

KENYA JUNIOR SCHOOL EDUCATION ASSESSMENT

GRADE 7 DECEMBER ASSIGNMENT

INTEGRATED SCIENCE

LEARNER'S DETAILS



Name: _____.

School: _____.

Assessment Number: _____. Date: _____.

School Code: _____. Signature: _____.

INSTRUCTIONS TO LEARNERS

1. Write your name and class on the answer sheet provided.
2. Answer **ALL** questions in **Section A** and **Section B**.
3. For questions with pictures, study the pictures carefully before answering.
4. Ensure your work is neat and clear.

SECTION A: (30 MARKS)

Answer all the questions. Choose the correct answer for each.

1. During a school assembly, the teacher told learners that Integrated Science is made up of different branches that help us understand the world. Which of the following is **NOT** a component of Integrated Science?

- A. Biology B. Physics
C. Geography D. Chemistry

2. Mary noticed that her grandmother uses glasses to see clearly.



This is an example of science improving life in the area of—

- A. food and nutrition B. health
C. agriculture D. transport

3. A farmer in Nakuru uses fertilizers to improve crop growth. This shows the importance of science in—

- A. transport B. industry
C. agriculture D. textile

4. The symbol below was found on a bottle in the laboratory.



It warns learners that the substance can burn easily. This hazard is—

- A. corrosive B. toxic
C. carcinogenic D. flammable

5. While doing an experiment, James accidentally cut his finger with a broken glass slide. What is the **first** action he should take?

- A. Apply powder on the cut
- B. Wash with clean water and cover with a sterile bandage
- C. Continue with the experiment
- D. Touch the wound with bare hands

6. Which branch of science deals with energy, motion, heat, and forces?

- A. Biology
- B. Physics
- C. Chemistry
- D. Astronomy

7. Your school bus uses fuel to move learners to educational trips. Science helps in this area of—

- A. health
- B. textile
- C. transport
- D. agriculture

8. A laboratory substance has a symbol showing that illustrates a carcinogenic substance. This symbol is?



A



B



C



D

9. A learner accidentally touches a hot beaker and gets a burn. Which first aid measure should be applied?

- A. Apply ice directly on the burn
- B. Break the blister
- C. Put the burnt area under cool running water
- D. Rub oil on the burn

10. Which of the following is a safety measure in the laboratory?

- A. Running around
- B. Eating food during experiments
- C. Wearing protective clothing
- D. Touching chemicals with bare hands

11. An experiment required mixing two chemicals that produced a harmful gas. The teacher advised learners to work near a window. This practice ensures—

- A. accuracy
- B. good ventilation
- C. fast results
- D. neatness

12. Which statement best describes **Biology**?

- A. Study of matter and its composition
- B. Study of living things
- C. Study of forces and energy
- D. Study of stars

13. A factory in Thika uses machines to manufacture clothes. This is an example of science applied in—

- A. industry
- B. transport
- C. agriculture
- D. health

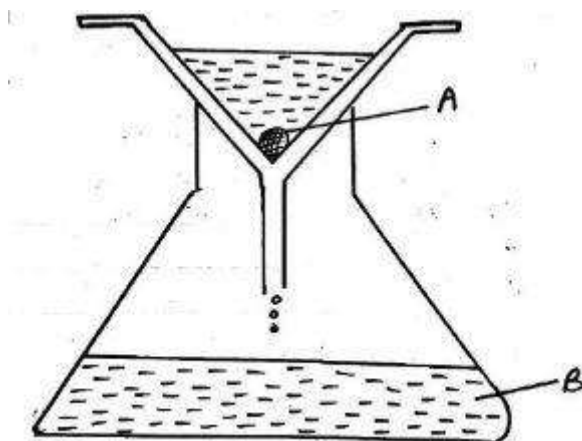
14. During a heating experiment, hot steam escapes from a beaker and lands on Mercy's hand. This accident is known as—

- A. burn
- B. scald
- C. cut
- D. fracture

15.

a) Differentiate between a **pure substance** and an **impure substance**. (2 marks)

16. The diagram below represents a simple **filtration set-up**.



Use the diagram to answer the questions that follow.

a) What names are given to substances **A** and **B**? (2 marks)

A: _____

B: _____

b) Identify **all the apparatus** used in the filtration set-up. (3 marks)

17. Solid carbon(IV) oxide, commonly known as **dry ice**, is used by ice cream vendors to preserve ice cream.

a) Why is dry ice preferred to ice formed from water for this purpose? (2 marks)

18. A learner tested the pH of five substances **A, B, C, D and E** using a universal indicator. The results are shown in the table below.

