

0708021/2&1 BBEKO
August 2021
INTEGRATED SCIENCE 2 & 1
Essay & Objective
2 hours

Name.....

Index Number.....

**BEST BRAIN EXAMINATIONS KONSORTIUM
GHANA**

Special Private Mock Examinations For BECE Candidates

August 2021

INTEGRATED SCIENCE 2 & 1

2 hours

Do not open this booklet until you are told to do so. While you are waiting, read and observe the following instructions carefully. Write your name and index number in ink in the spaces provided above.

This booklet consists of two papers. Answer Paper 2 which comes first, in your answer booklet and Paper 1 on your Objective Test answer sheet. Paper 2 will last 1 hour 15 minutes after which the answer booklet will be collected. Do not start Paper 1 until you are told to do so. Paper 1 will last 45 minutes.

This paper is in two sections: A and B. Answer Question 1 in section A and any other four questions in section B.

Answer all the questions in your answer booklet.
Credit will be given for clarity of expression and orderly presentation of material

SECTION A

[40 marks]

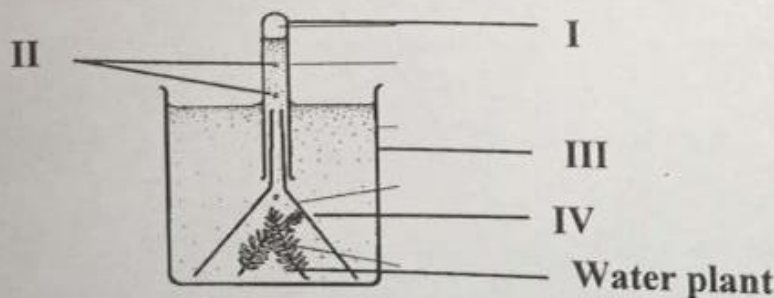
Answer all of Question 1

- (a) The diagram below illustrates a cultural practice in vegetable crop production. Study the diagram carefully and answer the questions that follow



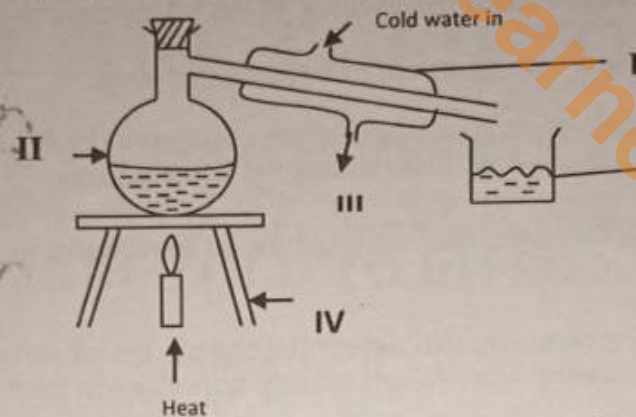
- (i) Name and explain the practice shown in the diagram above. [2 marks]
- (ii) Give two reasons why the cultural practice above is important. [2 marks]
- (iii) Name the equipment being used for the practice. [2 marks]
- (iv) State two ways of maintaining the equipment. [2 marks]
- (v) List four other cultural practices in vegetable production. [2 marks]

- (b) The set up below illustrates an experiment in photosynthesis using a water plant. Study the diagram carefully and answer the questions that follow.

