrightarrow 2\ ZnO(s)$$
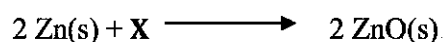
   (1).H_2O (2).O_2 (3).O (4).O_3

9. Bacteria, fungi, algae and protozoa are micro - organisms of the same group. Examples for each organism are in order,
   (1).*Penicillin, Salmonella, Spirogyra, Amoeba*
   (2).*Mildew, Salmonella, Paramecium, Amoeba*
   (3).*Vibrio, Penicillin, Chlamydomonas, Paramecium*
   (4).*Paramecium, Chlamydomonas, Spirogyra, Salmonella*

10. How many molecules of water contain in 18g of water? (H = 1, O = 16)
    (1). 6.022×10^{23} (2). $2 \times 6.022 \times 10^{23}$
    (3). $(6.022 \times 10^{23}) \div 2$ (4). $18 \times 6.022 \times 10^{23}$

11. The answer which include only polar organic solvents is,
    (1).Hexane, benzene, carbondi sulfide
    (2).Ethanol, methanol, acetone
    (3).Water, liquid ammonia, hexane
    (4).Acetone, benzene, hexane

• Properties of material A, B, C and D are shown in the chart given below. Answer question no. 12, 13 and 14 using it.

Material	Melting point	Solubility in water	Ability to conduct electricity
A	44	Insoluble	Weak
B	1610	Insoluble	Weak
C	1083	Insoluble	Conduct electricity
D	808	Soluble	Conduct electricity

12. A metallic element could be,
    (1).A   (2).B   (3).C   (4).D

13. A Simple molecular covalent compound could be,
    (1).A   (2).B   (3).C   (4).D

14. An ionic compound could be,
    (1).A   (2).B   (3).C   (4).D

15. What is the height of a ball after 2 seconds when it is thrown vertically upward from the earth with the velocity of 40ms⁻¹?
   (1).100m   (2).60m   (3)80m   (4).40m

16. Of the instances given below, what is the instance acted in order to increase the friction?
    (1).Applying lubricators between contact surfaces of machines
    (2).Cutting grooves in foot wears and vehicle tires
    (3).Using bearing for places that turn in machines
    (4).Putting talc powder on the surface of the carom board

17. Not a feature of epithelial tissue,
    (1).Cells are placed on a basement membrane
    (2).Cells are tightly packed
    (3).Presence of a nerve supply
    (4).Presence of a blood supply

18. A student was assigned to make a small heater. He was provided with four metals with equal sizes. Four metals were Nichrome, Copper, Aluminum and Iron. The selection of the student should have been,
    (1).Nichrome   (2).Copper   (3).Iron   (4).Aluminum

19. The reason for the above answer is,
    (1).Resistivity of the chosen metal is high
    (2). Resistivity of the chosen metal is low
    (3).Chosen metal conducts heat very well
    (4).Chosen metal conducts current very well

20. Not a factor which affect the rate of reaction
    (1).Surface area of products
    (2).Concentration of reactants
    (3).Temperature at which the reaction occurs
    (4).Surface area of reactants

21. Not a content in the cell theory.
    (1).Structural and the functional unit of life is the cell
    (2).All organisms are made up of one or more cells
    (3).New cells are formed from pre-existing cells
    (4).All the cells die eventually

- 22, 23 and 24 questions are based on the figure shown below.