Substance	pH
A	10
B	14
C	1
D	7
E	4

a) Classify the substances as:

- i. Strongly acidic _____
- ii. Weakly acidic _____
- iii. Neutral _____
- iv. Weakly basic _____
- v. Strongly basic _____

(5 marks)

b) Which of the substances is most likely to be:

- i. Sodium hydroxide _____
- ii. Hydrochloric acid _____
- iii. Pure water _____
- iv. Tomato juice _____

(4 marks)

19. State **three applications of different methods of separating mixtures** in everyday life or industry.
(3 marks)

20. a) Identify the colour shown by each commercial indicator in **acidic** and **basic** solutions using the table provided. (6 marks)

INDICATOR	COLOUR IN ACIDIC SOLUTION	COLOUR IN BASIC SOLUTION
Litmus		
phenolphthalein		
Methyl orange		

b) Give **four uses of acids in real life**. (4 marks)

21. What are **hormones**? (2 marks)

22. Describe the process of **fertilization in human beings**. (6 marks)

23. What is **implantation** in human reproduction? (2 marks)

24. The following terms are arranged in no particular order:

Blastocyst, Morula, Embryo, Villi

Identify the **correct order of development after fertilization**. (2 marks)

25. Identify **three challenges that intersex individuals may face in society**. (3 marks)

26. Outline **two functions of the human skin**. (2 marks)

27. Identify **any two types of kidney disorders**. (2 marks)

28. **a)** State **two functions of the kidneys** in the human body. (2 marks)

b) Name the main blood vessel that carries blood **to the kidney**. (1 mark)

29.

a) Name the organ in the female reproductive system where **fertilization usually occurs**. (1 mark)

b) State **two functions of the uterus**. (2 marks)

c) Name the male reproductive organ that produces **sperm cells**. (1 mark)

30.

a) What is **excretion**? (2 marks)

b) Name **two substances excreted by the human body**. (2 marks)

c) State **two ways through which the skin helps in excretion**. (2 marks)

31. Your school organized a Science Day where learners visited different stations showing branches of Integrated Science.

a) Define **Integrated Science**. (2 marks)

b) Outline the **three components** of Integrated Science and state the **meaning** of each. (6 marks)

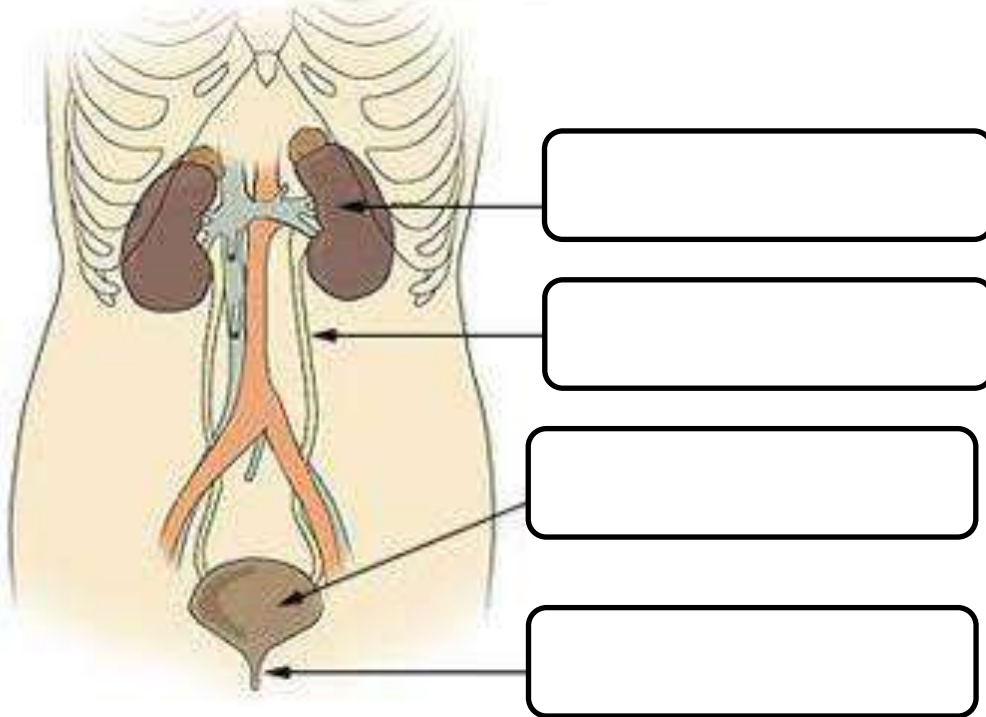
	Component	Definition
i		
ii		
iii		

c) State **two reasons** why it is important to study Integrated Science. (2 marks)