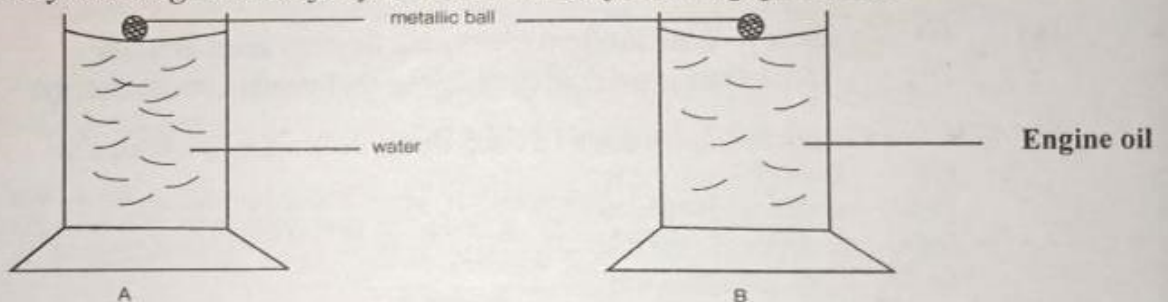


- (i) Name the parts of the set-up labeled I, II, III and IV. [2 marks]
- (ii) What observation will be made when the set-up is left under the sun for some time? [2 marks]
- (iii) Explain your observation in 1(b) (ii) above. [2 marks]
- (iv) How can you test for the gas produced? [2 marks]
- (v) What conclusion can you draw from the experiment? [2 marks]

- (c) The set-up below is an illustration of a separatory process. Study it carefully and answer the questions that follow



- (i) Name the process used in the experiment above. [2 marks]
 (ii) Which types of mixtures can be separated by this process? [2 marks]
 (iii) Name the parts labeled I, II, III and IV. [2 marks]
 (iv) What is the use of II? [2 marks]
 (v) What term is used to describe the liquid collected in X? [2 marks]
- (d) In the experimental set-up below, two metallic balls of the same weight were placed at the same time on two different liquids of the same volume. Study the diagram carefully and answer the following questions.



- (i) In which of the two above will the ball fall faster? [2 marks]
 (ii) Explain your answer in (d)(i) above. [3 marks]
 (iii) Name and explain the type of force involved in the movement of the metallic balls through two the liquids. [2 marks]
 (iv) Give **two** properties of the force involved. [3 marks]

SECTION B

[60 marks]

Answer **four** questions **only** from this section.

2. (a) An amount of **360J** of work is done when a force moves through a distance of 12m in the direction of the force. Calculate the value of the force. [3 marks]
 (b) Give **four** reasons why seeds are nursed. [4 marks]
 (c) (i) State **two** activities that occur in the mouth during digestion. [2 marks]
 (ii) Give **two** digestive functions of the stomach. [2 marks]
 (d) (i) In what **two** ways does water come into contact with impurities? [2 marks]
 (ii) Identify **four** impurities that can be found in water. [2 marks]

3. (a) (i) List **two** tools that can be used for pruning. [2 marks]
 (ii) Give **four** reasons for pruning in vegetable crop production. [2 marks]
- (b) List **four** stages in the life cycle of a flowering plant. [4 marks]
- (c) (i) Name **two** parts of a wheelbarrow and give the function of each. [2 marks]
 (ii) State **two** ways of maintaining the wheelbarrow. [2 marks]
- (d) State **three** effects associated with the use of hard water in the home. [3 marks]
4. (a) (i) Describe how you can determine the texture of soils. [2 marks]
 (ii) In what **three** ways is soil texture important in crop production? [3 marks]
- (b) Identify **six** human activities that lead to air pollution. [3 marks]
- (c) (i) Mention **four** differences between plants and animals. [2 marks]
 (ii) State **four** similarities between plants and animals [2 marks]
- (d) A machine used an effort of 25N to carry a load of weight 100N. If the velocity ratio is 5, find the
 (i) Mechanical advantage of the machine.
 (ii) Efficiency of the machine. [3 marks]
5. (a) (i) Identify **four** modern electronic devices used at home. [2 marks]
 (ii) Name **four** electrical appliances that produce heat energy. [2 marks]
- (b) Give the chemical formula of each of the following compounds:
 (i) Iron (II) sulphide;
 (ii) Carbon (II) oxide;
 (iii) Copper (I) Oxide;
 (iv) Calcium chloride;
 (v) Nitrogen (IV) oxide
 (vi) Ammonia [3 marks]
- (c) (i) Give **four** human activities that disrupt the carbon cycle. [2 marks]
 (ii) State **four** effects of destruction of the carbon cycle. [2 marks]
- (d) Give **four** functions of potassium in plants. [4 marks]
6. (a) (i) Identify **four** substances that are highly inflammable. [2 marks]
 (ii) List **four** places where the *No Smoking* sign is often displayed. [2 marks]
- (b) (i) State **two** differences between conduction and radiation. [2 marks]
 (ii) Mention **four** effects of illegal electrical connections at home. [2 marks]
- (c) Give **six** hereditary features in humans. [3 marks]
- (d) (i) State **four** causes of loss of soil fertility. [2 marks]
 (ii) Give **four** ways of maintaining soil fertility. [2 marks]

