

BECE 2021 INTEGRATED SCIENCE PREDICTED TOPICS

PRACTICAL

BIOLOGY	CHEMISTRY	AGRIC	PHYSICS
REPRODUCTION IN PLANTS <ul style="list-style-type: none"> 1. Experiment on germination 2. Diagram on germination 3. Diagram of a flower 4. Diagram of a fruit and seeds 5. Diagram on pollination, pollen tube of fertilization 	CHEMISTRY APPARATUS <ul style="list-style-type: none"> 1. Diagrams and function 2. Experimental set-ups and labelling 	CROP PRODUCTION <ul style="list-style-type: none"> 1. Diagram of crops 2. Cultural practices illustrations 	ENERGY AND ENERGY TRANSFORMATION <ul style="list-style-type: none"> 1. Diagram to show energy 2. Transformation
TRANSPORT IN LIVING CELL <ul style="list-style-type: none"> 1. Experiment on osmosis and diffusion 2. Examples of osmosis and diffusion 	ACIDS AND BASES <ul style="list-style-type: none"> 1. Table of acids, bases indicators 2. pH scale 3. Neutralization reaction 	FARM TOOLS AND MACHINERIES <ul style="list-style-type: none"> 1. Diagram of farm tools 2. Parts of farm tools 	BASIC ELECTRONICS <ul style="list-style-type: none"> 1. Parts and components of electronic circuit 2. Parts of transistor 3. Diagram of electronics
ECOSYSTEM <ul style="list-style-type: none"> 1. Diagram of a bird, fish, etc 2. Diagram of types of ecosystem and habitat 3. Food chain 4. Food web 	SEPARATION OF MIXTURES <ul style="list-style-type: none"> 1. Processes of the separation of mixtures 2. Diagram of separation of mixtures 	SOIL <ul style="list-style-type: none"> 1. Experiment to demonstrate the components of soil 2. Soil porosity 3. Soil profile 	MAGNETISM <ul style="list-style-type: none"> 1. Experiment and diagrams Methods of making methods 2. Magnetic field
DENTITION <ul style="list-style-type: none"> 1. Diagram of the types of teeth 	WATER <ul style="list-style-type: none"> 1. Diagram of purification of water 	PESTS AND PARASITES	LIGHT ENERGY <ul style="list-style-type: none"> 1. Propagation of light

	2. Diagram of the structure of the teeth		1. Diagram of pests and parasites 2. Parts of pests and parasites	2. Pinhole camera 3. Dispersion of light 4. Refraction of light
Digestion, food and nutrition	METALS 1. Diagram of digestive system 2. Enzyme; examples, functions, absence 3. Test for food substances	SOIL CONSERVATION 1. Experiment of rusting 2. Chemical properties of metals 3. Reactivities of metals	FORCES AND PRESSURE 1. Experiment of pressure 2. Illustration of forces	
CYCLE 1. Life cycle of mosquitoes 2. Carbon cycle	Hazards		Machines	
PHOTOSYNTHESIS 1. Experiment of the conditions of photosynthesis 2. Test for starch				

BIOLOGY PREDICTIONS

Reproduction in plants

- ④ Define reproduction
- ④ Differentiate between the types of reproduction
- ④ List the parts of a flower and state their functions
- ④ Define pollination
- ④ List and explain the types of pollination
- ④ List four agents of pollination
- ④ State three features of wind and insect pollinated flower
- ④ what is fertilization
- ④ Explain the processes of fertilization
- ④ Mention four importance of fertilization
- ④ what is germination of seed
- ④ List three conditions necessary for germination
- ④ differentiate between a seed and a fruit

ECOSYSTEM

- ④ Explain the following
 - I. Ecosystem
 - II. Habitat
 - III. Adaptation
- ④ b (i) Differentiate between the types of habitat
 - (ii) State three adaptations each of a fish, a bird, and a plant
- ④ c (i) Differentiate between food chain and food web
 - (ii) Design a food chain using; cassava, grasshopper, hen, man
- ④ State four factors that can disrupt the balance of the ecosystem

Reproduction in humans

- ④ List the parts of female reproductive system in humans
- ④ State the functions of the parts of the female reproductive system in humans
- ④ State the functions of the parts of the male reproductive system
- ④ what fertilization in humans
- ④ Differentiate between embryo and zygote
- ④ Explain how the fetus feed in the womb
- ④ Explain the term indiscriminate sex
- ④ State three effects of indiscriminate sex
- ④ List three disorders associated with the human reproductive system

HEREDITY

- ⑥ Explain the term heredity.
- ⑥ Mention five characteristics that can be inherited from parents.

