22. 07. 2016

Education Zone - Negombo
2nd Term Evaluation - 2016
Science

Index No: ....

6 pages

| Grade 11 | Paper I | 1 hour |

- **Answer all questions by selecting the most appropriate answer for each question**

01. Diagram shows a cell organelle. What is this organelle?

    (1) Chloroplast

    (2) Vacuole

    (3) Endoplasmic Reticulum

    (4) Golgi bodies
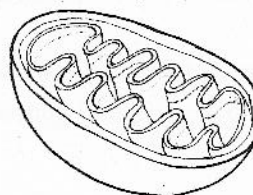
02. Select the disease which is **not** genetically transmitted.

    (1) Hemophilia   (2) Colour blindness

    (3) Thalassemia   (4) Anaemia

03. What is the electron configuration of the element that belongs to the third period and 2nd group of periodic table.

    (1) 2, 8, 2   (2) 2, 8, 1

    (3) 2, 8, 8, 1   (4) 2, 8, 8, 2

04. Sea-horse belongs to, class

    (1) Amphibia.   (2) Pisces.

    (3) Reptilia.   (4) Aves.

05. A scalar quantity is,

    (1) velocity   (2) acceleration

    (3) speed   (4) weight

06. Number of electrons, protons and neutrons of $^{35}_{17}Cl$ atom is,

    (1) 17, 17, 17   (2) 17, 17, 35

    (3) 17, 18, 17   (4) 17, 17, 37

07. Which compound shows lower solubility when increasing the temperature ?

    (1) Salt   (2) Sugar

    (3) Potassium sulfate   (4) Oxygen gas

08. 80 g of Sodium hydroxide is dissolved in 180 g of water. Calculate the molar fraction of NaOH. (H = 1 , O = 16, Na = 23)

    (1) 1/5   (2) 5/12

    (3) 2/5   (4) 1/6

1

09. "Water has special properties as it is in liquid form at room temperature." This is due to,
    (1) polarity of water molecules.
    (2) covalent bond between H and O atoms.
    (3) hydrogen bonds between water molecules.
    (4) H^+ and OH^- ions in water.

10. Study the diagram. T and W would be ,
    (1) T = Tension ; W = Mass
    (2) T = Tension ; W = Weight
    (3) T = Weight ; W = Tension
    (4) T = Mass ; W = Tension

11. Select the group of metals which do <u>not</u> react with cold water, hot water or water vapour.
    (1) Fe, Al, Zn   (2) Pb, Au, Ag   (3) Mg, Fe, Al   (4)Au, Na, Zn

12. Small amount of aqueous solution of food sample X is taken and tested to identify the food type. Tests and observations are given by A and B.
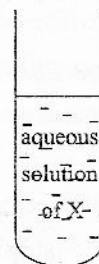   A   Add Sudan III and mix well   - pink/red globules
    B   Add NaOH and $CuSO_4$ - colour blue
    According to A and B, X contains respectively,
    (1) starch and protein.   (2) protein and starch.
    (3) lipid and protein.   (4) protein and lipid.

aqueous solution of X

13. An object starts to move at rest on a liner pathway with the acceleration of 0.2 ms^{-2} for 30.s. If with the constant velocity it travels another 5 minutes. Calculate the constant velocity of it.
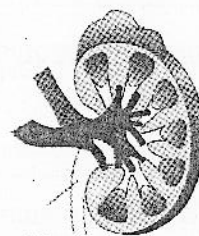   (1) 12 ms^{-1} (2) 3 ms^{-1} (3) 6 ms^{-1} (4) 4 ms^{-1}

14. Select the answer that contains respectively a strong basic oxide and acidic oxide ?
    (1) MgO , Al_2O_3 (2) MgO, Na_2O
    (3) SiO_2 , P_2O_5 (4) Na_2O , SO_3

15. Longitudinal section of a kidney is given below. What is labelled as X ?
    (1) Renal vein
   (2) Renal artery
    (3) Ureter
    (4) Collecting duct