END OF ESSAY TEST

Answer all the following questions. Each question is followed by four options lettered A to D. Find out the correct option for each question and shade in pencil on your answer sheet the space which bears the same letter as the option you have chosen. Give only one answer to each question. An example is given below.

The element with the chemical symbol Si is

- A. Silver
- B. Silicon
- C. Selenium
- D. Sodium

The correct answer is Silicon, which is lettered B and therefore answer space B would be shaded

A

B

C

D

Think carefully before you shade the answer space. Erase completely any answer you wish to change. Now answer the following questions.

1. Which simple machine does a flagpole make use of?
 - A. Wheel and axle.
 - B. Lever.
 - C. Pulley.
 - D. Inclined plane.
2. The heart is an organ of the
 - A. digestive system.
 - B. circulatory system.
 - C. respiratory system.
 - D. reproductive system.
3. Pure water must be
 - A. sweet.
 - B. white.
 - C. smelling good.
 - D. tasteless.
4. Soil erosion is promoted by
 - A. bush burning.
 - B. contour ploughing.
 - C. strip cropping.
 - D. terracing.
5. Digital instruments are composed of
 - A. gold.
 - B. iron.
 - C. water.
 - D. transistors.
6. A large force on a small contact area will produce
 - A. small pressure.
 - B. large pressure.
 - C. irregular pressure.
 - D. zero pressure.
7. It is easier to loosen a tight knot with a long spanner than a short one because the long one
 - A. does more work.
 - B. does little work.
 - C. requires less effort.
 - D. overcome less frictional resistance.

8. An atom becomes an ion when its
A. number of electrons change.
B. number of electrons is the same.
C. number of neutrons change.
D. number of neutrons is the same.
9. We can aid faster digestion of food by
A. overeating.
B. eating rapidly.
C. exercising the body after meals.
D. taking soft drinks after meals.
10. The efficiency of a machine would be said to be zero if
A. work input leads to no output.
B. work input equals work output.
C. work input is greater than output.
D. no energy was wasted.
11. Which of the following is **true** about ice?
A. It floats on water.
B. Water floats on ice
C. It is hotter than water.
D. It is chemically different from water.
12. Legumes are rich sources of
A. carbohydrates.
B. proteins.
C. water.
D. fats and oil.
13. The collective name for particles contained in the nucleus of an atom is
A. moecules.
B. nucleons.
C. neutrons.
D. protons.
14. We can give the body the ability to resist Covid19 infection by
A. wearing nose masks.
B. vaccination.
C. fasting.
D. inoculation.
15. The number of electrons in an element with atomic number 20 is
A. 20.
B. 6.
C. 8.
D. 10.
16. A machine does 12,000 J of work in one minute. Calculate its power.
A. 200 W.
B. 600 W.
C. 2,000 W.
D. 12,000 W.
17. A machine lifting a load of 300N with an effort of 150N has mechanical advantage of
A. 0.5.
B. 2.0.
C. 150.
D. 450.
18. The hardest part of the tooth is called
A. dentine.
B. enamel.
C. pulp cavity.
D. cement.
19. During digestion, saliva does **not**
A. soften the food.
B. lubricate the food.
C. act on cooked starch.
D. start digesting all types of foods.
20. Harvesting rain water will help to
A. keep water clean.
B. prevent water-borne diseases.
C. stop paying water bills.
D. conserve water.
21. The primary source of energy on earth is
A. petroleum.
B. the sun.
C. the wind.
D. plants.
22. The purpose of pricking out seedling is to
A. ensure quick germination.
B. protect the seedlings from heat.
C. prevent overcrowding in nursery.
D. increase rate of photosynthesis.
23. How many atoms are present in one molecule of NH_4SO_4 ?
A. 4
B. 6
C. 8
D. 10
24. In testing a leaf for the presence of starch, the leaf is first put into
A. alcohol.
B. boiling water.
C. cold water.
D. Chlorophyll solution