- i. _____
- ii. _____

32.

a) Name the parts of the kidney below: (4 marks)



b) Give **two ways of keeping the kidney healthy** (2 marks)

- i. _____
- ii. _____

33. Identify four characteristics of an adolescent boy

- i. _____
- ii. _____
- iii. _____
- iv. _____

b) State **two reasons** why it is important to understand hazard symbols. (2 marks)

- i. _____
- ii. _____

34. When performing an experiment, several accidents happened in the laboratory.

a) Explain the **causes of the following accidents: (3 marks)**

i. Burns and scalds

ii. Cuts

iii. Suffocation

b) Describe **first aid measures for scald accidents. (4 marks)**

- i.

- ii.

- iii.

- iv.

35. Your school organized a Career Day where different experts came to speak to learners.

a) Define **career pathway. (2 marks)**

b) List **four examples of careers found under the **STEM pathway**. (3 marks)**

- i.

- ii.

- iii.

d) Give **two examples of careers under **Sports**. (2 marks)**

- i.

- ii.

36. A group of Grade 7 learners is discussing what they want to become in future.

a) Match each learner to the correct pathway: (4 marks)

- | | |
|---|-----------------------|
| (i) Aisha wants to become a nurse | Arts |
| (ii) Kevin wants to be a historian | STEM |
| (iii) Jane wants to become a fashion designer | Sports |
| (iv) Mark wants to be a basket baller | Social Science |

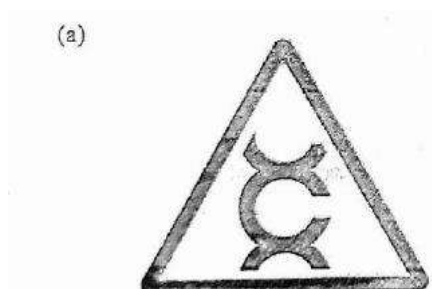
38. To ensure learners' safety in the laboratory, the Grade 7 Integrated Science teacher at Uba School taught them various laboratory safety measures and regulations. **Mention any three safety measures** he taught them. **(3 marks)**

i.

ii.

iii.

39. Grade 7 learners at Jamii School observed a chart showing common hazard symbols and their meanings. **State the meaning of each of the following symbols. (3 marks)**







40. List **three kidney disorders. (3 marks)**

i. _____

ii. _____

iii. _____

41. Scientists developed a standard system of measurement known as the **International System of Units (SI)** to standardise measurements in Science. State the **SI units for the basic quantities** shown in the table below.

(5 marks)

Basic Quantity	SI Unit
1. Length	_____
2. Mass	_____
3. Time	_____
4. Temperature	_____
5. Amount of substance	_____

42. What is **Integrated Science**? (2 marks)

43. List **three components of Integrated Science. (3 marks)**

i. _____

ii. _____

iii. _____

44. State **three basic skills needed in the laboratory. (3 marks)**

i. _____

ii. _____

iii. _____

45. During a study on the parts of a plant, Grade 7 learners discussed the **leaf** as an important part of a plant. Name **four functions of leaves**. (4 marks)

i. _____

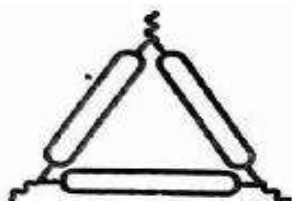
ii. _____

iii. _____

iv. _____

46. Grade 7 learners of Ebo Junior Secondary School visited their laboratory. Before the lesson began, the laboratory technician displayed several apparatus and asked the learners to identify them. **Identify and name the apparatus shown below**. (8 marks)

(a)



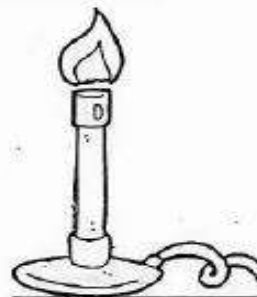
(b)