X

16. A force of 10 N is applied on an object. If it moves 50 cm what would be the work done ?
    (1) 0.5 Nm
    (2) 500 Nm
    (3) 5. J
    (4) 500 J

2

17. Select the answer that contains the correct 'structure - function' relationship.

Answer	Structure	Function
1	apical meristem of stem	increasing height of stem
2	parenchyma tissue	Photosynthesis
3	cambium	transportation of salts
4	Scllerechyma	supporting

18.
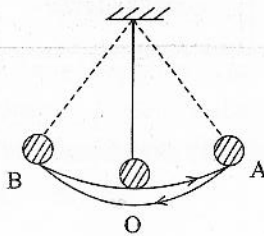
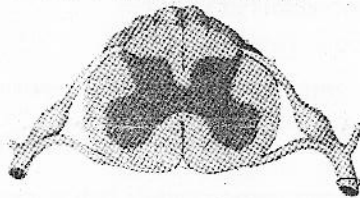A light weighted ball hanging in a string is s vung around point O as in the given diagram.

Consider the following statements.

A. - Displacement at O is 0.

B. - Velocity decreases gradually from O to B

C. - Maximum speed is at passing O from A.

Select the answer with correct statements.

(1) A and B only.

(2) B and C only.

(3) A and C only.

(4) All the above.

19. This diagram shows a cross section of,

(1) spinal code.

(2) spinal nerve.

(3) cerebral nerve.

(4) cerebrum.

20. Select the correct order of separation techniques used in the following instances. separation of compounds in crude oil, separation of compounds in chlorophyll mixture, extraction of salt from sea water and extraction of essential oils from plant materials

(1) steam distillation, chromatography, fractional distillation, solvent extraction

(2) fractional distillation, chromatography, crystallization, steam distillation

(3) solvent extraction, steam distillation, crystallization, fractional distillation

(4) chromatography, crystallization, steam distillation, fractional distillation

21.

X 6Ω

Y 3Ω

4 V
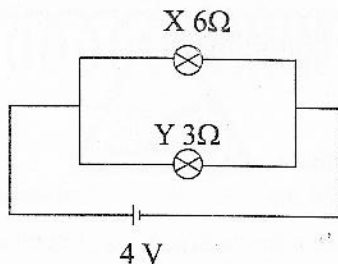
Resistance of X and Y bulbs are respectively 6Ω and 3Ω. These bulbs are connected to 4V power supply as in the given diagram. If bulb X is not working consider the following statements.

A - increase the current that passes through bulb Y.

B - voltage does not increase across bulb Y

C - decrease the current that passes through bulb Y.

Select the answer with correct statements.

(1) A and B only.
(2) B only.
(3) A only.
(4) A and C only.

3

22. Parallel light rays emitted from light source X pass through two optical instruments A and B as in the given diagram. What would be the two instruments respectively ?
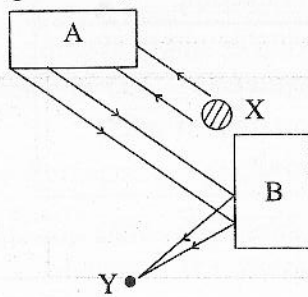
	A	B
1	concave lense	convex lense
2	prism	concave mirror
3	prism	convex mirror
4	concave mirror	concave lense

23. Mass of an element is "a" and mass of C element is "b". What is the relative atomic mass of "a"?

(1) a/b

(2) 12b/a

(3) 12a/b

(4) a x 12 b

24. Consider the following statements.

A. Food digestion starts from the mouth and ends in small intestine.

B. Protein digestion starts in duodenum.

C. glucose and amino acids are absorbed in to blood vessels in vili.

Select the correct statements.

(1) A & B only.   (2) B & C only.   (3) A & C only.   (4) A only.