    Density of the liquid - p, Gravitational force – g, Atmospheric pressure – P_0
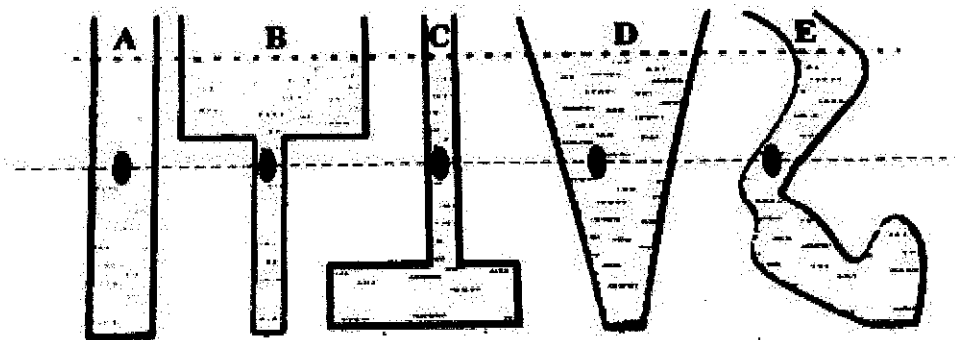
22. Select the correct statement about the pressure of the 5 vessels.
    (1).The pressure at the base of all the 5 vessels are equal
    (2).The pressure at the base of D is the greatest
    (3).The pressure at the base of C is the greatest
    (4).The pressure at the base of A, B, C, D vessels are equal

23. The correct scientific basis to the above answer is,
    (1).Pressure does not depend on the shape of the vessel
    (2).Pressure vary with the shape of the vessels
    (3).Pressure depends on the shape of the base
    (4).Pressure depends on the total volume of the liquid

24. Pressure at the base of the vessel D is,
    (1).P_0 (2).hpg   (3).P_0 + hpg   (4).P_0 − hpg

25. Which of the following is an example of an acidic oxide?
    (1).Sodium oxide   (2).Sulphur trioxide
    (3).Magnesium oxide   (4).Aluminum oxide

- The diagram shows the positions of elements L, M, Q, R and T in the Periodic Table.
  These letters are not the chemical symbols of the elements.

						R	T
L							
M	Q						

26. Which statement about the properties of these elements is correct?
    (1). L, M and Q all are non-metals
    (2). M reacts more vigorously with water than does L
    (3). T exists as diatomic molecules
    (4). T is more reactive than R

27. Which statement given below is correct in relation to both algae and fungi?
    (1).Autotrophic due to the presence of chlorophyll
    (2).There are forms which are unicellular or filamentous
    (3).Cell wall is made of chitin
    (4).Heterotrophic or saprophytic due to absence of chlorophyll

28. Resistance of this resistor in the diagram given is 320Ω colour bands. A, B and C are
    respectively, (black − 0, brown − 1, red − 2, orange − 3)
    (1). Red, Orange, Brown
    (2). Red, Orange, Black
    (3). Orange, Red, Black
    (4). Orange, Red, Brown

A   B   C

- The question numbers 29 and 30 are based on the following description.

  A cross between a homozygous organism and a heterozygous organism is illustrated here. R is the dominant character while r is the recessive character.

29. The genotype ratio of the F_1 generation is,
    (1).1:1   (2).1:2:1
    (3).3:1   (4).all belong to the same genotype

30. The phenotype ratio of the F_1 generation is,
    (1).1:1   (2).1:2:1
    (3).3:1   (4).all belong to the same genotype

$\times$	R	R
R	RR	RR
r	Rr	Rr

31. A – Performing protein synthesis
    B – Producing and transporting lipids and steroids
    C – Secreting and transporting substances
    Which of the organelles perform the above functions respectively?
    (1). Ribosome, Golgi complex, endoplasmic reticulum
    (2). Ribosome, endoplasmic reticulum, Golgi complex
    (3). Mitochondria, lysosome, Golgi complex
    (4). Lysosome, ribosome, chloroplast

32. The instrument of the voltmeter given in the circuit is 6V. The ammeter reading is,
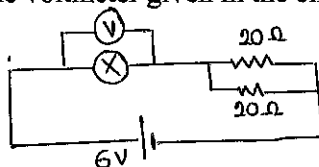
    (1).0.6A   (2).1.5A   (3).2A   (4).18A

33. Gravitational potential energy of an airplane moving at a certain height is equal to its kinetic energy. Its velocity is 200ms⁻¹. Height is between the airplane & ground level is, ($g = 10ms^{-2}$)
    (1).200m   (2).2000m   (3).20,000m   (4).400m

