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மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

වර්ෂ අවසාන ඇගයීම
ஆண்டிறுதி மதிப்பீடு - 2014
Year End Evaluation

ශ්‍රේණිය தரம் Grade	විෂයය பாடம் Subject	පත්‍රය வினாத்தாள் Paper	කාලය காலம் Time
11	Science	I	01 hour

Important

(i) Answer all questions.

(ii) In each of the questions 1 to 40 pick one of the alternatives (1), (2), (3), (4) which you consider is **correct or most appropriate**

(iii) Make a cross (×) on the number corresponding to your choice in the answer sheet provided.

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(01) The characteristic which is present only in mammals

(1) Having external ears
(2) constant body temperature
(3) Streamline body shape
(4) Having four chambers in the heart

(02) The diseases infected by bacteria and virus respectively

(1) Measles and tuberculosis
(2) AIDS and Leprosy
(3) Tetanus and Dengue
(4) Bird flu and syphilis

(03) Following three statements are given about the Cycus (Madu) plant

(A) It has a cylindrical shaped trunk.
(B) Bearing seeds on cones
(C) It has compound leaves.

The correct statement/s from the above are

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

(04) Which veins of human body contain the highest and the least amount of oxygen concentration

(1) Superior vena cava and hepatic artery
(2) pulmonary vein and renal artery
(3) pulmonary vein and renal vein
(4) Aorta and pulmonary artery

(05) Following statements are given about cells in muscle tissues

(A) Un branched (B) Striated (C) Having single nucleus

Characteristics present in skeletal muscles from the above features are

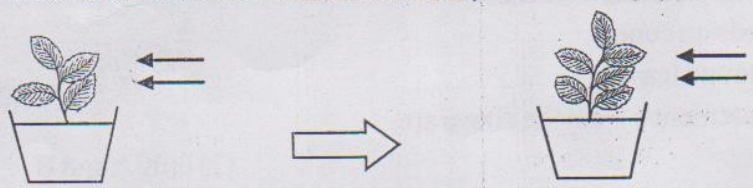
(1) only A (B) only B (3) A and B (4) Band C

(06) An occasion which meiosis takes place
(1) when producing gametes
(2) when tail is grown to replace to place a broken tail of a geco
(3) Regrowth of tissue to heal a wound
(4) A zygote is developed to a living organism

(07) Consider the following statements
(A) Does not contain chlorophyl.
(B) Cell walls are made of chitin
(C) reproduce only in living cells.
characteristics found in fungi from the above statements are
(1) only A (2) only C (3) A and B (4) A and C

(08) Select the incorrect statement among the following statements about the central nervous system
(1) Muscle movements are controlled by cerebellum
(2) Involuntary actions are controlled by the medulla oblangata
(3) Cerebrum helps to identify senses
(4) All reflexes are controlled by the spinal code

(09) The diagram shows a plant which bends towards light when kept near a window in a room. What is the statement that does not tally with this incident?



(1) A plant growing towards is a positive phototrophic movement
(2) Growth rate is higher at the opposite side of the plant stem than the side which is exposed to light
(3) The auxin which was produced at the tip of the stem reacts little below the tip
(4) The side of the stem which is exposed to sunlight well has a higher concentration of auxin

(10) The factor which affect the deafness most from the following
(1) An injury occurred in external ear
(2) Having a hole in the ear drum
(3) Thickning of the tympanic membrane
(4) Thickning of ear ossicles

(11) following table shows four hormones and their functions

	Hormone	Function
A.	Glycogen	Conversion of glucose into glycogen
B.	Progesteron	Prevention of production of ova if the ovum is fertilized
C.	Aldosteron	Regulation of minerals which pass through urea
D.	Thyroxine	Decrease the rate of metabolic reactions