25.
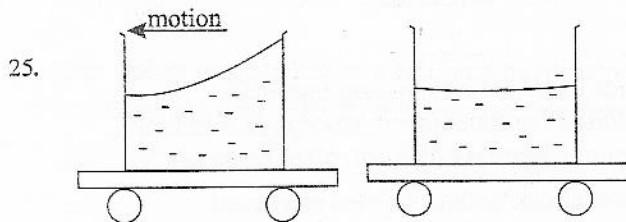
A water beaker, kept on a trolley and is moved towards the direction of the arrow. Observation is given in the diagram. According to that, trolley would be moved in

(1) a constant velocity   (2) an acceleration   (3) a deceleration   (4) a constant speed.

26. Following diagram shows a vibrated slinky.
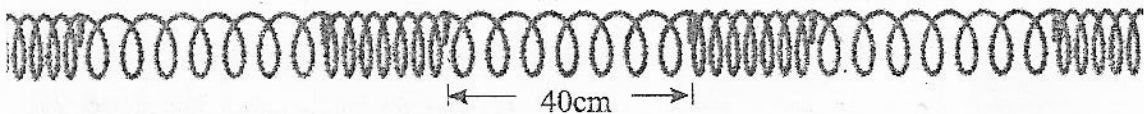
If the vibrated frequency of slinky is 100 Hz velocity of that wave is ,

(1) 400 ms^{-1} (2) 40 ms^{-1} (3) 20 ms   (4) 200 ms^{-1}

27. Consider the following good health practices

a. Drinking boiled water.

b. Eliminate hatching habitats of flies

c. Prevention of eating food which is sold in open places at roadside.

d. Cleaning hands with soap after using toilets

What are the two diseases that can be prevented through above practices ?

(1) conspiration & diarrhoea

(2) fever & diarrhoea

(3) gastritis & diarrhoea

(4) fever & gastritis

4

28. This diagram shows the forces applied to a static object kept on a table. If it moves in an acceleration, select the answer that shows velocity and momentum after 2 seconds (friction is not considerable).

$$40\ N \longleftarrow \boxed{10\ kg} \longrightarrow 20\ N$$
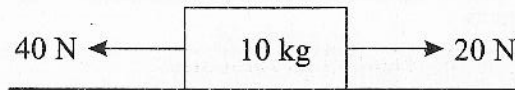
    (1) $4\ ms^{-2}$, $60\ kg\ ms^{-1}$ (2) $4\ ms^{-1}$, $40\ kg\ ms^{-1}$

    (3) $2\ ms^{-1}$, $20\ kg\ ms^{-1}$ (4) $2\ ms^{-2}$, $0\ kg\ ms^{-1}$

29. F force is applied to an object on a table with smooth surface and moved. If a half weighted object is placed on the same surface and F force is applied, what would be the acceleration of it compared to the first object ?

    (1)   twice.   (2)   equal.   (3)   half.   (4)   trice.

30. Study the chemical reaction given below.

    $A + B \longrightarrow C + D \quad \Delta H = -X\ KJmol^{-1}$
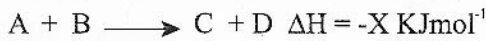
Consider the following statements on the above reaction.

        A -   This is an exothermic reaction.

        B -   Energy of A & B is higher than energy of C & D .

        C-   External energy should be provided for this reaction.

Select the answer with correct statements.

    (1)   A & B only.   (2)   B & C only.   (5)   A & C only.   (4) A only.

31. Select the answer that shows correct products of the given reactions.

    a. $4Na + O_2 \longrightarrow$ ....   b. $2Na + 2H_2O \longrightarrow$ ....

    (1)   5 $2NaOH$, $2Na_2O$, H_2 (2) H_2, $NaOH$, Na_2O

    (3) $2Na_2O$, $2NaOH$, H_2 (4) Na_2O, $NaOH$, H_2

32. Which contains the highest amount of nutrients ?

    (1)   superior vena cava   (2)   aorta

    (3)   portal hepatic vein   (4)   pulmonary artery

33. This is a label on a concentrated acid bottle indicating the danger of it. Which property of conc. acid is not indicated by it?

    (1)   corrosion

    (2)   corrosion when contacted with skin and clothes.

    (3)   severe burns when contacted with skin .

    (4)   unique acidic flavour.