34. A light, uniform rod AB kept in balance on a knife edge by two forces 20N and F. The magnitude of the force F at this instance is,

    (1).160N   (2).40N
    (3).30N   (4).9.6N
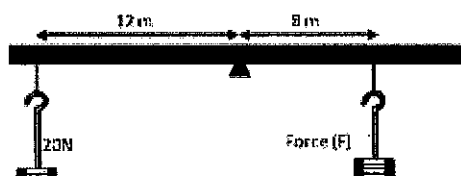
35. The following are some characteristics belonging to flowering plants.
    A- Presence of a fibrous root system
    B- Reticulate venation in leaves
    C- Presence of a thick cuticle in leaves
    D- Unbranched stem
       Of the above, the characteristics that help identify monocotyledons plants are,
       (1).Only A & B   (2).Only B & C   (3).Only C & D   (4).Only A & D

36. The correct definition of electro negativity is,
    (1).Tendency of a nucleus to attract the electrons of the shells surrounding it
    (2).Ability of an atom to make the other atom electro negative
    (3).Tendency of an atom to attract electrons of a chemical bond towards itself
    (4).Ability of a bond between two atoms to be negative in charge spontaneously

37. In Fe extraction,
    (1).Molten iron floats on slag
    (2).Slag is composed Calcium silicate and Calcium manganate
    (3).A temperature of 1000^0C to 1900^0C is used
    (4).Downs cell is used

38. What can you say about the purity of a sample obtained via crystallization and recrystallization?
    (1).Purity is same
    (2).Purity is more in a crystallized sample
    (3). Purity is more in a recrystallized sample
    (4).Purity is twice in a crystallized sample as that of a recrystallized sample

39. Following figure shows how a force (P) acts on an object (A) placed on a rough horizontal surface. Force P is gradually increased. P = 40 N it comes to the limiting state. Which of the following statement is incorrect regarding (F) friction force acts on A?
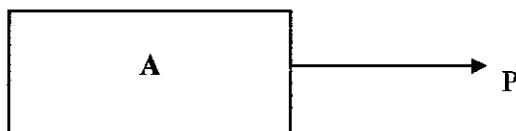
    (1).When P is increased F also gradually increased
    (2).The maximum value of P is 40 N
    (3).When A is moved F decreased up to 40 N
    (4).When A is stable, whatever happens to value of P, F=40 N

40. Which of the following statements correctly define the weight of an object?
    (1).The amount of matter contained in the object
    (2).The product of the mass of the object and its acceleration
    (3).The force of attraction exerted by the earth on the object
    (4).The product of the mass of the object and its velocity

(40 marks)

ASIAN GRAMMAR SCHOOL
1ˢᵗ TERM ASSESSMENT – 2019
SCIENCE
GRADE – 11

Name.................................   Class...................
Prepared by Ms. Sandini Perera   **Duration: 3 Hours**

➤ Write your answers in neat hand writing.
➤ Answer the four questions in part A, in the space provided.
➤ Of the five questions in part B answer three questions only.
➤ After answering, tie part A and the answer script of part B together and hand over.

Part A - Structured Essay Questions.

(01). (A). "The cultivation of legumes makes the soil fertile". A group of students are asked to check whether the above statement is true or false. They have planned and implemented an activity as follows.

Step 1

- Selecting two plots with equal area and soil factors.
- Growing soybean in one plot and maize in the other plot.
- Supplying all the factors needed for growth equally.
- Burying all the remaining parts after collecting the harvest.

Step 2

- Preparing soil afresh of the two plots and growing leaf cabbage in both of them.
- Supplying the factors needed for growth equally.

Step 3

- Comparing the growth of plants after an equal time interval.

1. Write two factors that should be supplied equally in step 2.   (02)
   ....
   ....

2. State a criterion that can be used to compare the growth of plants in step 3.   (01)
   ....

3. Is the activity sufficient to check the correctness of the statement, "The cultivation of legumes makes the soil fertile"? (01)

....

4. Give one reason for your answer. (01)

....
....

