# KENYA CERTIFICATE OF BASIC EDUCATION (K.C.B.E)

## MARKING SCHEME

### GRADE 10: GENERAL SCIENCE (Theory) – TERM 1 – JANUARY 2026

**SECTION A (40 MARKS)**

**1. (a) Define General Science as a learning area.**

**General Science is:**

- ✓ A study area that integrates concepts from Biology, Chemistry, and Physics.
- ✓ A foundational discipline that explains natural phenomena using scientific methods.
- ✓ A learning area that helps learners understand the physical, biological, and chemical world.
- ✓ The study of living and non-living things and the relationship between them.
- ✓ A subject that equips learners with skills for inquiry, problem-solving, and critical thinking.

**(b) One reason why it is taught in Senior School.**

- ✓ To help learners apply scientific knowledge to solve real-life problems.
- ✓ To promote innovation and technological development.
- ✓ To prepare learners for science-related careers.
- ✓ To develop analytical, investigative, and critical thinking skills.

**2. (a) Three major branches of General Science.**

i. **Biology**
ii. **Chemistry**
iii. **Physics**

**(b) One area each branch deals with.**

- ✓ **Biology:** Study of living organisms.
- ✓ **Chemistry:** Study of matter and its chemical reactions.
- ✓ **Physics:** Study of energy, force, and matter interactions.

**3. Ways General Science helps reduce pollution. (Any 2, but more provided)**

i. **By promoting proper waste management techniques** like recycling, composting, and waste separation.
ii. **By understanding chemical effects of pollutants**, enabling development of treatment methods.
iii. **By teaching environmental conservation practices**, such as afforestation and soil conservation.
iv. **By enabling monitoring of pollution levels** using scientific instruments.
v. **By informing communities on dangers of pollution** and guiding behaviour change.

**4. (a) Careers related to solving health problems.**

i. **Medical Doctor**
ii. **Nurse**
iii. Pharmacist
iv. Laboratory Technologist

v. Public Health Officer
vi. Biomedical Scientist

**(b) Branch of science associated with each career.**

- ✓ Most health-related careers fall under **Biology**.
- ✓ Pharmacy connects to **Chemistry**.
- ✓ Biomedical equipment servicing connects to **Physics**.

**5. (a) Methods of collecting scientific evidence (any 2).**

i. **Observation**
ii. **Experimentation**
iii. Surveys
iv. Interviews
v. Measurement
vi. Sampling

**(b) Importance of evidence.**

i. It helps in making **accurate and reliable conclusions**.
ii. It avoids guesswork and supports findings scientifically.
iii. Ensures decisions are based on facts.
iv. Helps in verifying results through repetition.

**6. Inference in scientific investigations.**

Inference is:

- ✓ A logical explanation made based on observations.
- ✓ A conclusion drawn from seen results, not directly observed.
- ✓ An interpretation of data to explain why something happened.
  Example: Warm water dissolves salt faster → inference: heat increases particle movement.

**7. (a) Methods of collecting data.**

i. **Measuring height of seedlings**
ii. **Counting number of leaves**
iii. Observation
iv. Recording daily changes
v. Sampling

**(b) Methods of analysing data.**

i. **Drawing graphs** (bar graphs, line graphs)
ii. **Calculating averages (mean)**
iii. **Tabulation**
iv. **Pie charts**
v. Comparing values
vi. Interpretation of trends

**8. (a) Define a cell.**

A cell is:

- ✓ The basic structural and functional unit of life.
- ✓ The smallest living unit capable of performing life processes.
- ✓ A microscopic building block of all living organisms.

**(b) Types of cells.**

i. **Plant cells**
ii. **Animal cells**
iii. Bacterial cells
iv. Fungal cells

**9. (a) Places where microscopes are used.**

i. **Hospitals and medical laboratories**
ii. **Research institutions**
iii. Schools and universities
iv. Forensic labs

**(b) Differences between light and electron microscope.**

| Light Microscope | Electron Microscope |
|---|---|
| Uses light rays | Uses electron beams |
| Lower magnification | Very high magnification |
| Cheap to maintain | Expensive to maintain |
| Produces coloured images | Produces black and white images |
| Portable | Not portable |

**10. Correct order from simplest to most complex.**

**Cell → Tissue → Organ → Organ System → Organism**

**SECTION B (60 MARKS)**

**11. (a)(i) Name parts A and B.**

A: **Eyepiece / Ocular lens**
B: **Fine adjustment knob**

**(a)(ii) Functions of E and F.**

E: **Diaphragm** – Focuses image by moving stage up/down.
F: **objective lens** – Sharpens the image.