34. Cholesterol is an essential lipid produced in the liver. As it is not water soluble it combines with protein and forms lipoprotein and is transported through the blood. There are two types of lipoprotein as LDL and HDL. Which one is responsible for   ?

    (1)   LDL   (2) LDL & HDL   (3)   HDL   (4) No effect from LDL or HDL

35. According to Newton's third law of motion, action & reaction

    (1)   should act on the same object which is compulsory.

    (2)   may act on different objects.

    (3)   should act on the different object which is compulsory.

    (4)   should not be equal in size but must act in the same direction.

36. Select the correct statement which is relevant to the nephrone.

    (1)   Fluid filtered into Bowman's capsule contains plasma protein.

    (2)   Glucose is completely reabsorbed at loop of Henley.

    (3)   Urea is the most abundant compound of filtrate in collecting duct.

    (4)   Nothing is filtered from blood capillaries to the nephrone.

37. Consider the following reactions in aqueous media.

$$HA_{(aq)} \rightleftharpoons H^+_{(aq)} + A^-_{(aq)}$$
$$XOH_{(aq)} \longrightarrow X^+_{(aq)} + OH^-_{(aq)}$$
$$HY_{(aq)} \longrightarrow H^+_{(aq)} + Y^-_{(aq)}$$
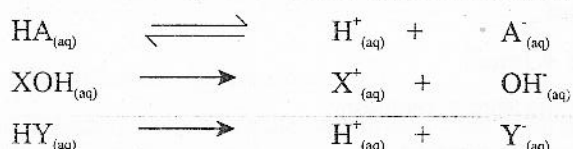
X, Y & Z are symbols of elements or forms of chemicals. Select the correct statement from the following.

    (1)   A salt is formed in reaction between HA & HY.

    (2)   Neutralization happens in reaction between HY & XOH.

    (3)   HA acts as a strong acid.

    (4)   HY & XOH act as a strong base.

38. What is the correct definition related with respiration ?

    (1)   anaerobic respiration - respiration that occurs inside the cell using oxygen.

    (2)   aerobic respiration   - respiration that occurs inside the cell without oxygen.

    (3)   lactic acid   - anaerobic respiration in plant cells

    (4)   cellular respiration   - oxidation of simple food to produce energy for cell functions.

39. Following tests were carried out for the samples taken from the test tube. Observations are given in the table.

Test	Observation
1. Add small amount of Zinc.	air bubbles are released
2. Add small amount of NaOH	test tube is heated
3. Add small amount of $CaCO_3$	air bubbles are released

Test tube might contain a,

    (1)   Sodium carbonate solution   (2)   Hydrochloric acid solution

    (3)   Sodium chloride solution   (4)   Ammonia solution

40. Select the answer with human activities which are responsible for recent extreme weather changes.

    (1)   deforestation, usage of re-neawable energy, excessive usage of agrochemicals

    (2)   combustion of fossil fuels, usage of re-neawable energy, deforestation

    (3)   deforestation, excessive usage of agrochemicals, excessive usage of natural resources

    (4)   deforestation, combustion of fossil fuels, excessive usage of natural resources

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Grade 11	Paper II	3 hours

Instructions:

(i) This paper consists of two parts as A and B.

(ii) All four questions in A should be answered in the space given.

(iii) Answer any 3 questions in part B

(iv) Answers of Part A and Part B should be tied together and handed over.