Turn o

25. Which of the following human characteristics **cannot** be inherited
- Baldness.
 - Height.
 - Intelligence.
 - Skills.
26. One way to protect the body against air-borne diseases is have proper
- sex education.
 - ventilation.
 - copulation.
 - fasting.
27. Soil fertility can be effectively maintained by practicing
- bush burning.
 - mono cropping.
 - crop rotation.
 - over grazing.
28. The following forms of energy can be changed directly into heat energy **except**
- Chemical energy.
 - Electric energy.
 - Kinetic Energy.
 - Potential energy.
29. The particles in the cells which are responsible for heredity are called
- organelles.
 - sex cells.
 - genes.
 - hormones.
30. A body with volume of 15cm^3 and a mass of 120g will have a density of
- 1900gcm^{-3}
 - 135gcm^{-3}
 - 105gcm^{-3}
 - 8.0gcm^{-3}
31. How many shells are in an atom of neon?
- 2
 - 8
 - 10
 - 20
32. A piece of chalk is made up of units of
- atoms.
 - molecules.
 - ions.
 - gases.
33. Tomato is an example of a
- stem vegetable.
 - root vegetable.
 - fruit vegetable.
 - leafy vegetable.
34. The method of food preservation which uses chemical to change pH medium is
- neutralization.
 - salting.
 - chlorination.
 - pickling.
35. The most suitable soil types for maize cultivation is
- water logged clay.
 - dry sand.
 - well drained loamy soil.
 - stony sand.
36. Which of the following statements is true about friction in machine parts?
- It makes movement impossible.
 - It helps reduce speed.
 - It causes wear and tear.
 - It produces moisture.
37. The two upper chambers of the heart are
- right atrium and left atrium.
 - right ventricle and left ventricle.
 - right atrium and right ventricle.
 - left ventricle and right atrium.
38. To prepare a vegetable garden, first
- manure the site.
 - select the site.
 - clear the site.
 - plant the seedlings.
39. Which of the following is **not** true about photosynthesis?
- It requires sunlight
 - Chlorophyll is required
 - Starch is formed.
 - Oxygen is an ingredient.
40. In a diffuse reflection of the light,
- the rays strike at a rough surface
 - each ray is reflected at one angle
 - the rays strike at a smooth surface
 - all the rays are equal.

END OF PAPER

BEST BRAIN EXAMINATIONS KONSORTIUM
SPECIAL PRIVATE MOCK EXAMINATIONS – AUGUST 2021
MARKING SCHEME – INTEGRATED SCIENCE

PAPER TWO

SECTION A

QUESTION ONE

(a) (i) NAME AND EXPLANATION OF CULTURAL PRACTICE

Watering: This is the practice of supplying water to crops.

[2 marks]

(ii) IMPORTANCE OF WATERING

- Helps to give plants constant supply of water for their growth
- Helps plants to get water in the absence of rain or during the dry season
- Enhances the growth of crops
- It increases crop yield
- It prevents crops from wilting

[2 marks @ 1 mark each]

(iii) NAME OF EQUIPMENT

Watering Can.

[2 marks]

(iv) WAYS OF MAINTAINING WATERING CAN

- Wash can after use
- Keep it dry and very clean to prevent rusting
- Oiling/ greasing
- Hang can upside down after use
- Keep the can in a cool dry place
- Use for the purpose intended only
- After use, rinse with water if used with liquid fertilizer.