In which combinaton the hormone and its function is given incorrect

(1) A (2) B (3) C (4) D

(12) Given below is a description of a plant cell

* Having vacuoles
* cells are with equal diameter and they are living
* Stores food

what would be the correct cells according to the details

(1) seive tube cells (2) Sclerenchyma cells

(3) parenchyma cells (4) companion cells

(13) The substance with a molecular lattice among following is

(1) ice (2) graphite (3) diamond (4) potassium chloride

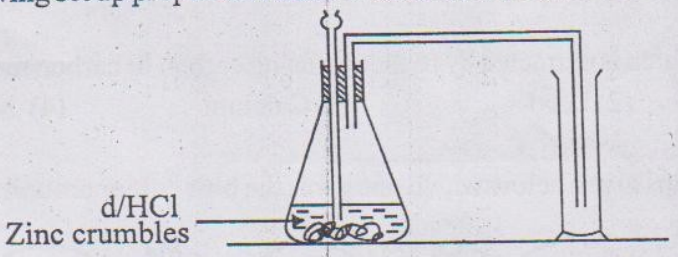
(14) Elements of the second period of the periodic table are given in the following table

Element	Li	Be	B	C	N	O	F	Ne
Atomic Number	3	4	5	6	7	8	9	10

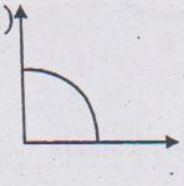
The couple of element which are monovalent

(1) Li and O (2) F and Be (3) Li and F (4) Be and 0

(15) The following set up prepared to show a chemical reaction reaction



The correct graph which is plotted to show the variation of the mass of the flask against the time of reaction

(1)


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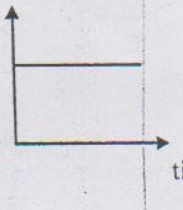

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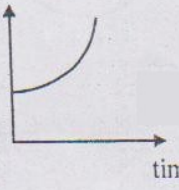

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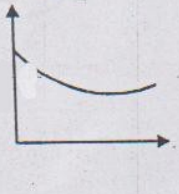


(16) The mass of the solute needed to prepare 200 cm^3 of 0.5 mol dm^{-3} glucose solution is (molar mass of glucose is 180g mol^{-1})

(1) 18g (2) 72g (3) 36g (4) 90g

(17) Following statements are given to describe an element of atomic number 18. What is the incorrect statement among them.

(1) There are three energy levels in the element X

(2) The X element belongs to the group VIII of the periodic table

(3) The element X is found as a diatomic gas

(4) The valency of the element X is 0 (zero)

(18) The main constituent of the clinker in cement industry which is produced in the rotary kiln

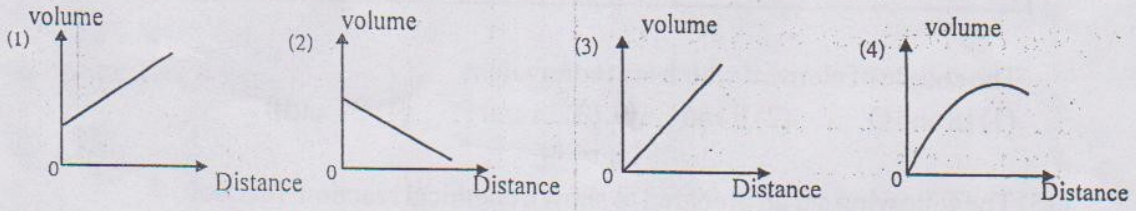
(1) Calcium carbonate and calcium silicate

(2) Calcium silicate and calcium aluminate

(3) Calcium carbonate and calcium aluminate

(4) Calcium sulphate and calcium carbonate

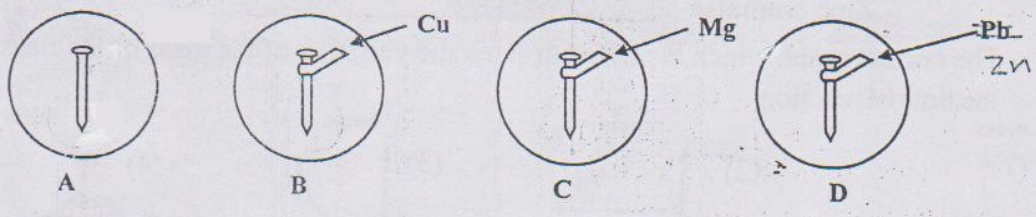
(19) An air bubble is released by a fish, from the bottom of a reservoir . Which graph illustrates correctly the variation of the distance travelled by the air bubble to the surface of water longitudinally upwards and the volume of the air bubble



(20) The element which is extracted by reduction using carbon or carbon monoxide is