PART A - STRUCTURED ESSAYS
Answer all four questions

1. A. Various factors are responsible for photosynthesis and its rate. Following is a diagram which shows the effect of such a factor.
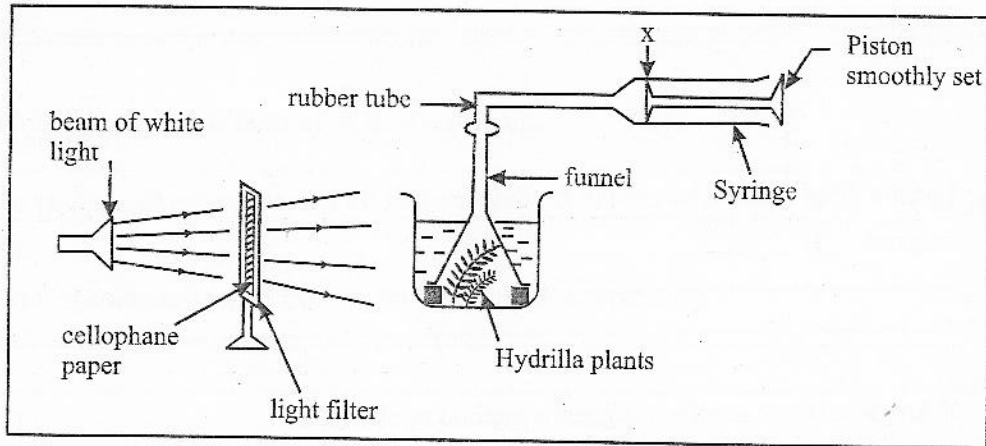
- When light travels through a special filter with cellophane papers, it directs one colour to the plant.

- At start the piston of siring fixed to rubber tube is at position X.

- Colour of used filter papers and distance that piston moves from X is given in the following table. Distance is measured in similar time intervals.

Distance piston travels from X	Colour of filter paper
Green	8 mm
Red	12 mm
Yellow	a

i. Why does the piston the move from X in this experiment ?

.... (1 mark)

ii Write two conclusions according to the given data.

....

.... (2 marks)

1

iii.   According to the data how could the value of "a" be changed ?

....

.... (1 mark)

iv.   Few minutes after the experiment using Green, Red & Yellow filters, the experiment is
repeated. The distance with red filter paper is about 7 mm. What would be the major reason
for that ?

....

.... (2 marks)

v.   Write one precaution to minimize that.

....

.... (1 mark)

vi.   Write two changes that could be applied in this experiment to increase the distance of
piston movement.

....

.... (2 Marks)

B. i.   List the thing that can be used in the Science Lab for demonstrating the activity of Amylase
enzyme.   (2 marks)

....

....

ii.   If Amylase is not supplied, suggest a method to obtain it?   (1 mark)

....

iii.   Write the main steps of demonstrating the activity of Amylase.   (3 marks)

....

....

(15 marks)

2

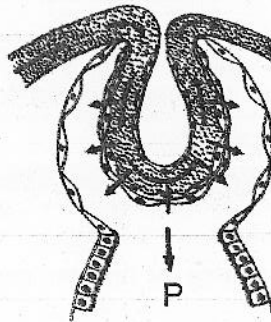2. A. Following two figures represent two structures belonging to excretory system & respiratory system.
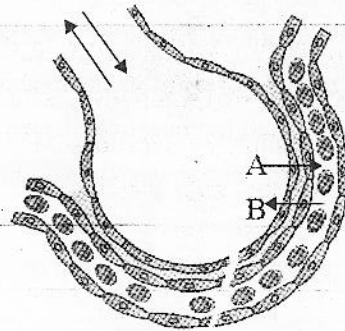

Figure X   **Figure Y**

i. Identify X & Y structures

....
.... (2 Marks)

ii. What is the component that is exchanged with blood indicated by arrow A in figure Y ?

....
.... (1 Mark)

iii. Write the major functions of X & Y separately.

....
.... (2 Marks)

iv. Write the adaptations of X & Y for their function separately..

....
.... (2 Marks)

v. What is the main excretory product th t X contains ?

....
.... (1 Mark)

vi. Write 3 components filtered in direction of the arrow from blood to P in a normal healthy person.

....
.... (3 Marks)

B.

I. What are the two systems of the human body affected by the following diseases ?
   a. Bronchitis - ....
   b. Nephritis - ....(2 Marks)

ii Write two examples for sexually transmitted diseases

....
.... (2 Marks)

(15 Marks)

03. A. few steps of an experiment conducted for testing thermal energy of a chemical reaction are given below.

- Take 100 cm^3 of 1 $moldm^{-3}$ HCl solution.
- Take 100 cm^3 of 1 $moldm^{-3}$ NaOH solution.
- Mix above two solutions in a beaker and measure the final solution.