[2 marks @ 1 mark each]

(v) EXAMPLES OF CULTURAL PRACTICES IN VEGETABLE CROP PRODUCTION

- Mulching
- Thinning out
- Pruning
- Staking
- Mulching
- Shading
- Stirring
- Weeding
- Fertilizer application
- Earthing-up
- Supplying in
- Prickling out
- Pest control
- Disease control

[2 marks @ ½ mark each]

(b) (i) NAMING OF LABELED PARTS

- I – Test tube/ inverted test tube
- II – Gas bubbles
- III – Beaker of water
- IV – Inverted funnel

[2 marks @ ½ mark each]

(ii) OBSERVATION MADE WHEN THE SETUP IS LEFT IN SUNLIGHT FOR SOME TIME

Bubbles of gas begin to appear in the test tube

[2 marks]

(iii) EXPLANATION OF OBSERVATION

The water plant undergoes photosynthesis, releasing oxygen as a byproduct.

[2 marks]

(iv) **HOW TO TEST FOR GAS PRODUCED**
Oxygen supports combustion so a good method of testing for Oxygen is to take a glowing splint and place it in a sample of gas, if it reignites the gas, its oxygen. [2 marks]

(v) **CONCLUSION TO DRAW FROM THE EXPERIMENT**
The experiment shows that a gas(oxygen) is given off during photosynthesis. [2 marks]

(c) (i) **NAME OF THE PROCESS USED IN THE EXPERIMENT** [2 marks]
Distillation

(ii) **TYPES OF MIXTURES THAT CAN BE SEPARATED BY DISTILLATION** [2 marks]
Miscible liquid mixtures

(iii) **NAMING OF PARTS**
I – Condenser
II – Conical flask
III – warm water out
IV – Tripod/Stand [½ each x 4 = 2 marks]

(iv) **USE OF II**
It holds the mixture for heating/ boiling. [2 marks]

(v) **TERM USED TO DESCRIBE THE LIQUID COLLECTED** [2 marks]
Distillate

(d) (i) **CONTAINER IN WHICH THE BALL WILL FALL FASTER** [2 marks]
In container A

(ii) **EXPLANATION TO (i) ABOVE**
This is because the liquid (water) in it is less viscous/lighter than the liquid in B (diesel oil) [3 marks]

(iii) **THE TYPE OF FORCE INVOLVED**
Type of force: Viscosity/Friction in fluids [2 marks]

Explanation: it is the pressure in fluids / the force which opposes motion in liquids [2 marks]

(iv) **PROPERTIES OF FORCE INVOLVED**
1. The force acts opposite to the direction of motion or direction of applied force.
2. The force acts depending on the normal reaction between the two surfaces under consideration and also on the nature of the surface.
3. They are caused due to intermolecular interactions between the bodies.

[3 marks @ 1 ½ mark each]

QUESTION TWO

(a) **CALCULATING THE VALUE OF FORCE**
Distance = 12m, Work done = 360J

$$\text{Force (F)} = \frac{\text{Work done (W)}}{\text{Distance (d)}}$$
$$= \frac{360}{12} = 30 \text{ N}$$

The value of force = 30N

[3 marks]

(b) **REASONS WHY SEEDS ARE NURSED**
- Nursed seeds provide higher yields.

- It eliminates the problem of unfavourable soil conditions
- It provides conditions favorable for healthy development of the young plant.
- Some seeds are unable to withstand adverse weather conditions
- Better protection/ care for seedlings
- Easy control of weeds
- Reduces field management cost
- Improves crop growth uniformity
- Some seeds need special treatment to enhance germination
- It enables proper care for the plants in terms of diseases and pest control.
- It gives seedlings a good start in the field to grow properly.
- It reduces diseases and pest infestation.
- It allows the farmer to select healthy seedlings for transplanting.
- Seedlings are hardened in the nursery to overcome transplanting seedlings.