(B). Plant tissues are categorized into two as permanent tissues and merismatic tissues. These tissues are categorized further.

1. Why do xylem tissues and phloem tissues identify as complex permanent tissues? (01)

....

2. To study the permanent tissues, it is ready to observe a thin layer of onion through the microscope. Write the steps of the preparation of onion tissue in order. (03)

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

3. Draw a labelled diagram of a tissue that can be seen, when observing the onion layer through microscope. (02)

(c).Some animals selected for a study of animals are as follows. Write to which class each of them belong. (04)

Ostrich..

Crocodile..

Giraffe...
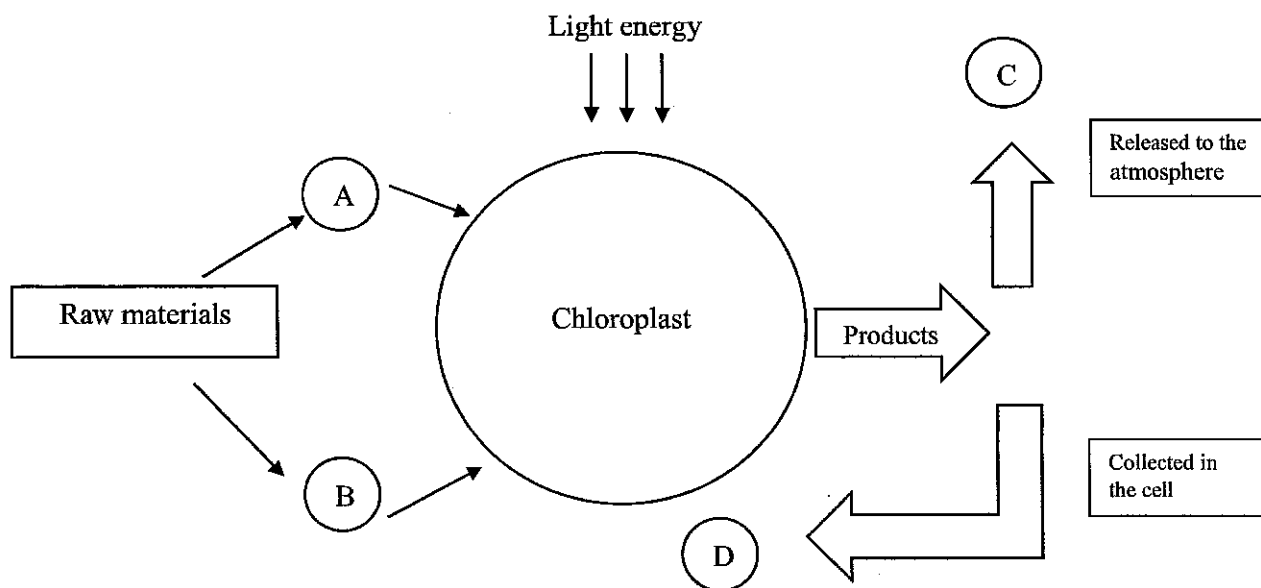
Seahorse...

(02). The diagram below summarizes the biological function photosynthesis, going on in a chloroplast. Answer the questions according to the diagram.

Light energy

Raw materials

A

B

Chloroplast

Products

C

Released to the atmosphere

D

Collected in the cell

1. Name (A), (B), (C) and (D)   (04)
   A..................................   B...................................
   C..................................   D...................................

2. The substance (D) dissolves in water. But in the leaf, (D) converts to a substance that does not dissolve in water. Name the substance that does not dissolve in water.   (01)
   ....

3. What is the chemical we can use in the laboratory to identify that substances?   (01)

   ....

4. This insoluble substance is converted to another water soluble carbohydrate in dark. Name that carbohydrates.   (01)

   ....

5. Which tissue in the plant transport this carbohydrate.   (01)

   ....

6. What are the cells that can be seen in above tissue? (04)

....
....