Answer the following questions based on the above experiment.

i. What is the major step that should be conducted before mixing HCl & NaOH solutions ?
....(1 Mark)

ii. Write two things that should be followed in obtaining the final temperature.
....
....(2 Marks)

iii. Is it an exothermic or endothermic reaction after mixing the two solutions ?
....(1 Mark)

iv. Write two assumptions that could be taken in this experiment.
....
....(2 Marks)

v. After mixing two solutions, heat exchanged in between mixture and the environment should be limited. Give one method to practise that.
....(1 Mark)

(B) Test tubes A, B & C contain HCl, NaOH & NaCl solutions. Tests for identifying them and observations are given below.
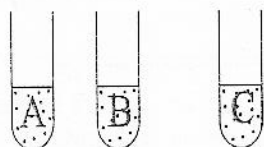
Experimental Step	Observation
1. Add sodium carbonate to each sample from each solution separately.	Air bubbles in tube B.
2. Mix B & C	Heating the test tube

Answer the following questions.

I. Identify solutions in A, B & C.
A - .... B. .... C. ....(3 Marks)

ii. Name the test tube/tubes which cannot be expected to make a colour change with either blue or red litmus.
....(1 Mark)

iii. Write the balanced chemical equation for reaction between B & C.
....(2 Marks)

iv. If a small amount of each sample is put into 3 watch glasses separately and kept under sunlight for a long enough time, Which solution may produce a precipitate ?
....(1 Mark)

v. Explain your answer above.
....
....(1 Mark)

(15 Marks)

4

04. (A) As in the following diagram 4 mm diameter copper string is fixed in one edge. Its remaining edge travels through a pulley and 400g weight is applied to it.

copper string with 4 mm diameter

pulley

wooden blocks

A   B

weight (400 g)
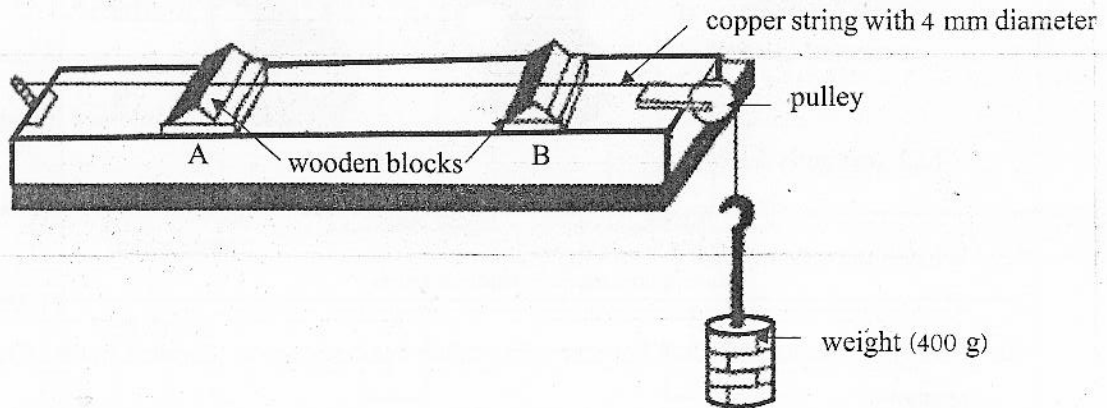
Wooden blocks kept in A & B are movable. When the string between A & B is vibrated, a sound is produced.

i. What is the purpose of adding a weight ?
.... (1 Mark)

ii. When the distance between A & B is decreased and vibrated again in the same way. Complete the sentence given below by underlining the correct term.
Frequency of the producing sound will be (increased/decreased)   (1 Mark)

iii. If the distance between A & B is reset by keeping them in their original locations and 600 g weight is added instead of 400 g. Then it is vibrated again in the same way. Complete the sentence given below by underlining the correct term.
Frequency of the producing sound will be (increased/decreased)   (1 Mark)

iv. If 2 mm diameter copper string is added instead of 4 mm one and the above (iii) step is repeated what would be happen to the frequency of the producing sound ?
.... (1 Mark)

(B) Filament bulbs, CFL bulbs, LED bulbs can be used for lighting. Power and life time of various bulbs with similar light intensity are given in the following table.