[4 marks @ 1 mark each]

(c) (i) **ACTIVITIES THAT OCCUR IN THE MOUTH DURING DIGESTION**

- Chewing/mastication
- Softening of food by saliva
- Rolling of food into ball
- Breakdown of starch into maltose

[2 marks @ 1 mark each]

(ii) **DIGESTIVE FUNCTIONS OF THE STOMACH**

- Produces pepsin for protein digestion
- Produces HCl to kill bacteria in food.
- Churning of food by contraction and relaxing

[2 marks @ 1 mark each]

(d) (i) **WAYS WATER COMES INTO CONTACT WITH IMPURITIES**

- Mining along bank of rivers
- Sand wining along bank of rivers
- Poor agricultural practices
- Use of pesticides, insecticides
- Release of industrial waste
- Disposal of domestic waste
- Use of chemicals for fishing
- Etc.

[2 marks @ 1 mark each]

(ii) **IMPURITIES THAT MAY BE FOUND IN WATER**

- Dust
- Germs
- Dissolved gases
- Dissolved chemicals
- Organic materials
- fungi,
- mosquito larvae
- suspended substances
- Etc.

[½ each x 4 = 2 marks]

TOTAL = 15 MARKS

QUESTION THREE

(a) (i) **TOOLS USED FOR PRUNING**

- Secateurs
- Loppers
- Long reach pruners
- Scissors
- Saws

(ii) **REASONS FOR PRUNING**

- It improves air circulation in the farm
- It promotes light penetration
- It encourages easy harvesting
- It checks the spread of diseases
- It promotes the production of bigger fruits
- It beautifies ornamentals
- It aids clearing of weeds
- It improves the growth rate of the crop
- It increases the plants longevity
- It enhances plants quality
- It removes dead and dying branches and stubs, allowing room for new growth
- It also deters pest and animal infestation and promotes the plant's natural shape and healthy growth.

[$\frac{1}{2}$ each x 4 = 2 marks]

(b) **STAGES IN THE LIFE CYCLE OF FLOWERING PLANTS**

- Flowering
- Pollination
- Fertilization
- Fruit/seed formation
- Seed dispersal
- Seed germination

[4 marks @ 1 mark each]

(c) (i) **PARTS OF A WHEEL BARROW AND THEIR FUNCTIONS**

- Handle (Effort): it's the part of the wheel barrow where force is applied to move the object
- Tray (load): it carries the load
- Fulcrum: it's the turning point of the wheel barrow which enables it to move.

[2 marks @ 1 mark each]

(ii) **WAYS OF MAINTAINING THE WHEELBARROW**

- Grease / oiling the movable part/ wheel shaft regularly
- Ensure adequate air pressure in the tyre always
- Avoid overloading.
- Clean / wash after use

[2 marks @ 1 mark each]

(d) **EFFECTS ASSOCIATED WITH USE OF HARD WATER IN THE HOME**

- Blocked showers
- Burnt out immersion heaters
- Scale build up inside water pipes
- Higher water heating cost
- Extra soap required to get a lather
- Soap wastage leading to extra cost

[3 marks @ 1 mark each]

TOTAL = 15 MARKS

QUESTION FOUR

(a) (i) **DESCRIBE HOW YOU CAN DETERMINE THE TEXTURE OF SOILS.**

Feeling of the soil between the fingers.

[2 marks]

(ii) **WAYS SOIL TEXTURE IS IMPORTANT IN CROP PRODUCTION.**

- It helps the farmer to know the farming method to use
- It has an effect on water and air relationship
- It influences the soil temperature
- It influences the water holding capacity of soil
- Knowledge of soil texture is important in determining soil management practices to adopt
- It helps the farmer to know the type of crop to plant

[3 marks @ 1 mark each]

(b) **HUMAN ACTIVITIES THAT LEAD TO AIR POLLUTION**

- Discharge of gases from factories
- Smoke from exhaust engines and other machines
- Smoke from domestic fires
- Discharge of chlorofluorocarbons from aerosol sprays and some refrigerators
- Bush burning
- Dust from open cast mining
- Dust from sand winning and stone quarrying
- Dust from construction, etc.
- Smoke from cigarette/smoking.
- Etc.