(1) Sodium (2) Lead (3) Calcium (4) Mercury

(21) Out of the set ups given below which one gives the blue colour around the nail



(1) A and B (2) B and C (3) C and D (4) A and D

(22) Four adverse effects of the change in the atmosphere are given below

A. Increase in the temperature of the ocean

B. Melting ice at poles of the earth

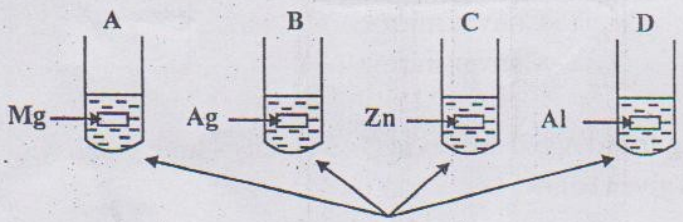
C. Cause skin cancers

D. Reduce photosynthesis of plants

Out of the above statements which are the results of ultra violet rays.

(1) A and D (2) B and C (3) C and D (4) A and D

(23) As illustrated in the diagram copper sulphate solutions are added with equal sizes of Magnesium, Silver, Zinc and aluminum pieces in test tubes



Equally concentrated copper sulphate solution with equal volumes

In which experimental set up doesn't a chemical change take place

(1) A (2) B (3) C (4) D

(24) Which one shows the highest pH value from the solutions mentioned below

(1) Soap solution (2) Vinegar (3) Sugar solution (4) Water

(25) Which one cannot be considered as an electro - magnetic wave out of the waves given below

(1) ultra sonic waves (2) microwaves (3) infra red waves (4) visible light

(26) Consider the following statements on characteristic features of sound

A - pitch of the sound is depending on frequency of it. Sound is sharp when the pitch is high

B -When a sound wave travels far, its amplitude is decreased. Therefore its loudness is getting decrease

C - When playing the same note with many musical instruments the difference of the quality of sound depends on due to different wave patterns.

Select the correct statements to the above

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

(27) Given below is a description of two equipment used by students when doing an activity on behaviour of light

X - Refract parallel light beams and make them converge

Y - Reflect parallel light beams and make them converge

X and Y are

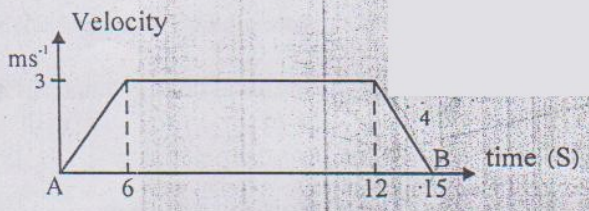
(1) X - Concave lense Y - Concave mirror

(2) X - Convex lense Y - Concave mirror

(3) X - Convex lense Y - Convex mirror

(4) X - Concave mirror Y - Convex mirror

(28) A mortar car starts moving from A and arrives at B. Velocity - time graph which shows the movement of the car is given below



According to the graph which shows the deceleration, and the displacement during the deceleration in order

(1) 0.6 ms^{-2} and 4.5 m (2) 1 ms^{-2} and 9 m

(3) 1 ms^{-2} and 4.5 m (4) 1.2 ms^{-2} and 15 m

(29) Two strategies to decrease the heat loss in a thermos flask are given below

(a) Removing air between the two glass layers and sealing

(b) Internal surfaces of the two layers of the glass vessel are plated with silver

The methods of heat transference are plated with silver

The methods of heat transference are prevented by the above strategies respectivly

(1) A - conduction , B - radiation

(2) A - conduction and convection, B - radiation

(3) A - radiation and radiation, B - convection

(4) A - radiation and convection, B - conduction

(30) The electric current which flows through a bulb having a resistance of 75Ω and a voltage of 225 v

(1) $\frac{225}{75}$ A (2) 225×75 A (3) $\frac{75}{230}$ A (4) $\frac{225}{75 \times 75}$ A

(31) Select the incorrect statement among the following

(1) Only an imbalanced force can create an acceleration in an object

(2) The acceleration gained by an object is directly propotional to the force and indirectly propotional to the mass

(3) The motion can be maintained at a uniform velocity by exerting an equal opposite force

(4) An object can remain at rest even under equilibrium forces.