⑥

- ⑥ Diffusion and osmosis
- ⑥ Explain the term diffusion.
- ⑥ Demonstrate the process of diffusion.
- ⑥ Explain the term osmosis.
- ⑥ Demonstrate the process of osmosis.
- ⑥ Distinguish between diffusion and osmosis.
- ⑥ Give three practical applications of each of diffusion and osmosis
- ⑥ Why is a plant likely to wilt if too much fertilizer is applied to it?

Circulatory system

- ⑥ Explain the meaning of the circulatory system
- ⑥ List parts of the circulatory system and state their functions
- ⑥ List the parts and function of the human heart
- ⑥ State the composition and functions of the blood.
- ⑥ Explain how high and low blood pressure develops in the circulatory system
- ⑥ Mention three possible causes of high and low blood pressure
- ⑥ State three ways of preventing high and low blood pressure
- ⑥ Draw and label the longitudinal section of the heart.

TREND: CHECK ALL PREDICTED QUESTIONS

Photosynthesis

- a. Explain the term photosynthesis.
- b. State the factors necessary for photosynthesis and give the functions of each factor.
- c. State three importance of photosynthesis to plants and animals.
- d. Describe how to test for a starch in a green leaf

TREND: CHECK ALL PREDICTED QUESTIONS

Food and nutrition

- a. Classify food items based on their nutrients.
- b. State four importance of food nutrients.
- c. Describe how to test for sugar, and fats and oil
- d. Explain a balanced diet
- e. State four importance of a balanced diet
- f. Define mal-nutrition
- g. Mention four effects of mal-nutrition
- h. Differentiate between fats and oils

TREND: CHECK AND LEARN ALL PREDICTED QUESTIONS

DISEASES AND INFECTIONS

- a. Explain the term infectious disease.
- a. Identify common infectious diseases.
- b. Describe the causes, mode of transmission, prevention, and control of some common diseases of humans, animals, and crops.

CARBON CYCLE

- ④ Describe how carbon is cycled in nature
- ④ State four importance of the carbon cycle.
- ④ Mention four ways the carbon cycle is disrupted.

TREND: CHECK AND LEARN PREDICTED QUESTIONS

LIFE CYCLE OF MOSQUITO

- ④ State the stages of the life cycle of a mosquito
- ④ Sketch and label the life cycle of a mosquito
- ④ State three causes of malaria
- ④ Mention the methods of controlling mosquitoes
- ④ State the advantages and the disadvantages of each of the methods of controlling mosquitoes

TREND: CHECK AND LEARN PREDICTED QUESTIONS

RESPIRATORY SYSTEM

- ④ Explain the term respiration
- ④ State three importance of respiration
- ④ State and explain the types of respiration
- ④ List the parts of the respiratory system and state the functions of each of the parts
- ④ Distinguish between the types of respiration
- ④ State three differences between the types of respiration

TREND: CHECK AND LEARN PREDICTED QUESTIONS

DENTITION AND DIGESTION

- ④ List the parts of the teeth and provide their function
- ④ List the types of the teeth and state their function
- ④ State three causes of tooth decay and gum disease
- ④ Describe how plaque is formed
- ④ State four ways of preventing tooth decay
- ④ State four ways of caring for the teeth
- ④ List the parts of the digestive system of humans
- ④ What is digestion
- ④ State the function of the parts of the digestive system of humans
- ④ Define an enzyme
- ④ List the digestive enzymes, their site of secretion and function
- ④ Provide the end products for the food substances
 - I. Carbohydrates
 - II. Protein
 - III. Fats and oils
- ④ What is indigestion
- ④ State three causes of indigestion
- ④ State three effects of indigestion
- ④ State three ways of preventing indigestion
- ④ State the function of liver in digestion