[½ each x 6 = 3 marks]

(c) (i) **DIFFERENCES BETWEEN PLANTS AND ANIMALS**

Animals	Plants
Do not manufacture their own food.	Manufactures their own food.
Respond quickly to stimulus.	Respond to stimulus gradually/slowly.
Move freely from place to place.	Shows movement only in certain parts such as growing regions.
Growth takes in all parts of the body.	Growth takes place at definite regions.
Do not have a cell wall	Have cell wall
Have no cellulose	Have cellulose
Have no chloroplast and chlorophyll	Have chloroplast and chlorophyll

[½ each x 4 = 2 marks]

(ii) **SIMILARITIES BETWEEN PLANTS AND ANIMALS**

- They are made of cells
- They feed
- Both give rise to young ones of their own kind/ reproduce.
- Both respire.
- Both grow.
- Both show movement.
- Both respond to stimulus.
- Both get rid of metabolic waste products/ excrete.

[½ each x 4 = 2 marks]

(d) (i) **CALCULATING MECHANICAL ADVANTAGE**

$$\begin{aligned}\text{Mechanical Advantage} &= \frac{\text{Load}}{\text{Effort}} \\ &= \frac{100\text{N}}{25\text{N}} \\ &= 4\end{aligned}$$

[1 ½ mark]

(ii) **CALCULATING EFFICIENCY OF MACHINE**

$$\begin{aligned}\text{Efficiency} &= \frac{\text{Mechanical Advantage}}{\text{Velocity Ratio}} \times 100\% \\ &= \frac{4}{5} \times 100\% \\ &= 80\%\end{aligned}$$

[1 ½ mark]

TOTAL = 15 MARKS

QUESTION FIVE

(a) (i) MODERN ELECTRONIC DEVICES USED AT HOME.

- Television
- Radio
- Telephones
- Mobile phones
- Computers
- Calculator
- Digital clocks
- etc.

[½ each x 4 = 2 marks]

(ii) HOUSEHOLD APPLIANCES THAT PRODUCE HEAT ENERGY

- Kettles
- Cookers
- Iron
- Microwave
- Electric bulbs
- etc.

[½ each x 4 = 2 marks]

(b) THE CHEMICAL FORMULA OF EACH OF THE FOLLOWING COMPOUNDS:

	<u>COMPOUNDS</u>		<u>CHEMICAL FORMULA</u>
(i)	Iron (II) sulphide;	-	FeS
(ii)	Carbon (II) oxide;	-	CO
(iii)	Copper (I) Oxide;	-	Cu ₂ O
(iv)	Calcium chloride;	-	CaCl ₂
(v)	Nitrogen (IV) oxide	-	NO ₂
(vi)	Ammonia	-	NH ₃

[½ each x 6 = 3 marks]

(c) (i) HUMAN ACTIVITIES THAT DISRUPT THE CYCLE

- Destruction of forest or cutting of trees or lumbering.
- Bush burning
- Afforestation or planting of trees
- Burning of fossil fuels.
- Etc.

[½ each x 4 = 2 marks]

(ii) EFFECTS OF DISRUPTION OF THE CARBON CYCLE

- Global warming/ rise in temperature/ greenhouse effect/ affects climate
- Reduction in oxygen
- Rise in sea level/ flooding/ melting of ice
- Animals and plants becoming endangered/ extinct
- Prolonged drought
- Reduction in rainfall
- Depletion of the ozone layer.
- High amount of carbon dioxide in the atmosphere.
- Melting of icebergs due to high temperature leading to floods

[½ each x 4 = 2 marks]

(d) FUNCTIONS OF POTASSIUM IN CROP PLANTS

- Plays an important role in plant metabolism
- Plays an important role in carbohydrate formation
- Plays an important role in translocation of starch to growing parts
- Neutralization of organic acids
- Strengthens straw and stalk of plants
- Aids absorption of nutrients
- Helps to reduce diseases in plants
- Helps to produce quality fruit and seed development
- Activates enzymes for photosynthesis and respiration
- Helps build proteins.