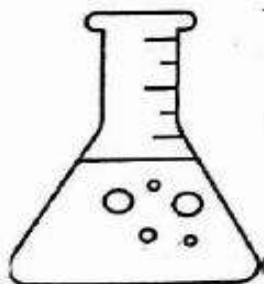
(c)



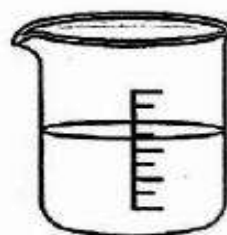
(d)



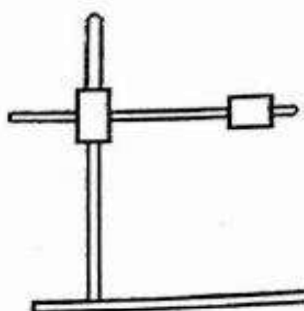
(e)



(f)



(g)



(h)



No.	Name of Apparatus
1.	_____
2.	_____
3.	_____
4.	_____
5.	_____
6.	_____
7.	_____
8.	_____

47. Identify and write **five health concerns** that may affect people in your community. **(5 marks)**

- i. _____
- ii. _____
- iii. _____
- iv. _____
- v. _____

48. Grade 7 learners were asked to state the importance of **health education** in promoting healthy living. Write **three points** they were likely to mention. **(3 marks)**

- i. _____
- ii. _____
- iii. _____

49. Grade 7 learners observed the pictures and symbols shown below. **Identify the meaning of the symbols.** **(2 marks)**



- i. _____
- ii. _____

50. We can use locally available materials and resources to improvise **personal protective equipment (PPE)**. Using the materials shown below, identify the protective gear that can be improvised. **(4 marks)**



I

II



III

IV

i. _____

ii. _____

iii. _____

iv. _____

51. Mrs. Somo, a Health Education teacher, asked the learners to define the following terms. **Define each term.** **(4 marks)**

a) Environmental Health (2 marks)

b) Sanitation (2 marks)

ANSWERS

SECTION A: MULTIPLE CHOICE QUESTIONS

1. **C. Geography** (*Biology, Chemistry, and Physics make up Integrated Science*)
2. **B. health**
3. **C. agriculture**
4. **D. flammable**
5. **B. Wash with clean water and cover with a sterile bandage**
6. **B. Physics**
7. **C. transport**
8. **A** (*Carcinogenic symbol showing health hazard / chest radiation effect*)
9. **C. Put the burnt area under cool running water**
10. **C. Wearing protective clothing**
11. **B. good ventilation**
12. **B. Study of living things**
13. **A. industry**
14. **B. scald** (*Burns are caused by dry heat/fire; scalds are caused by hot liquids or steam*)

SECTION B: STRUCTURED QUESTIONS

15. Pure vs. Impure Substances

- **Pure substance:** A substance consisting of only one type of particle/matter with a constant melting and boiling point.
- **Impure substance:** A mixture of two or more substances that melts or boils over a wide range of temperatures.

16. Filtration Set-up

- **a) Name of substances:**
 - ☉ **A:** Residue
 - ☉ **B:** Filtrate
- **b) Apparatus used in filtration set-up:**
 - ☉ Conical flask, Filter funnel, Filter paper, Beaker, Retort stand and clamp (if used).

17. Dry Ice Usage

- **a) Why dry ice is preferred to water ice:**
 - Dry ice sublimates directly into gas without melting into liquid, meaning it **does not leave any wetness** or soggy mess, and it keeps items much colder than water ice.

18. Universal Indicator & pH

- **a) Classification of substances:**
 - ☀ **i. Strongly acidic:** Substance C (pH 1–2)
 - ☀ **ii. Weakly acidic:** Substance E (pH 4–6)
 - ☀ **iii. Neutral:** Substance D (pH 7)
 - ☀ **iv. Weakly basic:** Substance A (pH 8–10)
 - ☀ **v. Strongly basic:** Substance B (pH 11–14)
- **b) Most likely matches:**
 - ☀ **i. Sodium hydroxide:** Substance B (Strong base)
 - ☀ **ii. Hydrochloric acid:** Substance C (Strong acid)
 - ☀ **iii. Pure water:** Substance D (Neutral)
 - ☀ **iv. Tomato juice:** Substance E (Weak acid)