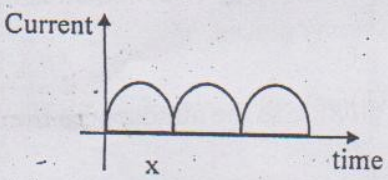
(32)

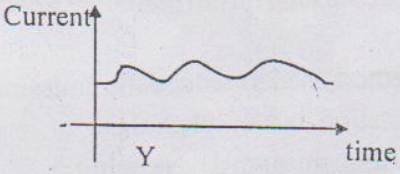
current in in put circuit	Current in out put circuit
1	0
0	1

Above table shows the truth table for a logic gate. The logic gate when the bulb does not light when the current flows

(1) OR gate (2) AND gate (3) NOT gate (4) OR and AND gate

(33) The graph X shows a wave form as seen by a cathode Ray Oscilloscope when an Alternating current is sent through the apparatus A The graph Y shows the waves which can be seen when appararus Y is connected parellely to the same ciruit





A and B apparatus are

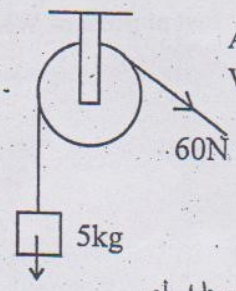
(1) Transistor and diode

(2) Resistor and rectifier bridge

(3) Transformer and capacitor

(4) Rectifer bridge and capacitor

(34)



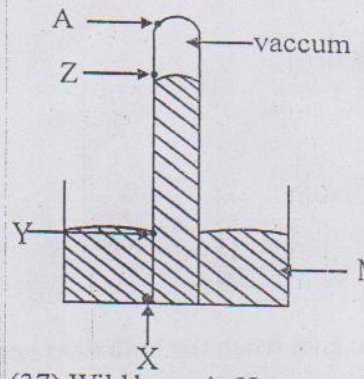
A force of 60 N is exerted to lift an object of 5 kg from a pulley ($g = 10 ms^{-2}$)
What is the mechanical advantage of it

(1) $\frac{60}{50}$ (2) $\frac{50}{60}$ (3) $\frac{60}{50} \times 100$ (4) $\frac{50}{60} \times 100$

(35) A belli fruit of 1 kg falls to the ground at a speed of 20 ms^{-1} What kinetic energy in the fruit when it reaches the ground

(1) 50 J (2) 100 J (3) 200 J (4) 400 J

(36) A mercury barrow meter used to measure the atmospheric pressure is given in the following diagram



The height of the Mercury column which shows the atmos pheric pressure is

(1) Z x (2) Zy (3) Ay (4) AX

(1)

(37) Wild boars in Horton plains and in Dry zone forests belong to the same species. But fur on wild boars in Horton plains is thicker than the wild boars in dry zones. what is the most possible reason for that ?

(1) Wild boars in horton plains are having a special gene.
(2) A gene present in wild boars reacts more in wild boars in Horton plains.
(3) Wild boars in Horton plains have received more food for the growth of their hair.
(4) Wild boars in Horton plains are not often found in sunny places.

(38) The method used to reduce the emission of sulphur dioxide to the atmosphere from coal power station in Norechcholai

(1) Sending through a lime pulp
(2) Allowing to dissolve in sea water
(3) Releasing smoke from a very high chimney
(4) Absorbing by using electro static charges

(39) Doctors highlight that non infectious diseases are spreading very fast at present What is the factor which is not related with it.

(1) Consuming high amounts of instant food
(2) Not engaging in heavy work
(3) Consuming food with more fiber
(4) Consuming food with high amount of starch

(40) Sound pollution can be considered as a growing environmental issue. Among the following statements which cannot be considered as a result of it

(1) Disturbing the pollination
(2) Increasing the mental stress
(3) Change in the composition of air
(4) Change in hormone activity in the body

Select one question from each section **Biology**, **Chemistry** and **physics** and answer **three** questions

(05) A A person wants to obtain a large number of mango plants from a mango tree which is exactly similar to the mother plant from a plant which bears sweet fruits. An attempt to get plants by planting stem cuttings of the mother plant was unsuccessful. The man has no ability to do tissue culture.