7. Write two adaptations in the tissue you mentioned in (5) to do its function. (02)

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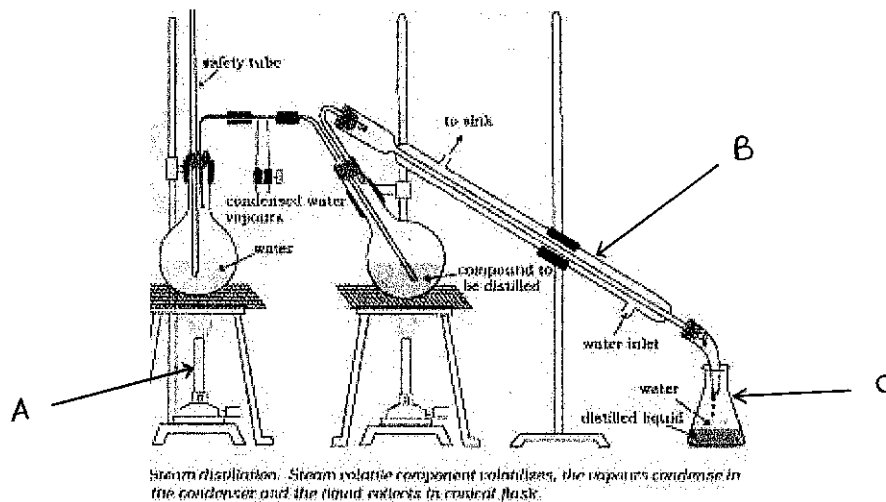
8. Write the chemical balanced equation to indicate the process photosynthesis in a plant leaf. (01)

....

(03). A. The diagram below shows a set of equipment's used in the laboratory, to extract essential oil from the cinnamon leaves.

Steam distillation. Steam volatile component volatilizes, the vapours condense in the condenser and the liquid collects in conical flask.

1. Identify the three apparatus indicated by A, B and C in the diagram and write their names. (03)

A..
B..
C..

2. What is the name given to this technique of extracting essential oils using this setup?(01)

....

3. Name two properties of essential oils which facilitate the extraction of these oils by this method. (02)

....
....

B. P is an ionic compound. Given below are some readings reported by two groups of students who carried out experiments on the solubility of P.

Experiment (1)

Solvent	Thinner	Hexane	Water
Mass of P dissolved in 100g of solvent at room temperature	X	Y	Z

Experiment (2)

Temperature (^{0}C)	30	60	90
Mass of P dissolved in 500g of water (g)	5.4	6.2	6.7

1. What is the factor, tested by the student, on the solubility of P in experiment (1)?   (01)

....

2. What is the factor that tested on solubility of P in experiment (2)?   (01)

....

3. How much is the solubility of P, in water at 60 ^{0}C?   (02)

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

C. 1. What is the volume of acetic acid needed to prepare 500cm^{-3} of an aqueous solution of acetic acid with composition of 1/25 v/v?   (02)

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

2. A solution of 1 dm3 is prepared by dissolving 15g of urea CO (NH$_2$)$_2$ in distilled water. Find the concentration of the solution. (C – 12, O -16, N – 14, H – 1)   (03)

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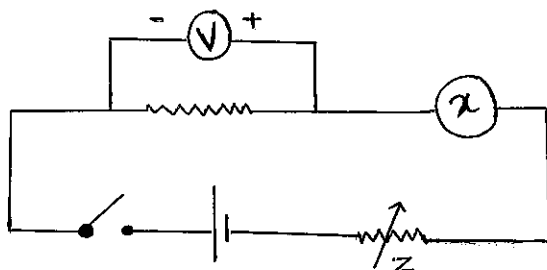...

(04). (A). The current flows through a nichrome wire varies as the potential difference between two terminals of the wire changes. The diagram shows as experiment set up to investigate this phenomenon. X and V are two measuring instruments.

1. How is the X connected with the nichrome wire?   (01)

   ....

2. There is a mistake of joining V equipment with the circuit. What is it?   (01)

   ....

