

CHRISTIAN SOCIAL SERVICES COMMISSION (CSSC)
NORTHERNZONEJOINTEXAMINATIONSSYNDICATE(NZ-JES)



FORM FOUR PRE–NATIONALEXAMINATION AUGUST 2026

BIOLOGY 1

MARKING SCHEME

SECTION A (16 MARKS)

QUESTION 1:

i	ii	iii	iv	v	vi	vii	viii	ix	x
B	C	A	D	C	C	E	B	E	D

@1 = 10 Marks

QUESTION 2

i	ii	iii	iv	v	vi
G	E	H	F	D	B

@ 1 = 6 Marks

SECTION B (54 MARKS)

QUESTION 3

Biology and other fields

(a) Agriculture (3 marks)

- Biology helps in studying crop pests and diseases and their control methods.
- It is used in improving crop varieties through selective breeding and genetic engineering.
- It helps in understanding soil organisms and improving soil fertility through microorganisms like nitrogen-fixing bacteria.

(b) Medicine (3 marks)

- Biology is used in diagnosing diseases and treat them
- It helps in developing vaccines, antibiotics and other drugs for treatment.
- It explains how organs and body systems function, helping doctors treat disorders effectively.

(c) Nutrition (3 marks)

- Biology explains nutrients required by the body for growth and energy.
- It helps in understanding digestion, absorption and assimilation of food.
- It is used in preventing malnutrition and deficiency diseases through balanced diet education.

QUESTION 4

(a) Classification (2 marks)

- Phylum: Arthropoda
- Class: Insecta

(b) Kingdom Animalia characteristics (3 marks)

- Organisms are multicellular and made up of many specialized cells.
- They are heterotrophic and depend on other organisms for food.
- They lack cell walls and have ability to move at least at one stage of life.

(c) Importance of Arthropods (4 marks)

- Pollination of crops by insects like bees increases food production.
- They serve as a source of food for humans and animals.
- They help in decomposition of organic matter, recycling nutrients into soil.
- Some arthropods act as biological control agents by feeding on pests.

QUESTION 5

(a) Eye vs Camera (6 marks @1½)

- Cornea → Camera lens (focuses light rays)
- Iris → Diaphragm (controls amount of light entering)
- Retina → Film or sensor (forms image)
- Lens → Camera lens (focuses image on retina)

(b) Brain damage effects (3 marks @1½)

- Hypothalamus: Disruption of temperature regulation, hunger and hormonal control.
- Medulla oblongata: Failure of vital processes such as breathing and heartbeat leading to death.

QUESTION 6

(a) Reasons for using pea plant (3 marks)

- Short life cycle allows quick generation of results.
- Has many clear contrasting characteristics (traits).
- Can self-pollinate and cross-pollinate easily for controlled experiments.
- Produces many offspring making data collection reliable.

(b) Chromosomal disorders (6 marks)

- Turner's syndrome: Missing X chromosome (XO) leading to sterility and underdeveloped female features.
- Down's syndrome: Trisomy 21 causing mental disability and physical abnormalities.
- Klinefelter's syndrome: XXY chromosomes causing sterility and reduced male characteristics.

QUESTION 7

(a) Name of diagram (1 mark)

- Female reproductive system

(b) Labels (8 marks)

- P: Uterus
- Q: Ovary
- R: Fallopian tube
- S: Cervix
- T: Vagina

(c) Complication (.... mark)

- Ectopic pregnancy: embryo implants in fallopian tube causing rupture and internal bleeding.

QUESTION 8

(a) Osmoregulation (6 marks)

ADH (Antidiuretic Hormone)

ADH increases water reabsorption in the kidney tubules and collecting ducts by making them more permeable to water. This reduces water loss in urine and produces small, concentrated urine, helping to maintain body water balance.

Aldosterone

Aldosterone increases sodium ion reabsorption in the kidney tubules. Water follows sodium by osmosis, increasing blood volume and helping to maintain blood pressure and salt balance.

(b) Plants and excretion (3 marks)

- Plants lack complex excretory organs because wastes diffuse easily.
- Oxygen and carbon dioxide leave through stomata and lenticels.
- Some wastes are stored in large vacuoles, leaves or bark.
- Plants produce fewer toxic metabolic wastes compared to animals.
- Plants waste products can be recycled e. g., oxygen can be used for respiration and carbon dioxide can be used as raw materials for photosynthesis

SECTION C (30 MARKS)

QUESTION 9: PNEUMONIA

Introduction = 2 Marks

Pneumonia is an infectious respiratory disease that affects the lungs, causing inflammation of air sacs (alveoli). It can be caused by bacteria, viruses or fungi and is common in children and elderly people or may be caused by inhaling toxic chemicals or irritants.

Symptoms (@2 = 8 marks)

- Persistent cough producing mucus or pus.
- High fever and chills due to infection.
- Chest pain that worsens during breathing or coughing.
- Difficulty in breathing due to fluid-filled alveoli.

Prevention (4 marks)

- Vaccination against pneumonia-causing pathogens.
- Maintaining good personal hygiene such as hand washing.
- Avoiding overcrowded places to reduce transmission.
- Early treatment of respiratory infections.
- Staying warm
- Avoid cold foods or drinks and take hot drinks

Conclusion = 1 Mark

Pneumonia is a serious but preventable disease. Proper hygiene, vaccination and early medical care significantly reduce its spread and complications.

QUESTION 10:

Introduction

Main Body

Germination stage/ sprouting

The seed absorbs water, swells and radicle emerges forming the first root.

1. Seedling stage

The plumule develops into shoots and first leaves appear for photosynthesis.

2. Vegetative stage

The plant grows roots, stems and leaves rapidly for food production.

3. Budding stage

Small buds appear which later develop into flowers.

4. Flowering stage

Reproductive organs form and pollination occurs.

5. Fruiting stage/ adult stage

Fertilized ovules develop into seeds inside fruits for reproduction.

Conclusion

Plant development is a continuous process from germination to seed formation, ensuring survival and reproduction of plant species.

QUESTION 11: BLOOD TRANSFUSION

Introduction =02 Marks

Blood transfusion is the process of transferring blood from a donor to a recipient to replace lost blood or treat medical conditions.

Advantages (4 marks @2)

- Saves life in cases of severe blood loss.
- Treats blood disorders such as sickle cell anaemia
- Improves patient recovery after surgery or accidents.

Disadvantages (4 marks @2)

- Risk of transmission of diseases such as HIV and hepatitis.
- Possible blood group incompatibility reactions.
- Allergic reactions in some patients.
- Shortage of compatible donor blood.

Precautions (4 marks @2)

- Proper blood grouping and cross-matching before transfusion.
- Use of screened and sterile blood under safe medical conditions.

Conclusion =1

Blood transfusion is a life-saving procedure but must be carried out carefully to avoid complications and ensure patient safety.