(i) In addition to above mentioned methods name a suitable method to obtain a large number of new plants which are with identical characteristics with the mother plant.

(ii) Explain briefly why plants obtain by planting seeds do not have identical characteristics with the mother plant.

(iii) What is the suitable name for a group of plants having identical characteristics with mother plant?

(iv) A child collected a large number of seeds from a Mirabilis jalapa (Hendirikka) plant which was grown alone with pink flowers. He planted them and observed about colour composition of the first generation. His observations are as follows.

plant with pink flowers -	20
plant with white flowers -	10
plant with red flowers -	10

(a) Find the phenotypic ratio of the above plant generation.

(b) What may be the pollination method of the mother plant ?

(c) What is the genetic deviation pattern which results in producing pink flowers?

(d) Demonstrate the above results using a punnet square. Consider reddish colour as 'R' and white colour as 'r'.

A man was taken to a hospital due to getting minor injuries by falling from a bicycle. It was observed that his heart beat was high and the body was wet with sweat.

(i) What is the suitable name given for the action here several organs function together when cycling?

(ii) Which part of the brain which take decisions for the above reactivity ?

(iii) Give a reason for the increase of the heart beat.

(iv) Name the hormone responsible for increasing the heart beat.

(v) Write an advantage for the body gained by sweating.

(vi) Give a reason for high blood pressure.

C Blood was seen clot on the wound of his leg.

(i) What is the componant of blood cells which help in blood clotting?
(ii) Write the process of blood clotting.
(iii) What is the hereditry disease which prevents blood clotting ?
(iv) Cell division occurs in tissues when the wound is healed. What type of a cell division occurs here?

(06) A A man kept a poisonous substance mixed with food to kill rats were seen dead on the following day. After about 2 days their pet cat and a rat snake were found dead. Few months later rats became a trouble even more than earlier.

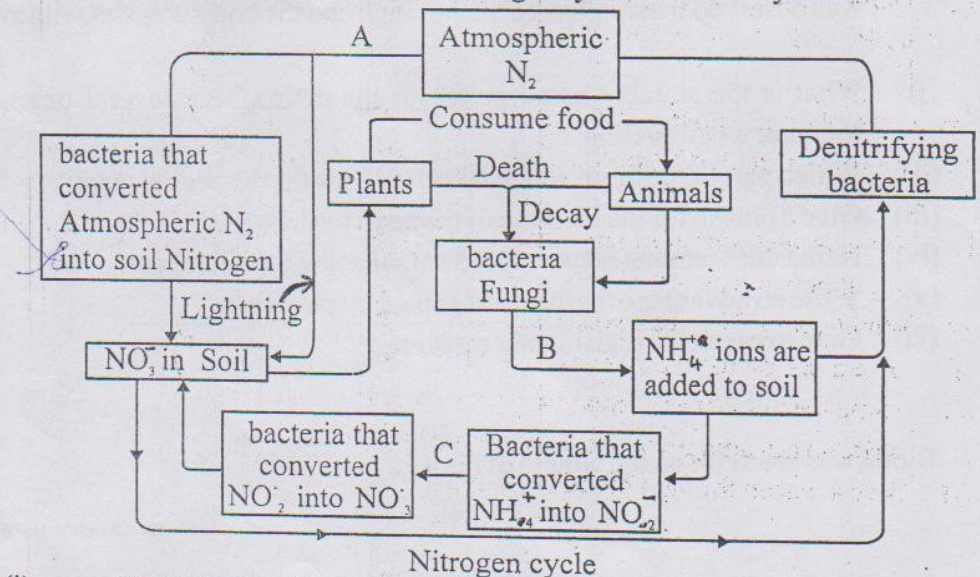
(i) By which sense do the rats find food in the dark?
(ii) A student says that the poison found in the rat snakes body is more than the poison found in the rat's body. Explain the statement.
(iii) Write how organisms that you mentioned in (i) above are helpful to the environment
(iv) To which animals life cycle does the organisms found on the cat's body belongs ?
(v) Write a characteristic which differs the rat snake from the other two anialms.
(vi) "Use of chemical to kill rat is not a sutable method for the environment" Name a suitable eco- friendly method for this purpose.

B The cat was buried after 2 days. The below observations were seen at the time of the buriel of the cat.