3. The fault was corrected and taken four pairs of reading of X and V. Sketch a graph readings of X vs. readings of V. (Numerical values not necessary)   (02)

4. At a certain instance the potential difference of two ends of the nichrome wire was 3V and the current flows was 0.4A. Calculate the resistance of the wire at this instance.(03)

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

(B). A bus of mass 1000kg being stopped on a rough horizontal floor. Four men are pushing the bus forwards forward white the engine is being off.

1. What are the factors affecting friction?   (02)

   ....
   ....

2. If the limiting fractional force is 2000N. What is force applied by each man?   (02)

....
....

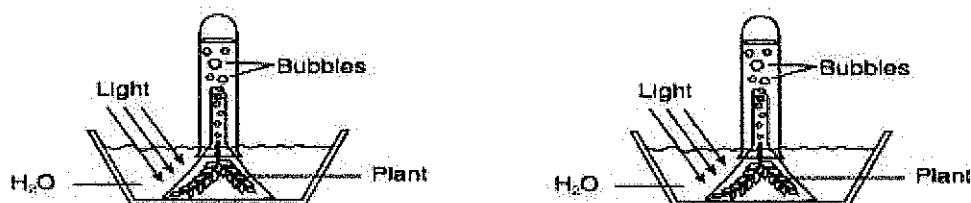3. At the time bus was pushing it got an acceleration of $0.5ms^{-2}$. Find the frictional force at the moment the bus starts to move.   (02)

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

4. The diagram show a pan balance in the state of rest. Draw a diagram to show the forces in action at this instance.   (02)
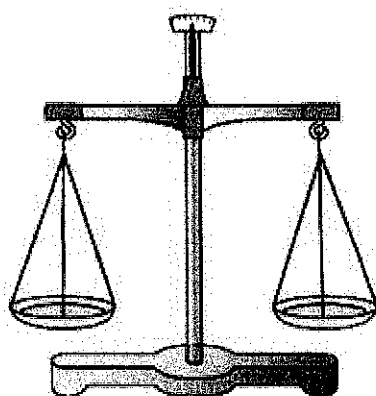
Part B - Essay Questions.

(05).

The diagram show two experimental set ups used to study the influence of various factors on the rate of photosynthesis. The two set ups are by inserting hydrilla plants into two funnels. Both set ups are kept in a place where they receive continuous sunlight equally, on a bright sunny day. The water in the set-up 2 has been saturated with carbon dioxide by bubbling carbon dioxide gas through it. The number of gas bubbles evolved have been counted and recorded in time periods of five minutes as a measurement of rate of photosynthesis. Result are shown in the table.

Time period of recording readings (a.m.)	Number of gas bubbles evolve	
	Set - up 1	Set - up 2
8.00 – 8.05 hrs.	2	2
9.00 – 9.05 hrs.	6	7
10.00 – 10.05hrs.	8	10
11.00 – 11.05 hrs.	10	13
12.00 – 12.05 hrs.	12	15

1. The chain of chemical reactions takes place during photosynthesis. We can summaries the process using an equation

(a).Name one factor that is likely to influence the rate of the said chemical reaction in the set up.   (02)

(b). State the conclusion that you can arrive at taking into consideration the observations obtained from the set-up 1 only.   (02)

(c). Explain the reason for the change in the observations made through set up 1 and set up 2.

(03)

(d).What is the variable applied in set up 2.   (02)

(e). Write another way of applying that variable factor?   (01)

II.   Determine the anticlockwise moment.   (02)

III.   Calculate the distance X, from the pivot.   (02)

2. (a).Define the term density.   (02)

(b). An object has a density of 25 kg/m3, weighs 10 N in air and 5 N when immersed in water. (Density of water – 1000kg/m^3)

   I.   Determine the weight of the fluid displaced.   (01)

   II.   Calculate the volume of water displaced.   (02)

   III.   State two disadvantages of using alcohol in thermometers.   (02)

(07). 1. (a). The following diagram shows an instance where block of aluminum metal (A) immersed in water hanged by spring balance gets weight in the water was recorded as 10N.
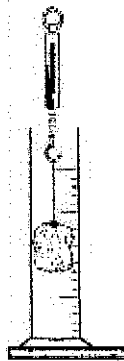
   I.   Write one factor that affect the pressure applied by the object on water.   (01)

   II.   When the object at the depth of 25cm, what is the pressure exerted by water on the object. (density of water 1000kg/m^3, gravitational acceleration 10ms^{-2})   (02)

(b).Before the block of Aluminum (A) immersed in water its weight in air was recorded as 20N in the spring balance.

