GM / Bandaranayake College – Gampaha

34/E/I

1st term Test - 2023

Grade 11 | **Science** | **Time – 1 hour**

- **Answer all questions.**
- **Select the correct or most suitable answer from answer (1), (2), (3), (4) given in questions 1 - 40**

01. An inorganic compound that contributes to build up living matter is,
    1. Vitamin 2. Nucleic acid 3. Minerals 4. Proteins

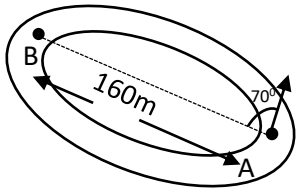
02. The compound that breaks down to release energy during cellular respiration,
    1. Glucose 2. Carbohydrates 3. Galactose 4. Sucrose

03. A laboratory activity which convert sucrose in to glucose is,
    1. Dissolving sugar in water
    2. Combustion of sucrose
    3. Heating sugar with dilute acids
    4. Dissolving sucrose in water and heating.

04. Consider the following statements regarding nucleic acids. Select the answer with true statements.
    a) Involve in proteins synthesis
    b) Help for the occurrence of variation.
    c) Help to control all biological activities.
    1. Only a 2. Only b and c 3. Only a and c 4. All a,b and c

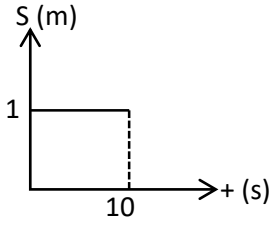
05. Water is a major component of the extracurricular fluids that are excreted from living bodies. Property of water which mainly responsible for this is.
    1. Coolant property of water
    2. Solvent property of water
    3. Presence of cohesive forces in water
    4. High specific heat capacity of water

06. .Calcium is a mineral contained in the human body and one of its function is,
    1. Important in the absorption of vitamin B
    2. Necessary for the production of thyroxin hormone
    3. Necessary for the synthesis of hemoglobin
    4. Important to store oxygen in muscle.

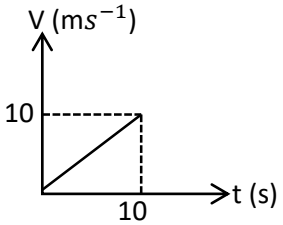
07. 

A sportsman is running from A to B in a running track. Select the correct statement regarding his displacement.
    1. 200m to west
    2. 160m to south east
    3. 160m to west with 70^0 from north
    4. 70^0 to north west from north

08. An object starting from rest moves with an acceleration of $1ms^{-2}$ for 10s. Relevant graph for its motion is,



1.



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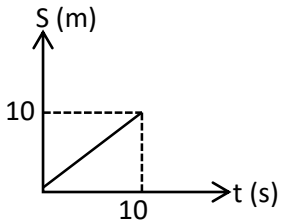

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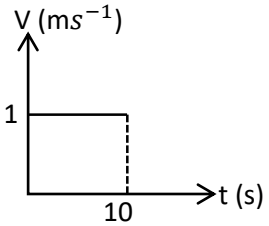


4.

09. A ball is projected upward with a velocity of $40ms^{-1}$ the distance travelled by the ball when it reaches half of its maximum height is,

1. 40m 2. 60m 3. 80m 4. 100m

10. Maximum number of electrons that can be exist in first four energy levels of an atom is,

1. 78 2. 60 3. 26 4. 58

11. Given below are some statements regarding the variation of first lionization energy of elements.

a) Ionization energy increases from left to right in all period.
b) Group VIII elements have the highest lionization energy
c) These values are expressed in joule per mole

Out of above, true statements are,

1. Only a and c 2. Only c 3. Only b 4. Only a and b

12. Metals combine with oxygen to from

1. Basic oxides
2. Acidic oxides
3. Neutral oxides
4. Amphoteric oxides

13. A strong acidic compound is,

1. SiO_2 2. Cl_2O_7 3. Mgo 4. Na_2O

14. The chemical formula for potassium carbonate is K_2CO_3. The formula of the carbonate of element which has the valency of 3 is?