(a) Strong bad smell
(b) White small worms without legs

(i) What kind of organism was responsible for the bad smell ?
(ii) What is the nutrient method of that organisms ?
(iii) Write how organisms that you mentioned in (i) above are helpful to the environment.
(iv) To which animals life cycle does the organisms found on the cat's body belongs to?

C (i) The diagram below shows the Nitrogen cycle in an eco - system.



Nitrogen cycle

(i) What is meant by cycling of materials ?

(ii) Name processes A, B and C of the above diagram.

(iii) Name a group of micro - organisms which are important in the process 'B'.

(iv) As which ions does soil nitrogenous compound get absorbed by plants?

(v) Name the process where nitogeneous compound are absorbed in to plants.

(vi) As what nutrient is nitrogen compounds found in animal bodies ?

(vii) Write a human activity which affects the process of the above mentioned cycle.

Chemistry

(07) (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.

(08) A 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?

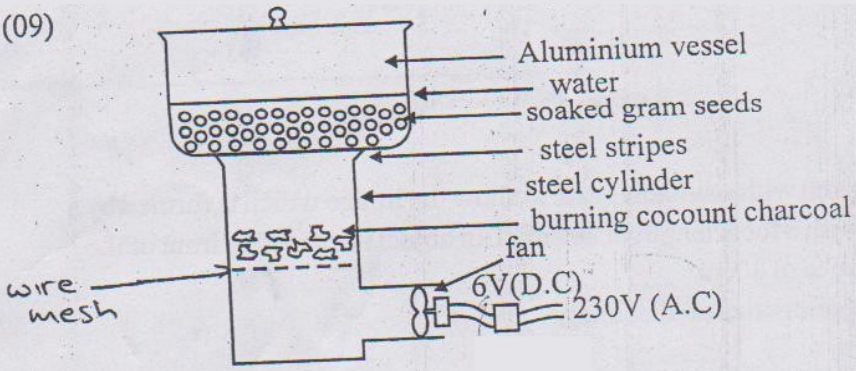
(iii) Write 2 adverse effects caused in an aquatic environment as a result of the above problem.

(iv) Urea was produced in industrially by using ammonia (NH_3) as a raw material ammonia (NH_3) is produced by reacting Nitrogen and Hydrogen

(a) Write the balanced equation of production of ammonia

(b) What is the catalyst used in producing ammonia industrially

(09)



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.

C The mass of the pan and its content was 4 Kg.

(i) What is the weight of it ? ($g = 10\ ms^{-2}$)

(ii) If it was lifted on to a table with a height of 0.75m ,What is the work done by the man?

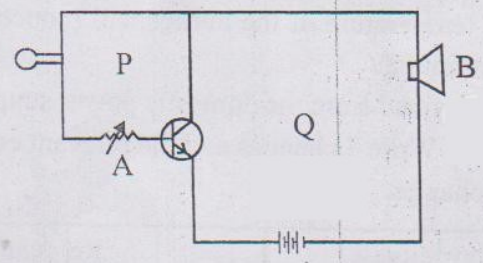
D The aluminum pan contains a shiny outer surface. It resembles a convex mirror and a child could see his image when he looked on to the pan.

(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.

(10) 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.

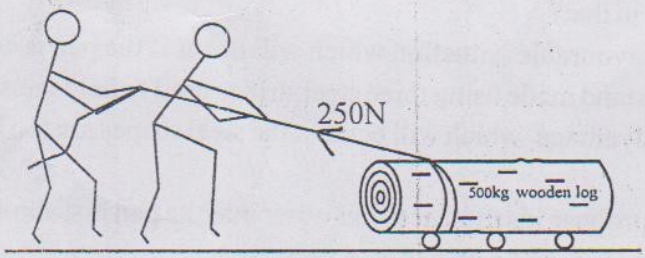
(iii) What is the type of transistor used in this circuit ?

(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 ?

(iii) what is the M.A gained by using the above method)

(iv) when the log is being pulled with a uniform velocity of $2ms^{-1}$, for what is the energy of 2 men used for)

(v) Calculate the kinetic energy of the log when it's ~~bee~~ being dragged with the above velocity.

(vi) What will happen to the 2 men of the rope broke suddenly? Explain your answer.