19. Applications of Separation Methods

1. **Crude oil refining** (*Fractional distillation*)
2. **Extraction of oil from seeds/nuts** (*Solvent extraction*)
3. **Purification and treatment of water** (*Filtration and chlorination*)

20. Indicators and Acids

- **a) Commercial Indicators Table:**

Indicator	Colour in Acidic Solution	Colour in Basic Solution
Litmus	Red	Blue
Phenolphthalein	Colourless	Pink / Magenta
Methyl orange	Red / Pink	Yellow

- **b) Four uses of acids in real life:**
 1. Carbonic acid is used in soft drinks to enhance taste and effervescence.
 2. Sulfuric acid is used as an electrolyte in car batteries.
 3. Citric acid is used as a food preservative and flavoring agent.
 4. Hydrochloric acid in stomach juice aids digestion and kills germs.

21. Hormones

- **Definition:** Chemical messengers produced by endocrine glands, transported through the bloodstream, that regulate physiological activities and bodily functions.

22. Process of Fertilization in Humans

- During ovulation, an egg (ovum) is released from the ovary and swept into the fallopian tube (oviduct).
- During intercourse, sperm swim through the cervix and uterus into the fallopian tube using their tails.
- When sperm reach the ovum, the head of one sperm penetrates the egg cell membrane, causing the nuclei to fuse and form a **zygote**.
- Once one sperm fertilizes the egg, a protective barrier forms to block other sperm.

23. Implantation

- **Definition:** The attachment of the developing embryo (blastocyst) to the inner lining (endometrium) of the uterus wall.

24. Order of Development After Fertilization

- **Correct Order:** Morula $\rightarrow$ Blastocyst $\rightarrow$ Villi $\rightarrow$ Embryo

25. Challenges Faced by Intersex Individuals

1. Stigma and social discrimination.
2. Lack of proper birth registration and gender identity documentation.
3. Limited specialized healthcare facilities and trained personnel.

26. Functions of the Human Skin

1. Protection against micro-organisms and UV radiation.

2. Excretion of waste products (water, salts, urea) through sweat.
3. Thermoregulation (regulating body temperature).

27. Types of Kidney Disorders

(Any two)

1. Kidney stones (Nephrolithiasis)
2. Kidney failure / Renal failure
3. Nephritis (Kidney inflammation)
4. Uremia

28. Kidneys Structure and Function

- **a) Two functions of the kidneys:**
 1. Excreting metabolic waste products (urea, uric acid) from blood.
 2. Osmoregulation (maintaining water and salt balance in the body).
- **b) Main blood vessel carrying blood to the kidney:**
 - **Renal artery**

29. Reproductive System Functions

- **a) Organ where fertilization occurs:** Fallopian tube (Oviduct)
- **b) Two functions of the uterus:**
 1. Implantation of the blastocyst.
 2. Housing and nourishing the developing fetus during pregnancy.
- **c) Male organ producing sperm:** Testes (Testicles)

30. Excretion

- **a) Definition:** The biological process of eliminating toxic metabolic waste products from the body.
- **b) Two excreted substances:** Urea, carbon dioxide, excess salts, or water.
- **c) Two ways skin helps in excretion:**
 1. Producing sweat through sweat glands to remove water and excess salts.
 2. Releasing small amounts of urea and lactic acid through skin pores.

31. Integrated Science Overview

- **a) Definition:** A multidisciplinary field of science that unifies basic scientific disciplines (Biology, Chemistry, Physics) into an integrated learning concept.
- **b) Three components:**
 1. **Biology:** The study of living organisms and life processes.
 2. **Chemistry:** The study of the composition, properties, and reactions of matter.
 3. **Physics:** The study of matter, energy, forces, and motion.
- **c) Two reasons why it is important to study:**
 1. Helps learners solve real-life everyday problems using scientific methods.
 2. Lays a foundation for future career pathways in STEM.

32. Kidney Anatomy and Care

- **a) Parts of the Kidney:**
 - ☀ Cortex, Medulla, Renal pelvis, Ureter.
- **b) Two ways to keep kidneys healthy:**
 1. Drinking plenty of clean water daily.

2. Avoiding excessive salt intake and avoiding abuse of over-the-counter medications.

33. Adolescent Characteristics and Hazard Symbols

- **a) Four characteristics of an adolescent boy:**
 1. Deepening of the voice.
 2. Growth of pubic, facial, and body hair.
 3. Enlargement of testes and penis.
 4. Rapid increase in height and broadening of shoulders.
- **b) Two reasons to understand hazard symbols:**
 1. To prevent laboratory accidents and injury.
 2. To know proper handling and storage measures for dangerous chemicals.