1. $X_2(CO_3)_3$ 2. $X_2\ CO_3$ 3. $X\ CO_3$ 4. $X_3(CO_2)_2$

15. Incorrect statement regarding the nature of the force is,

1. Velocity of the object decreases when a force is applied in the direction opposite to the motion.
2. Resultant due to an applied force varies with its direction.
3. The unbalanced force required to push a table placed on a smooth surface such as ice is high.
4. The direction of the force can be indicated by a straight line drawn from the point of application of the force.

16. The acceleration is inversely proportional to its mass is represented symbolically by,

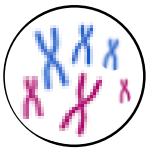
1. $a \propto F$ 2. $m \propto a$ 3. $a \propto \frac{F}{m}$ 4. $a \propto \frac{1}{m}$

17. The correct statement regarding the frictional force is,

1. The limiting frictional force increases with increasing the normal reaction between surfaces.
2. If the object doesn't move although the force is applied, a dynamic frictional force acts between surfaces.
3. Frictional force decreases with increasing surface area.
4. Limiting frictional force is slightly less than dynamic frictional force.

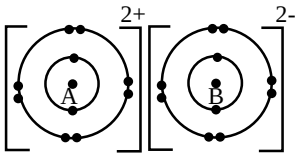
18. The type of cell that involves in the transportation of oxygen in the human body is,

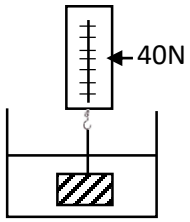
1. Nerve cell
2. Hemoglobin
3. Red blood cell
4. Skeletal muscle cell

19. 

This figure shows nucleus with six chromosomes. Due to the meiosis of this cell.

1. 2 cells with 6 chromosomes are formed.
2. 4 cells with 6 chromosomes are formed
3. 2 cells with 3 chromosomes are formed.
4. 4 cells with 3 chromosomes are formed.

20. Select the answer that correctly indicates the number of molecules contain in 2 moles of carbon dioxide (C = 12 , O = 16)
    1. $6.022\ x\ 10^{23}$
    2. $44x.022\ x\ 10^{23}$
    3. $6.022\ x\ 10^{23} x\ 2$
    4. $88\ x\ 6.022\ x\ 10^{23}$
21. An organism that carries out the process of obtaining energy and materials by its own.
    1. Mucor
    2. Paramecium
    3. Yeast
    4. Chlamydomonas
22. 

This diagram represent ,
    1. a covalent bond
    2. diagram B represents S
    3. Magnesium oxide compound
    4. Nobel gas configuration in each atom
23. Select the correct statement / s regarding the atomic lattice
    a) Atoms are covalently bonded in this lattice
    b) Some covalent compounds have high boiling points due to their atomic lattice.
    c) Sodium chloride is a naturally existing one such lattice
    1. Only a and b
    2. Only b and c
    3. Only b
    4. All a, b and c
24. Select the correct statement regarding protists
    1. They are prokaryotic , unicellular or multicellular organisms without specialized tissue.
    2. Most of are photosynthesis
    3. Highly contributes in the decomposition of dead bodies.
    4. Protozoans contribute in the formation of lichens with bacteria.
25. Small plants that rise horizontally from the basal part of stem under the soil in the plants such as paddy, pineapple and kaladuru are known as
    1. Bulbil
    2. Tuber
    3. Suckers
    4. Corm
26. The action should be done after one week of bud grafting is,
    1. Wrapping the grafted place using polythene strips
    2. Re-wrap the cut inserting the bud more in to the cut
    3. Cutting the stem of the stock about 15cm above from the grafted place.
    4. Remove the wrap and re-wrap keeping the bud open
27. Inside the ovary are produced with in
    1. Follicles
    2. Cortex
    3. Corpus luteum
    4. Corpus albicans
28. Pressure exerted on the submarine which is at the depth of 3000m in the sea is (density of sea water = $1050 kgm^{-3}$, gravitational acceleration = $10 ms^{-2}$, atmospheric pressure = 103360pa)
    1. 31500000pa
    2. 31603360pa
    3. 103360pa
    4. 107420pa
29. 