**(b) Precautions.**

i. **Carried with both hands**
– Prevents dropping and damage.
– Ensures balance and safety.

ii. **Do not touch lenses with fingers**
– Prevents smudges, scratches and blurred images.
– Oils from skin damage lens coating.

**12. (a) Examples of plant cells.**

i. **Guard cells**
ii. **Parenchyma cells**
iii. Xylem cells
iv. Phloem cells
v. Palisade cells

**(b) Cell components found in plant but absent in animal.**

i. **Cell wall**
ii. **Chloroplasts**
iii. Large permanent vacuole

**(c) Functions.**

i. **Mitochondrion**
– Site of respiration, energy production (ATP).
– Provides energy for cell activities.

ii. **Nucleus**
– Controls cell activities.
– Stores genetic information (DNA).
– Responsible for cell division.

**13. (a) Type of cell (with reasons).**

– **Plant cell** (presence of cell wall, chloroplast)

**(b) Identify parts.**

M: **Cell wall**
Q: **Sap Vacuole**

**(c) Functions.**

O: **Chloroplast – conduct photosynthesis**
R: **Cytoplasm – site for chemical reaction**

**14. (a) Define cell cytology.**

- ✓ The study of cell structure.
- ✓ Deals with cell shape, size, and components.
- ✓ Also called cell anatomy.

**(b) Define cell physiology.**

- ✓ The study of functions of cell components.
- ✓ How organelles carry out life processes.

**(c)**

i. Gives plant cell shape → **Cell wall**
ii. Site of protein synthesis → **Ribosomes**

**15. (a) Methods to collect river contamination evidence.**

i. **Taking water samples**
ii. **Measuring pH/conductivity**
iii. **Observing presence of dead organisms**
iv. Interviewing community members
v. Chemical analysis

**(b) Importance of proper data collection.**

i. Ensures **accuracy** and reliability.
ii. Helps in making valid conclusions.
iii. Allows comparison and verification.

**(c) One method of data analysis.**

- ✓ Drawing graphs
- ✓ Tabulation
- ✓ Statistical analysis

**16. (a) Ways General Science improves industrial safety.**

i. Designing proper ventilation and safety equipment.
ii. Understanding chemical hazards and safe handling.
iii. Use of physics principles to prevent electrical accidents.
iv. Development of protective gear.
v. Training workers using scientific knowledge.

**(b) General Science contributes to technological advancements.**

i. Development of medical technologies.
ii. Improvement of communication devices (physics).
iii. Production of fertilizers, medicines (chemistry).
iv. Engineering inventions (physics principles).

**17. (a) Definitions.**

**Biology:** Study of living organisms and life processes.
**Chemistry:** Study of matter, its composition, and reactions.
**Physics:** Study of force, energy, matter, and their interactions.

**(b) Careers**

**Biology:**

- ✓ Doctor
- ✓ Nurse
- ✓ Botanist
- ✓ Zoologist

- ✓ Microbiologist

**Chemistry:**

- ✓ Chemist
- ✓ Pharmacist
- ✓ Lab technologist
- ✓ Chemical engineer

**Physics:**

- ✓ Engineer
- ✓ Pilot
- ✓ Electrician
- ✓ Astronomer
- ✓ Physicist



**NOTE TO FACILITATORS (TEACHERS):**

*The marking scheme provided is not exhaustive. Facilitators are advised to use their professional judgment when awarding marks. Any correct, relevant, and scientifically or contextually acceptable answer that demonstrates understanding of the concepts should be credited. Where examples are required, learners may provide other valid examples apart from those listed in the scheme.*



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