CHEMISTRY DETAILED PREDICTIONS

Magnetism

- ④ . Define the following
 - I. Magnetism
 - II. Magnetic field
 - III. Magnetic materials
 - IV. Non-magnetic materials
- ④ List three examples of magnetic and non- magnetic materials
- ④ C. Mention four uses of a magnet
- ④ State three properties of a bar magnet
- ④ State the law of a magnet
- ④ State the three and explain the three ways of making a magnet

- ④ Differentiate between permanent and temporary magnet

Forces and pressure

- ④ Define the following
 - I. Force
 - II. Pressure
 - III. Friction
 - IV. Force of gravity
- ④ State four effects of a force
- ④ State three effects of frictional force
- ④ Mention three ways of reducing friction
- ④ Mention four applications of pressure in liquids
- ④ A cement block with the surface area 100cm² and force 10N, Calculate the pressure of the block

Electrical energy

- ④ Define the following
 - I. Electrical energy
 - II. Potential difference
 - III. Electromotive force
 - IV. Current
 - V. Resistance
- ④ Mention four sources of electricity
- ④ State three ways of conserving electricity
- ④ State three effects of illegal electrical connection
- ④ What is a fuse
- ④ State three uses of a fuse
- ④ Draw and label a simple electrical circuit

- ④ Mention three advantages and disadvantages of parallel and series electrical connection

Heat energy

- ④ . Define the following
 - I. Heat
 - II. Temperature
 - ④ State three difference between heat and temperature
 - ④ List and explain the modes of heat transfer
 - ④ Mention three applications each of
 - I. Radiation
 - ii. Convection
 - ii. Conduction
 - ④ Differentiate between poor and good conductors of heat
 - ④ Explain the reasons why handles of cooking utensils are made with poor conductors of heat

Machines

- ④ . Define the following
 - I. Machine
 - II. Lever
 - III. Mechanical advantage
 - IV. Velocity ratio
 - V. Complex machine
 - ④ State the types of simple machine
 - ④ Give three examples each of the types of lever
 - ④ Explain why the efficiency of a machine is less than one
 - ④ Give three examples of complex machines
 - ④ State three ways of caring for a machines

Light energy

- ⑥ Define the following
 - Light
 - Opaque object
 - Transparent object
 - Shadow
 - Eclipse
 - Image
 - Refraction of light
 - Reflection of light
 - Dispersion of light
- ⑦ List four sources of light
- ⑧ Differentiate between opaque object and transparent object
- ⑨ Mention three examples of opaque objects
- ⑩ Briefly describe the pinhole camera
- ⑪ Sketch the pinhole camera
- ⑫ State four properties of images formed by a pinhole camera
- ⑬ Mention four uses of a plane mirror
- ⑭ Draw a diagram to represent reflection, refraction and dispersion of light
- ⑮ State the laws of refraction and reflection
- ⑯ State four uses of a periscope

Basic electronics

- ① Explain the term electronic
- ② List five examples of electronic devices
- ③ List and state the function of the components of an electronic circuit
- ④ Draw an electronic circuit and label it
- ⑤ Explain the terms forward bias and reverse bias
- ⑥ What is a transistor
- ⑦ List and state the functions of the components of a transistor
- ⑧ Draw and label the symbols for the types of transistors
- ⑨ State three characteristics of transistors

- ④ Mention four uses of a transistors

Solar system

- ④ State the composition of the solar system
- ④ Explain the following
 - A star
 - A planet
- ④ List the planets in order of the distance from the sun
- ④ Explain the meaning of a satellite
- ④ Differentiate between the two types of a satellite
- ④ State four uses of artificial satellite

Elements of weather

- ④ Explain the following
 - Weather
 - Climate
 - Season
- ④ List the elements of weather/climate and the instruments used to measure each one of them

MEASUREMENT

- ④ Describe how to determine the volume of;
 - I. Regular object
 - II. Irregular object
- ④ Describe how to determine the density of irregular object
- ④ Explain why objects sink or float
- ④ Calculate density of a block with dimension 20cm by 10cm by 5cm and mass 50kg.
- ④ Find the density of a substance of initial volume of 50cm^3 and final volume of 100cm^3 and mass 25kg.

Hazard

- a. Explain the term hazard.
- b. Mention four hazards that may occur in science laboratory
- c. State four ways to prevent hazards in science laboratory
- d. Draw five warning and safety signs in the community and laboratory.
- e. State four safety precautions to prevent accidents in the home and school.