What is the weight of the water displaced by this wooden block which has the mass of 5kg in air?
    1. 50N
    2. 10kg
    3. 40N
    4. 10N

30. (A) Ag_2O ⟶ (B) Ag + O_2

The numbers to be placed in positions A and B in the above balanced chemical reaction are respectively

1. 1,2
2. 2,2
3. 2,4
4. 3,6

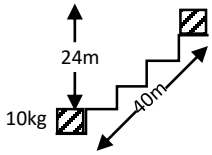
31. A metal that does not react chemically with dilute sulphury acid

1. Cu
2. Zn
3. Mg
4. Al

32. $CaCO_3$ + 2HCL ⟶ $CaCl_2$ + H_2O + CO_2

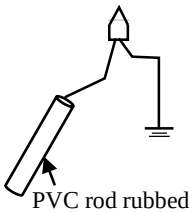
The volume of CO_2 collected by reacting 100g of $CaCO_3$ within 10 minutes is 5cm^3. The rate of reaction is,

1. 0.5cm^3 per minute
2. 1 mole per minute
3. 10g per Minute
4. 44g per minute

33. 

The time taken to lift an object of mass 10kg to be the highest position is 42 minutes. The rate of doing work is ,

1. $100Js^{-1}$
2. $10Js^{-1}$
3. $1\,Js^{-1}$
4. $1.6\,Js^{-1}$

34. 

In the above activity,

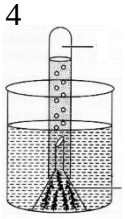
1. Static electrical charges are stored in PVC rod .
2. Static electrical charges flows out when the rod touches the terminal of the bulb.
3. The neon bulb lights up due to the flow of static electrical charges through it.
4. All of the above can be happened.

35. 1 Nichrome 2 Copper
3 Iron 4 Nichrome

The instance with the highest resistance is

1. 1
2. 2
3. 3
4. 4

36. The chemical reaction carried out by plants in the given experimental set up is,



1. $C_6H_{12}O_6 + 6\,CO_2 \rightarrow 12\,lO_2 + 6\,H_ZO$
2. $6\,CO_2 + 6\,H_ZO \rightarrow C_6H_{12}O_6$
3. $C_6H_{12}O_6 + 6O_2 \rightarrow 6\,CO_2 + 6\,H_ZO$
4. $CO_2 + H_2O \rightarrow H_2CO_3$

37. An example for a solid- solid homogeneous mixture

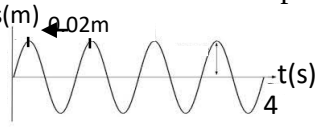
1. Concrete mixture
2. Fish bun mixture
3. Steel mixture
4. Hematite mixture

38. 100 g of dolomite contains 58 g of calcium carbonate. Mass fraction and mass parentage respectively

1. 5.8 , 58 %
2. 0.58 , 58 %
3. $\frac{100}{58}$, 0.58 %
4. 580 kg , 5.8 %

39. When a sample of well water is subjected to simple distillation

1. Dissolved gases in the water condense when water is slightly heated
2. Salts evaporate instantly due to their high boiling point.
3. Only water evaporates
4. Non- volatile components float on the water surface

40. 