Light source	Power	Life time
Filament bulb	60W	1200h
Florescent tubes	22W	3000h
CFL	11-13W	8000h
LED	6-8W	50,000h

i. What is meant by power ?
....
.... (1 Mark)

ii. According to the above table, what is the most suitable bulb for a house ?
.... (1 Mark)

iii. Why is it limited using that type of bulbs in your above answer (ii) ?
.... (1 Mark)

iv. Heater is an effective instrument for boiling water . What is the reason for that ?
.... (1 Mark)

Study the following diagrams.

heater partially immersed in water

heater fully immersed in water

v. Which one boils faster ?

.... (1 Mark)

vi. What is the reason for it ?

.... (1 Mark)

vii. Energy is measured in Jule but electricity meter readings are in Kilowatt hours. Explain the reason.

....

.... (2 Marks)

viii. Convert 1 kWh in to Jules.

.... (1 Mark)

ix. Calculate the energy produced by 2 kW motor within 5 s.

.... (2 Marks)

(15 Marks)

PART B - ESSAYS

🟋 Answer any 3 questions from 5-9.

05. Later stage of a fertilized flower is given in the following diagram.
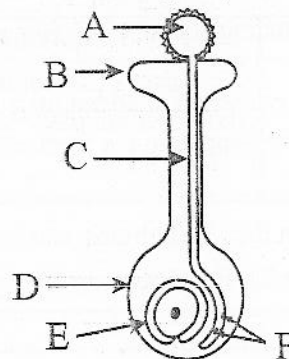
i. Name parts from A to F of the diagram. (6 Marks)

ii. Draw a labelled diagram of A at the stage of just it deposited on the Structure B. (2 Marks)

iii. What is the function of C ? (1 Mark)

iv. After the fertilization what are the structures formed by D & E ? (2 Marks)

v. What is the importance of cross pollination ? (1 Mark)

B. Diagrams of fruits and seeds are given below.

A   B   C
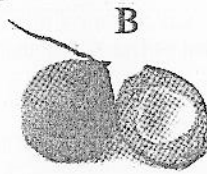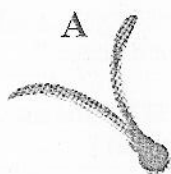
i. Name the dispersal method of each fruit/seed. (3 Marks)

ii. Write one structural adaptation of each one for their dispersal method. ((3 Marks)

iii. Write 2 important ways of fruit and seed dispersal for a plant. (2 Marks)

(20 Marks)

6

06. A. Two experimental diagrams for testing factors responsible for reaction rate are given below.
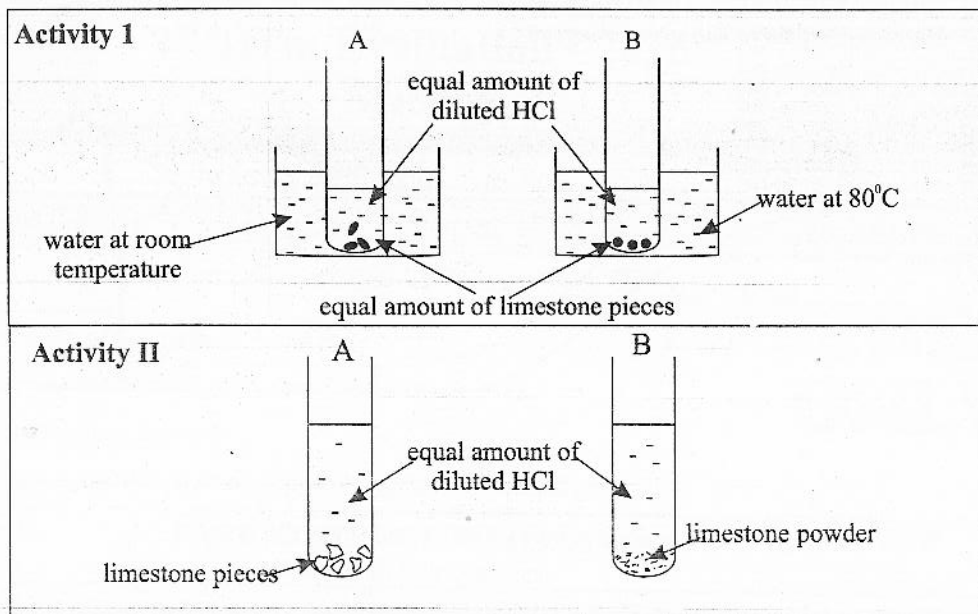
Activity 1