   I.   What can you say about the weight of the object A? (reading of the spring balance)
                                                         (01)

   II.   What is the instrument design to decide the density of liquid using above phenomenon?   (01)

2. (a).In pea plants, yellow seed color (Y) is dominant to green seed color (y). A farmer crossed two heterozygous pea plants.

   I.   Draw a punnet square in the Answer Booklet to find the genotype and the phenotype of the offspring of the above cross.   (04)

2. (a).In the above experiment, the rate of photosynthesis has been determined in relation to the number of bubbles of gas that evolved. Suggest and alternative method that could be adopted instead. (03)

(b).Write down a simple experiment to confirm that the gas collected in the test tube is oxygen. (03)

3. Another set up similar to set up 2 has been kept in a dark place for several hours, from the moment it was arranged and observations were made later. At that time too some gas had been collected in the test tube.

(a).State what gas it could be. (02)
(b).State the process, by which this gas is produced. (02)

(06). 1. (a). State Newton's First Law of motion. (02)

(b).The diagram given below shows a block of mass 5 kg acted upon by a force of 50 N. A frictional force of 10 N also acts on the block.
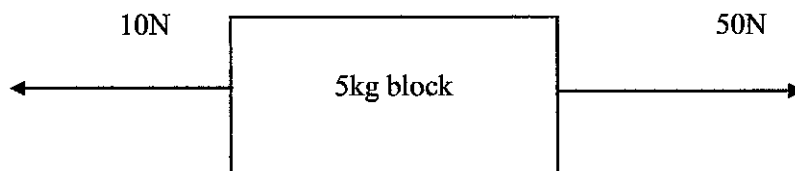
I. State the direction in which the block will move. (02)
II. Calculate the resultant force acting on the block. (02)
III. Calculate the magnitude of the block's acceleration. (02)

(c).The diagram given below show s balanced lever with two toys of weight 9N and 6N.

Pivot
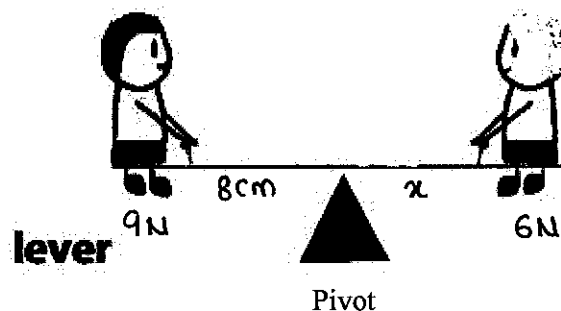
I. State the principle that keeps the leaver balanced. (01)

I. Name the tissues A and B. (02)
II. Write a characteristic that helped identify those tissues as above. (02)
III. Write a difference and a similarity between smooth muscles and cardiac muscles. (02)

(c) What kind of muscles,

I. moves food from your mouth to the stomach? (01)
II. moves your arm when you turn this page? (01)
III. moves blood around you blood? (01)

(d). Describe one way that heart muscle is,

I. similar to the stomach muscle. (02)
II. different from stomach muscle. (02)

(09). 1. (a).The main function of a saltern is the production of salt. A simplified diagram of a saltern is illustrated below.
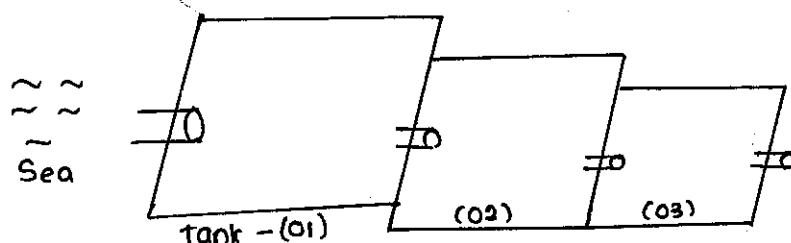
I. What is the process that causes the increase in concentration of brine here? (01)
II. According to the above figure, in which tank does salt crystallize? (02)
III. Of the compounds, dissolved in sea water, which crystallize out first? Give reasons for it. (02)
IV. What happens if the mother liquor has not removed at the correct time? (01)

(b). Element X contains 20 protons.

