Zahira College – Colombo

Online Holiday Assignment – August 2015

Medium : English	**Grade :** 11
Subject :Science	**Date :**
Adm. No :	**Name :**

Chemistry

1. (A) A student got a small amount of lime which is used to chew with betel, soaked it in water and wrapped it with an aluminum foil. He heard a small noise coming out. He observed small gas bubbles releasing after unwrapping it.

(i) What is the main chemical compound in the lime used for chewing with betel ?

(ii) What is the gas observed in the bubbles by the child?

(iii) Write an instance where that gas is used .

B

(i) Given below are elements and compounds Identify the given material according to the given characteristics. Write whether they are elements or compounds.

(a) Purple crystals sightly soluble in water sublimation takes place when heated.

(b) Purple crystals. Dissolved well in water giving bright purple solution. Release a gas occurring a small explosion.

(c) A yellowish powder Burns when heated giving a bluish flame and a gas with a characteristic smell.

(ii) Draw and name a suitable set up which can be used to prepare the gas mentioned in 'b'

C The reaction between calcium carbonate and hydrochloric acid is given in the following equation.

$$CaCO_{3(s)} + X\,HCl_{(aq)} \longrightarrow CaCl_{2(aq)} + CO_{2(g)} + H_2O_{(l)}$$

(i) What is the correct number for 'x' to balance the equation (01)

(ii) A group of students have planned an experiment to study factors affectting the rate of the above reaction. The fllowing table shows the details of the experiment

	A	B	C	D
Composition of HCl	0.1moldm^{-3} HCl 20ml	0.1 moldm^{-3} HCl 20ml	0.2 moldm^{-3} HCl 20ml	0.2 moldm^{-3} HCl 20ml
$CaCO_3$	crystals 5g	powder 5g	crystals 5g	powder 5g

(a) Name two factors affecting the rate of reaction which are shown by this experiment .

(b) Name the experiments given above which show the rate of reaction maximum

and minimum.

(c) Write the reasons for your answer.

2. Details about 3 metals are shown in the following table.

Metal	Reaction with air (Co_2)	Reaction with water	Reaction with dilute acid
A	Reacts slowly burns giving a white flme	reacts with cold water slowly. Speed of the reaction is little higher with hot water and highly reacts with water vapours	Reacts with a very high speed. The reactants are getting heated
B	No reaction, No reaction after heating also	No reaction	No reaction
C	Reacts slowly oxide layer forms when heated	No reaction with hot water cool water or vapours	Reacts very slowly

(i) Arrange metals A, B and C according to the descending order of their reactivity.

(ii) What is the metal which exists naturally as an element among the above metals ?

(iii) What should be the method of extraction of metal 'A' according to the given characteristics?

(iv) What is the most suitable metal to make jewelery from the above metals ?

B A farmer prepared two liters of urea by dissolving 6g of urea { $CO(NH_2)_2$ } in water.

(i) Find the composition of that urea solution in the form of percentage w/v.

(ii) Calculate molar mass of urea. (C=12 , O=16, N=14)

(iii) Calculate the number of moles in 6g of urea.

(iv) Calculate the concentration of urea solution in cubic decimetres.

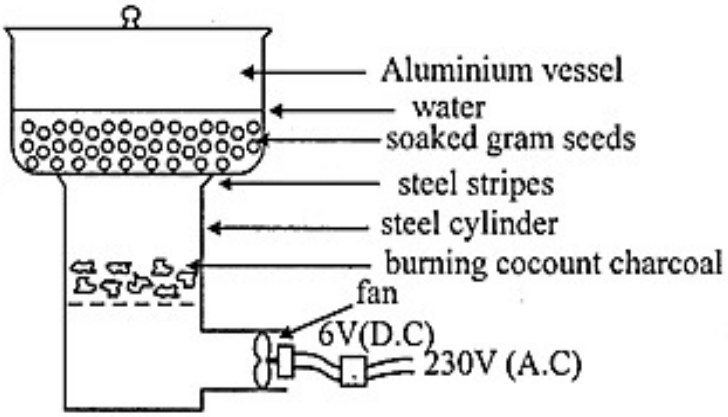
C

(i) What is the major plant nutrient which is given to plants by spraying the urea solution ?

(ii) What is the environmental problem which occur when urea which is used in the field get added to water in the reservoire?

(iii) Write 2 adverse effects caused in an aquatic environment as a result of the above problem.

3.



The above diagram shows a charcoal hearth used in cooking. Two coconut shells were crushed and placed on the wire mesh and fire was set. After starting the small fan the burner gives a flame with high temperature without a smoke.

(i) If the fan is stopped, temperature of the burner will reduce and more smoke is released: Give reasons for that.

(ii) When the electricity obtained from the domestic power supply is used to arrange according to the motor , Write 3 changes and the relevant equipment that should be used. to make that change.

Change in eletricity	Relevant equipment
A	
B	
C	

(iii) Amount of heat supplied to the pan due to the fan is high. What is the method of heat transference in that?

(iv) Write an unfavourable situation which will occur if the pan is kept on the hearth with out the stand made using three steel stripes used to hold pans on the hearth.

(v) Write a disadvantage which will occur if the steel stripes are too high.

B (i) A student propose his mother to put water into the pan just above the gram seeds. What advantage can be gained by doing this ?

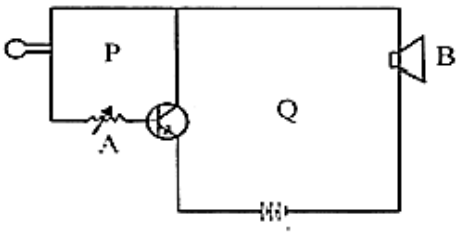
(ii) Write the advantage of closing the pan after keeping it on the burner by the means of heat transfering methods.

4 (i) Draw a ray diagram with a suitable scale to show the image which is formed by a convex mirror with a focal length of 20 cm, if an object is placed in front of the mirror at a distance of 30cm

(ii) write three characteristics of that image.

A)

A circuit to demonstrate the action of a transistor is given in the following diagram



(i) Name the components A and B.

(ii) Write the energy conversion in the microphone.

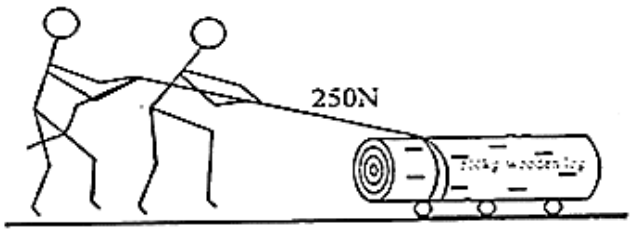
(iii) What is the type of transistor used in this circuit ?

(iv) What is the action performed by this transistor ?

(v) Write two changes done by component A when the circuit is in action.

(vi) The circuit is divided into two parts P and Q What is the name given to Q?

B



The above diagram shows dragging a tree trunk with mass of 500 kg by two men

(i) Draw a rough diagram, of the tree trunk and mark the forces which act on it.

(ii) How is dragging made easier by using roller s ?