i. a. What would be the gas emitted from reaction between HCl and limestone ?(1 Mark)

b. Write the balanced chemical equation for that reaction. (2 Marks)

c. What would be the observation of activity I ? (1 Mark)

d. What would be the observation of activity II ? (1 Mark)

e. What would be the conclusions according to the above ? (2 Marks)

ii. A. Put Zn strip into aqueous solution of $CuSO_4$

B. Put Cu pieces into aqueous solution of $ZnSO_4$

a. What would be the observations of above A & B. (2 Marks)

b. Write the balanced chemical equation for A & B reactions. (2 Marks)

iii. Write one similar chemical and physical property between Oxygen and Hydrogen gas.

(2 Marks)

iv. Explain bond formation between Na & Cl in NaCl using suitable equations and diagrams.

(3 Marks)

v. Write the electron configuration of ion in above. (2 Marks)

vi. If 1dm³ "Jeewani" solution contains 5.85 g of NaCl, calculate its composition in n/v.

(Na=23, Cl=35.5) (2 Marks)

(20 Marks)

07. A. A man with a mass of 60 kg starts pedalling a 90 kg boat from the bank of a lagoon and continues for 200 m. Then he ties the boat to a stick in the lagoon. The boat floats and he starts fishing as in the given diagram.
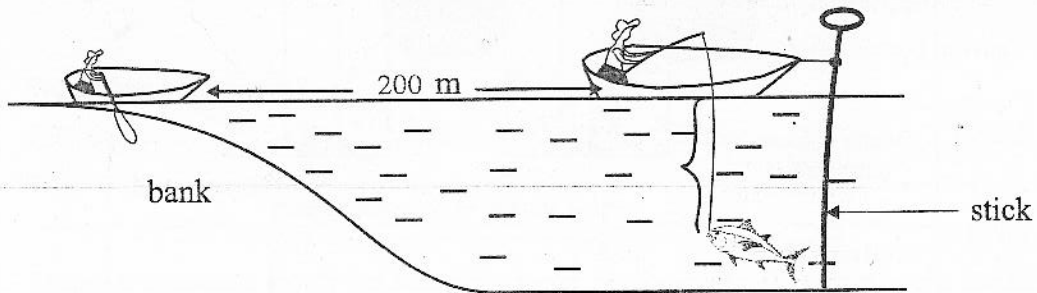
i. What is the type of muscle that helps him in pedalling the boat ?   (1 mark)

ii. While pedalling the boat, his muscles contract and feel a pain. What would be the reason for that ?   (2 marks)

iii. Name two systems which are working fast during pedalling the boat.   (2 marks)

iv. If he applied 400 N force to pedal the boat calculate the work he would do   (2 marks)

v. While he moves the pedal backward the boat moves forward. Draw a sketch of this and label the "Action" and "Reaction" clearly.   (2 marks)

vi. When the boat stops floating on the water under balanced system of forces. Draw a diagram of that balanced system of forces.   (2 marks)

vii Calculate the upthrust of the boat.   (2 marks)

viii. If the density of water is 1000 kgm^3, calculate the volume of the boat.   (3 marks)

ix. If the man observed a fish under the water in 2 m depth, calculate the real depth of the fish. (Refraction number of the water is 1.3)   (2 marks)

x. If the man sitting inside the boat stands up what will happen to dipping amount of boat ? will it change or not ? Explain your answer.   (2 marks)

(20 marks)

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