In the wave shown in figure,

1. Wave length is 0.02m
2. Frequency is 0.08 Hz
3. Speed is 0.01ms^{-1}
4. Amplitude is 0.02 m

	GM / Bandaranayake College – Gampaha	**34/E/I**
Grade 11	**1st term Test - 2023**	**Time – 3 hour**
	Science - II	

Part – II

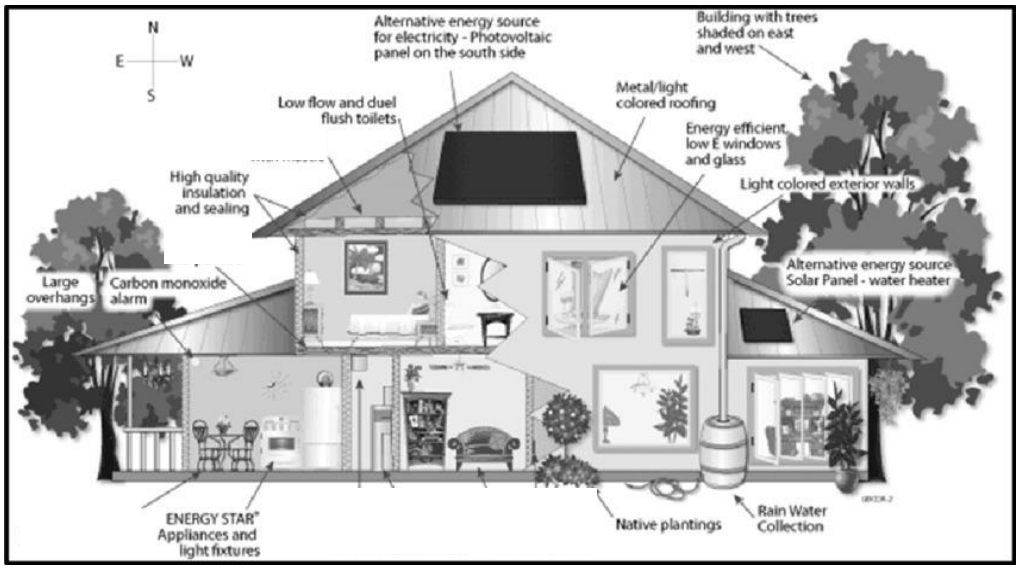
Instruction

- Write your answers in clear hand writing
- Answer four question in part A in space provided
- Answer three question from part 'B'
- After answering, tie part a and the answer script of part together and handover.

PART A

01. (A) New methods such as green concept and sustainable development are very important to solve current energy crisis and economical problems in the country.

The figure give below shows a model of a house designed to implement the green concept.



☞ Answer the following question based on the model house above.

i. Write two strategies used prevent over heating during the daytime

a) ……

b) ……

(2 marks)

ii. Write two measures taken to avoid using external energy sources

a) ……

b) ……

(2 marks)

iii. Write two measures taken to conserve water

a) ……

b) ……

(2 marks)

iv. What is the strategy used to monitor atmospheric conditions ?

…… (1 marks)

v. In which direction should tall plants grow around the house to conserve energy ?

…… (1 marks)

(B) i. Write two renewable energy sources that can be used to generate electricity to solve the present energy crisis in Sri Lanka. (2 marks)

a) ……. b) …….

ii. Write the reason why it is suitable and not suitable for Sri Lanka to build a nuclear power plant to generate electricity.

a) Reason for being suitable for the country

……. (2 marks)

b) Reason for not being suitable for the country

……. (2 marks)

iii. What is the energy source used in the largest power plant in Sri Lanka

……..……. (1 marks)

02. (A) choose and write the biomolecule from the box that matches from the statements below.

Glucose, Galactose, Carbohydrate, protein, lipid nucleic acid

i. The compound consist of only C, H, O but the ratio between H ; 0 is not 2 :1 …….

ii. A polymerized compound which contains only C, H and O ……

iii. A biological molecule that responsible to show common inherited characters externally. (such as skin color)

……

iv. A biological molecule that cause to inherit characters of organisms.

……

v. A compound which can be identified by benedict solution

……

vi. A compound which is a building unit of maltose

…… (6 marks)

(B) In addition to controlling inherited characters by using biomolecules, humans have produced varieties of organisms with unique characteristics.

i. Write the scientific name of the garden pea plant (PISUM SATIVUM)in standard from.

……. (1 marks)

ii. Write 2 reasons to select the garden pea plant to study about the inheritance.

…….