[4 marks @ 1 mark each]

TOTAL = 15 MARKS

QUESTION SIX

(a) (i) SUBSTANCES THAT ARE HIGHLY INFLAMMABLE

- Gasoline/petrol
- Ethanol/alcohol
- Acetone
- Liquid nail polish
- LPG/Gas
- Fuel storage
- etc

[½ each x 4 = 2 marks]

(ii) PLACES WHERE THE NO SMOKING SIGN IS OFTEN DISPLAYED

- Petrol stations/ filling stations
- Gas stations
- Petrol tankers
- Gas tankers
- Public places, eg hospitals
- restaurants
- etc.

[½ each x 4 = 2 marks]

(b) (i) DIFFERENCES BETWEEN CONDUCTION AND RADIATION

Conduction	Radiation
It needs a material medium to travel in	It travels in a vacuum/ does not need material medium
Does not depend on whether body is black or white	Black bodies radiate heat well
Heat is passed from one molecule to another	Molecules are not involved/ Travels by electromagnetic waves

[2 marks @ 1 mark each]

(ii) EFFECTS OF ILLEGAL ELECTRICAL CONNECTIONS

- There is an overload of the power supply.
- It may cause fire outbreaks.
- It damages electrical appliances.
- It leads to frequent power cuts.
- It leads to a drop in voltage of electricity.
- Can cause electric shocks
- It leads to loss of revenue to the government

[2 marks @ 1 mark each]

(c) HEREDITARY FEATURES IN HUMAN

- Weight
- Colour of skin
- Ability to roll the tongue
- Height of an individual
- Blood group
- Shape of face/nose/ eye
- Intelligence
- Temperament
- Colour of eyes
- Colour of hair
- Shape and size of some organs
- Etc.

[½ each x 6 = 3 marks]

(d) (i) CAUSES OF LOSS OF SOIL FERTILITY

- Loss of topsoil (by erosion)
- Nutrient mining/ depletion/ removal of nutrients by crops
- Leaching,
- Decreased soil bioactivity
- Soil acidification/ alkalization/ salination
- Over cropping

- Overgrazing
- Indiscriminate use of agro-chemicals/ soil pollution
- Inefficient soil management practices
- Bush burning and oxidation of organic matter
- Erosion
- Crop removal
- Excessive burning/ bush burning/ wildfires
- Quarrying
- Surface mining
- Sand winning/ physical degradation of soil/
- Poor soil structure
- Waterlogging
- Compaction
- etc

[½ each x 4 = 2 marks]

(ii) WAYS THE FERTILITY OF THE SOIL CAN BE MAINTAINED

- Growing cover crops
- Green manuring
- Addition of chemical fertilizers
- Crop rotation
- Liming
- Composting
- Mixed farming
- Mixed cropping
- Tillage to improve aeration
- Alley cropping
- Mulching
- Irrigation
- Bush fallowing
- Application of farmyard manure/ kraal manure/ poultry manure
- Ecological farming
- Organic farming
- Practice of afforestation
- Etc.

[½ each x 4 = 2 marks]

PAPER 1 [40 marks]

1. C	11. A	21. B	31. A
2. B	12. B	22. C	32. A
3. D	13. B	23. D	33. C
4. A	14. B	24. B	34. D
5. D	15. A	25. D	35. C
6. B	16. A	26. B	36. C
7. C	17. B	27. C	37. A
8. A	18. A	28. D	38. B
9. C	19. D	29. C	39. D
10. A	20. D	30. D	40. A

TOTAL FOR PART II = 60 MARKS

THUS TOTAL FOR PAPER 2 = (PART I + PART II) = 100 MARKS

GRAND TOTAL = PAPER 1 (40) + PAPER 2 (100) = 140 MARKS

OVERALL SCORE = $\frac{\text{TOTAL SCORE}}{140} \times 100\%$