I. How many electrons does a neutral atom of X have? (01)
II. Write the electronic configuration of X. (02)
III. Write the number of the group and the number of the period in the Periodic Table to which X belongs, in order. (02)
IV. Another element Y is accommodated in group vii of the Periodic Table. Write the formula of the compound formed by the reaction between X and Y. (02)

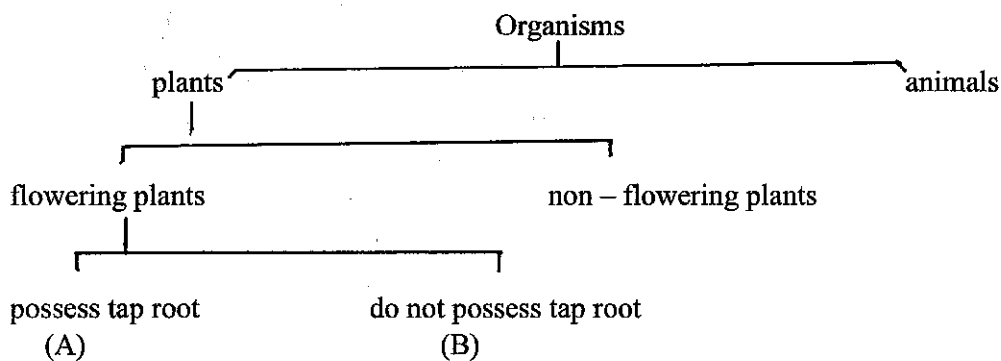(c). One method of expressing the composition of a solution is indicating it as concentration.

I. If the amount of moles of a solute is n and the volume of the solution is V, write an expression for the concentration of that solution. (02)
II. If 20g of NaOH were dissolved in water and diluted to 500cm^3, what is the concentration of the resulting solution? (Na = 23, O = 16, H = 1) (05)

II.   If the farmer plants one hundred seeds produced from the above cross, what would be the expected number of plants producing yellow seeds?   (01)

III.   Why is genetic variation important?   (01)

(b). Sexual reproduction in plants involve pollination and fertilization as two major processes. With reference to this statement,
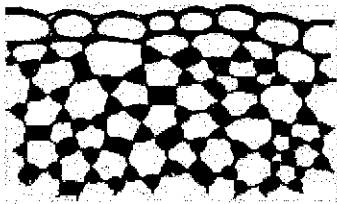
I.   Define cross-pollination and self-pollination.   (02)

II.   Describe two ways wind and insect pollinated flowers are each adapted to support pollination.   (04)

III.   Write 3 adaptations in plants to avoid the self-pollination.   (03)

(08). 1. (a).The following scheme was constructed using the information collected during a study conducted to inquire into the classification of living organisms.
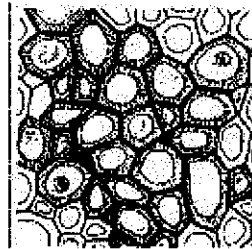
Organisms

plants   animals

flowering plants   non – flowering plants

possess tap root   do not possess tap root
   (A)   (B)

I.   To which group of plants do A and B belong?   (02)

II.   What differences can be seen in the flowers belonging to the two groups? (02)

III.   Write an advantage of the natural classification.   (01)

IV.   Write two facts presented by the cell theory put forward by Schliden, Schwan and Radolf.   (02)

(b).Several cells assemble to form a tissue. Given below are diagrams of two types of tissues which can be seen in plants.

A   B