……. (2 marks)

iii. a) yellow seeds (Y) in the garden pea plant is dominant than that of green seeds (y) based on this complete the Punnett square below (2 marks)

gametes ♀ \ ♂	Y	y
Daughter plants: Y		
Daughter plants: Y		

b) Write the ratio of phenotypes

……. (1 marks)

c) Write the ratio of genotypes

……. (1 marks)

iv. State 2 non-inherited characteristics in human

…….

……. (2 marks)

03. (A) diagram drawn by a student who studied about the atomic structure is given below

Sub atomic particles → atoms → elements → (x) → polymer

i. Name 'x' …….. (1 marks)

ii. State the sub atomic particle in the nucleus which has no charge.

……..…….. (1marks)

iii. What is the mass of the above mentioned sub atomic particle in (ii), in the atomic mass unit.

……..…….. (1marks)

iv. What is atomic mass unit ?

……..…….. (2 marks)

(B) $^{39}_{19}J$ $^{19}_{9}K$ Answer the questions below by using the information of these two elements (Answer using the given symbols)

i. In element J

(a) Atomic number …….

(b) Number of neutrons in the nucleus ……(1 marks)

ii. (a) Electronic configuration of K = ……

(b) Electronic configuration of J = ……(1 marks)

iii. Write the chemical formula of the compound formed between J and K

……..…….….. (2 marks)

iv. Write the type of bond in the compound in (iii)

……..…….….. (1 marks)

v. Write the nature of the mixture formed when the above compound in (iii) is mixed with water

……..…….….. (1 marks)

vi. What is the molar fraction of compound in (iii) when 290g of that compound are completely dissolved in 360g of water?

(J=39, K=19, H=1, 0=16)

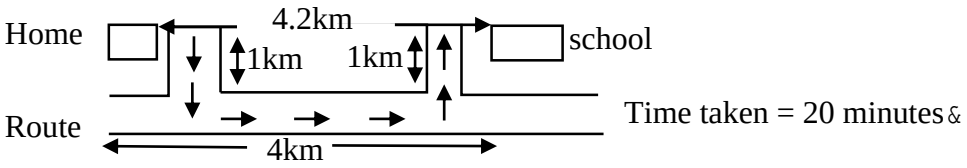
……..…….…..

……..…….…..

……..…….…..

……..…….….. (4 marks)

04.



Given above is the path of a student from home to school travelled by a motor car

i. What is the distance from home to school

……..…….….. (1 marks)

ii. What is the mean speed in SI unit during his journey?

……..…….…..

……..…….….. (2 marks)

iii. What is the displacement from home to school ?

……..…….….. (2 marks)

iv. What is the wean velocity in SI unit during his journey ?

……..……..…..

……..……..….. (2 marks)

v. If the mass of motor car is 700kg, what is the momentum during the journey mentioned in (iv) above.

……..……..…..

……..……..….. (2 marks)

vi. Write 3 characters in the image formed by vehicle side mirrors.

(a) ……

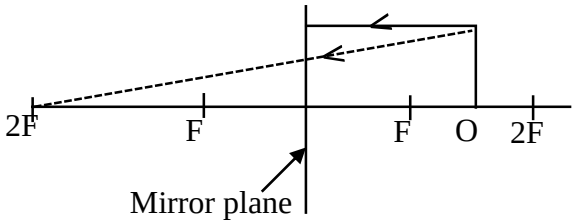
(b) ……

(c) …… (3 marks)

vii. What type of mirror are vehicle side mirrors?

……..……..….. (1 marks)

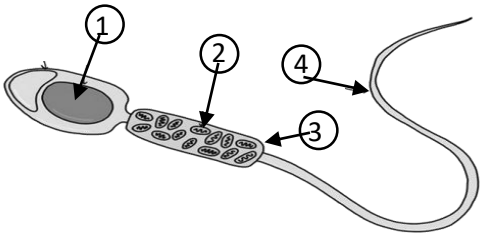
viii. Complete the ray diagram of reflection, to determine the formation of the image formed by and abject placed in front of the above mirror



(2 marks)

PART B

05.