34. Laboratory Accidents & First Aid

- **a) Causes of accidents:**
 - ☀ **i. Burns and scalds:** Touching hot apparatus/open flames (burns) or contact with hot liquids/steam (scalds).
 - ☀ **ii. Cuts:** Mishandling broken glass apparatus or sharp tools.
 - ☀ **iii. Suffocation:** Inhaling toxic gases or working in an unventilated room.
- **b) First aid for scalds:**
 1. Place the affected area under cool running water for at least 10–15 minutes.
 2. Remove tight clothing or jewelry near the affected area before swelling starts.
 3. Cover the scalded area loosely with a clean, sterile bandage.
 4. Do not break any blisters or apply oils/lotions.

35. Career Pathways

- **a) Definition of career pathway:** A structured sequence of educational courses and training programs that leads to specific occupations and professions.
- **b) Four STEM careers:** Civil Engineer, Doctor, Software Developer, Laboratory Technician.
- **c) Two Sports careers:** Professional Athlete, Sports Coach/Trainer.

36. Matching Learners to Pathways

- (i) Aisha (Nurse) $\rightarrow$ **STEM**
- (ii) Kevin (Historian) $\rightarrow$ **Social Science**
- (iii) Jane (Fashion designer) $\rightarrow$ **Arts**
- (iv) Mark (Basketballer) $\rightarrow$ **Sports**

38. Three Laboratory Safety Regulations

1. Never eat, drink, or taste any chemical in the laboratory.
2. Read and follow chemical label symbols and instructions carefully.
3. Tie back long hair, roll up loose sleeves, and wear protective gear (lab coat, goggles).

39. Common Hazard Symbols

1. **Carcinogenic / Health Hazard**
2. **Corrosive**
3. **Flammable**

40. Three Kidney Disorders

1. Kidney stones

2. Nephritis
3. Kidney failure

41. SI Units Table

Basic Quantity	SI Unit
1. Length	Meter (\$m\$)
2. Mass	Kilogram (\$kg\$)
3. Time	Second (\$s\$)
4. Temperature	Kelvin (\$K\$)
5. Amount of substance	Mole (\$mol\$)

42. Integrated Science Definition

- An integrated course combining concepts from Biology, Chemistry, and Physics to build scientific literacy and problem-solving skills.

43. Three Components of Integrated Science

1. Biology
2. Chemistry
3. Physics

44. Three Basic Laboratory Skills

1. Observation
2. Measurement
3. Manipulation / Experimentation

45. Four Functions of Leaves

1. Photosynthesis (making food for the plant).
2. Transpiration (loss of excess water vapor).
3. Gas exchange through stomata.
4. Food storage (in specialized leaves like onions).

46. Identification of Laboratory Apparatus

1. **Pipe clay triangle**
2. **Spirit lamp**
3. **Wire gauze**
4. **Bunsen burner**
5. **Volumetric flask**
6. **Graduated beaker**
7. **Retort stand and clamp**
8. **Separating funnel**

47. Five Health Concerns in the Community

1. Malnutrition
2. Infectious diseases (e.g., Cholera, Malaria)
3. Drug and substance abuse
4. Chronic lifestyle diseases (e.g., Diabetes, Hypertension)
5. Teenage pregnancies

48. Importance of Health Education

1. Promotes healthy habits and disease prevention.
2. Helps individuals make informed decisions regarding personal hygiene and diet.
3. Encourages early health-seeking behavior in communities.

49. Public Safety Symbols

- **i.** Do not litter / Keep environment clean
- **ii.** No smoking / Prohibited to smoke

50. Improvised Personal Protective Equipment (PPE)

- **i.** Improvised apron / gown (from plastic bags)
- **ii.** Improvised face shield (from transparent plastic bottles)
- **iii.** Improvised hand gloves (from polythene bags)
- **iv.** Improvised gumboots / foot cover (from heavy plastic wrapping)

51. Health Education Terms

- **a) Environmental Health:** The branch of public health focused on monitoring and controlling environmental factors (water, air, waste) that affect human well-being.
- **b) Sanitation:** The provision and maintenance of hygienic conditions through proper disposal of waste, clean water supply, and clean surroundings.