Air pollution

- a. State the names and sources of common air pollutants.
- b. State four possible harmful effects of air pollutants.
- c. State three activities of man that can pollute the air

Physical and chemical change

- a. Explain the following
 - i. Physical change
 - ii. Chemical change
- b. Differentiate between physical and chemical change
- c. Classify the following as chemical or physical change

Melting and freezing of ice

Crumpling a piece of paper

Boiling of egg/foodstuff

Rusting of iron

Stretching an elastic material

Inflating and deflating a bicycle tyre or football

Burning a paper

Lighting a match

Elements, compound, mixtures

- a. Explain the following terms; element, compound and mixture.

- b. classify the following materials into elements, compounds and mixtures. Salt, water, iron fillings, sodium
- c. write the chemical symbols for the first twenty elements of the periodic table.
- d. Write the name and chemical formula for the following compounds
- Hydrogen and chlorine
 - Magnesium and oxygen
 - Sulphur(IV) oxide
 - Carbon (IV) oxide
 - Iron(II) oxide
- e. Explain the following terms; solute, solvent, solution.
- f. Differentiate between homogeneous and heterogeneous solutions.
- g. Differentiate between a mixture and a compound.
- h. State three differences between a mixture and a compound
- i. List the methods of separating the following mixtures
- A mixture of alcohol and water
 - Rice from water
 - Mixture of iron filling and sand
 - Mixture of sand and iodine crystals
 - Salt from salt solution
 - A mixture sand and water

Metals and non-metals

- a. State four characteristics of;
- 1. metals
 - 2. and non-metals.
- b. Mention three uses each of metals and non- metals
- c. What are metalloids
- d. State three properties of metalloids
- e. Mention three uses of metalloids
- f. List four reactive and non-reactive metals
- g. Explain why aluminum does not rust
- h. State three chemical properties of metals.
- i. State three causes of corrosion of metals.
- j. Mention three the effects of corrosion on metals.

k. List four ways for preventing rusting

water

- a. State four properties of water.
- b. Explain the terms hard and soft water.
- c. Explain what causes of hardness of water.
- d. State four ways of softening hard water.
- e. Mention four health benefits of water to humans.
- f. State three uses of water in agriculture.
- g. Identify four ways of conserving water in the home.
- h. Define purification of water
- i. State four ways of purifying water
- j. State three ways by which purification of water is important

AGRIC PREDICTED QUESTIONS

Soil

- a. Define soil
- b. List and explain the components of soil.
- c. Mention five uses of soil.
- d. State three the physical properties each of the three types of soil.
- e. Explain the following

Soil texture

Soil structure

Crop production

- a. Sate the principles in crop production.
- b. Explain the term vegetable crop.
- c. Mention four factors influencing vegetable crop production.
- d. List five cultural practices that can be carried in vegetable production

- e. State three reasons for each of the cultural practices
- f. State four uses of vegetable crops.

Farming systems

- a. List five farming system suitable for crop production.
- b. State three advantages and disadvantages of the farming systems above
- c. Define crop rotation
- d. State three importance of crop rotation
- e. draw a plan for a crop rotation programme.
- f. Distinguish between the following pairs of farming systems:
 - i. Mixed cropping and land rotation.
 - ii. Mixed farming and mixed cropping.
 - iii. Organic farming and crop rotation

Pest And Parasite

- a. Differentiate between pests and parasites and give examples.
- b. State four methods of controlling pests and parasites.
- c. State **two** effects each of parasites and pest on humans.
- d. State at least **four** control methods of pests and parasites

Soil conservation

- a. Mention five factors, which lead to the depletion of soil resources.
- b. State four methods of restoring depleted soil.
- c. Explain the term water conservation.
- d. State four practices that destroy water bodies.
- e. Mention four methods for conserving water bodies.
- f. What are fertilizers
- g. Differentiate between the two types of fertilizers
- h. Give two examples each of the two types of fertilizer
- i. Explain the two types of chemical fertilizers
- j. Mention three effects of fertilizers
- k. State four methods of applying fertilizers to crops
- l. Define soil erosion

- m. Mention three ways to control soil erosion
- n. State three effects of soil erosion