Given above is a special type of cell found in a mature animal body

(A) i. What is a cell ? (1 marks)

ii. Name the organelle ② and write its function (2 marks)
iii. How does the organelle ① in this cell differ from other type of cells in the body. (1 marks)
iv. Name the part of the above cell that gives the ability to move (1 marks)
v. Name the type of cell division that involves in the production of above type of cells (1 marks)

(B) Gametes are essential for the generation of offspring with variations.

i. What is meant by fertilization? (1 marks)
ii. Where does fertilization occur in the human reproductive system (1 marks)
iii. Write 2 substances that diffuse through the umbilical cord from fetus to mother (2 marks)
iv. At which time period does the development of the skeleton and growth of hair in a fetus begin ? (1 marks)
v. Write 2 sexually transmitted diseases caused by virus (2 marks)
vi. Write 2 measures that can be taken to prevent transmission of diseases in (v) above (2 marks)

(C) Human embryonic development occurs with tissue differentiation

i. Name 3 types of tissues that are modified to show movements in human body (3 marks)
ii. Write 2 structural differences in 2 types of muscles cell which show involuntary movements. (2 marks)

06. The matter found in the environment constantly undergoes various changes.

(A) i. Write the basic difference between a physical change and a chemical change (1 marks)
ii. Write 2 observation that can be used to identify a chemical change (2 marks)
iii. Write 4 type of chemical reactions that can be classified based on the nature of the chemical change. (2 marks)

(B) Hydrogen peroxide thermally decomposes into water and oxygen.

i. Write the balanced chemical equation for the above reaction (2 marks)
ii. Mention a method to reduce the rate of above reaction. (1 marks)
iii. Write two other affecting for the rate of reaction that is not mentioned in (ii) above (2 marks)

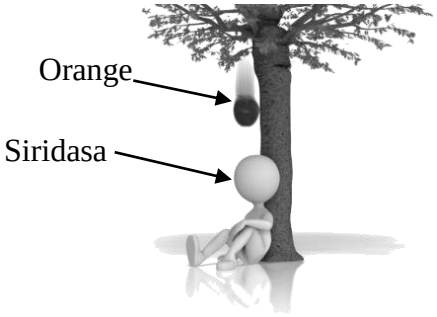
(C) The following are observations taken from the reaction of metals with air, water and acids.

Given symbols are not standard

Element	Burning in air	Reaction with not water	Reaction with diluted acid	color
P	Burns with a bright flame	Release hydrogen gas fast	Release hydrogen gas vigorously	Silvery grey
Q	Surface becomes dull	No reaction	Release hydrogen gas very slowly	Silvery grey
R	No change	No change	No change	Silvery grey

i. Identify and name P, Q and R metals in order. (3 marks)
ii. Write 2 uses of metal P you identified (2 marks)
iii. What method is used to extract metal R (1 marks)
iv. Write 2 raw material used to extract metal Q (2 marks)
v. Mention 2 methods to collect hydrogen gas. (2 marks)

07. A 200g orange which was at rest in the tree fell to siridasa's head who was standing under the tree It took I second to fall on to the head. The velocity of the orange when it hits the head is 10 ms^{-1}.



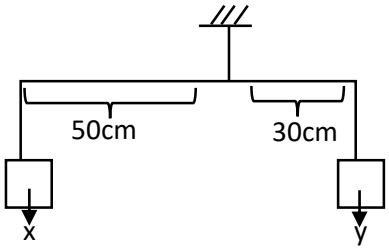
i. Represent the forces acting on the orange when it is at rest on the tree using a diagram and name the forces (2 marks)
ii. Write 2 characters in forces mentioned in (i) above. (2 marks)
iii. What is the acceleration of the orange ? (2 marks)
iv. Mention the weight of the orange? (2 marks)
v. Draw the velocity time graph with measurement for the motion of the orange? (2 marks)
vi. What is the height from siridasa's head to the place where the orange was ? (2 marks)
vii. What is the kinetic energy of the orange when it is hit? (2 marks)
viii. What force was acting against the motion of the orange when it fell? (1 marks)
ix. Name 2 factor that affect the force mentioned in (vii) above. (2 marks)
x. What is the amount of work done by the orange when it is falling on to head? (2 marks)
xi. What is power of the work done by the orange (1 marks)

08. (A) At present, the three domain classification system is used to classify organisms.

i. According to the above classification, name the domain that contain antibiotic resist prokaryotes. (1 marks)
ii. Name 2 autotrophic kingdoms in the domain eukarya (2 marks)
iii. What is meant by "photosynthesis" which is the process used to obtain nutrition in autotrophs (2 marks)

iv. Write an internal factor necessary for the above process. (1 marks)
v. Name 2 type of tissues in plant leaves where photosynthesis takes place. (2 marks)
vi. Write 2 adaptations in plant leaves for efficient photosynthesis (2 marks)

(B)



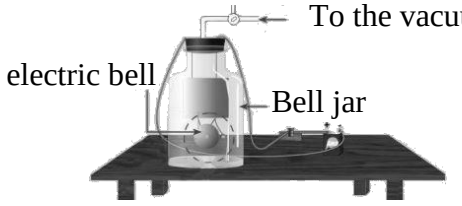
i. Express the simplest ratio between x and y loads, when a rod is in equilibrium as above. (2 marks)
ii. Write 2 instruments used for the above calculation. (2 marks)
iii. Under how many forces is the above system in equilibrium ? (1 marks)
iv. Write 2 common features in above forces. (2 marks)
v. What is meant by force couple? (2 marks)

09. (A) To prepare a sweetmeat mixture, a saturated sugar solution was prepared and 250g of rice flour was added to prepare a 750 g of homogeneous mixture.

i. What is 'solubility of a solution' ? (2 marks)
ii. Write an strategy that can be used at home to increase the solubility of rice flour. (1 marks)
iii. What is the mass fraction of rice flour in the mixture? (2 marks)
iv. Calculate the concentration od sugar solution, if 5 moles if sugar contains in 500ml of the solution (2 marks)
v. Explain how the solubility of gases in liquids varies with temperature (2 marks)
vi. What kind of mixture is an unopened soda bottle? (1 marks)

(B) An ringing sound was made with the vessel when the spoon collide with it while preparing the sweetmeat mixture.

i. What wave form does sound belong to? (1 marks)
ii. Calculate the wave length of a sound wave of frequency 250Hz if its velocity $350\ ms^{-1}$ (2 marks)
iii.



Which property of sound is demonstrated by the above activity? (1 marks)
iv. Which wave type does not require the above factor in (iii) for its propagation? (1 marks)
v. Write 2 basic characteristics of above mentioned wave type in (iv) (2 marks)

(B) i. Write two laws that follow when a visible light wave is reflected from a rough surface.(2 marks)

ii. What is 'refraction of light' (1 marks)

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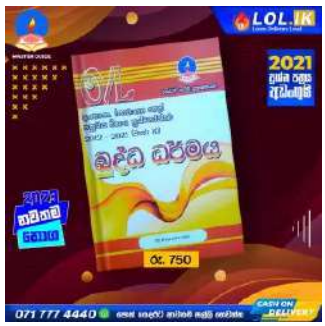

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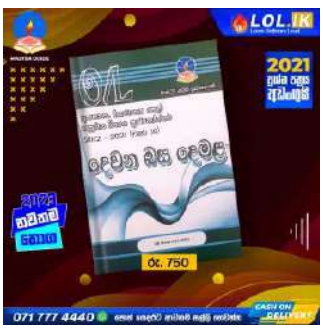

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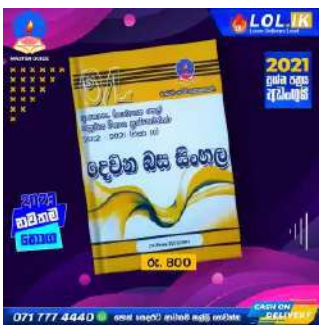

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