



மாநாணக் கல்வித்திணைக்களம் வடக்கு மாநாணம். Provincial Department of Education Northern Province. மாநாணக் கல்வித்திணைக்களம் வடக்கு
 தாணம் Provincial Department of Education Northern Province. மாநாணக் கல்வித்திணைக்களம் வடக்கு மாநாணம். Provincial Department of
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General Certificate of Education (Adv. Level) Sixth Term Evaluation. July - 2026.
கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர) ஆறாம் தவணை மதிப்பீடு. யூலை - 2026.

Grade 13 (2026)

Biology II

09

E

II

Three hours

Additional reading time 10 minutes.

Index No:

- ❖ *Use additional reading time to go through the question paper, select the questions you will answer and decide which of them you will prioritise.*

Instructions:

- ❖ This question paper consists of **10** questions in **11** pages.
- ❖ This question paper - **Part II** comprises Part **A** and **B**. The time allotted for **both parts** is **three hours**.

Part A – Structured essay (Pages 2 – 10)

- * Answer **all four** questions on this paper itself.
- * Write your answers in the space provided for each question. Note that the space provided is sufficient for your answers and extensive answers are not expected.

Part B – Essay (Page 11)

- * Answer **four** questions only. Use the papers supplied for this purpose. At the end of the time allotted for this paper, before handing over to the supervisor tie the two parts together so that **Part A is on the top of Part B.**
- * You are permitted to take only **Part B** of the question paper from the examination hall. (**Detach it**)

For examiners' use only

Total Marks

Part	Question. №	Marks
A	1	
	2	
	3	
	4	
B	5	
	6	
	7	
	8	
	9	
	10	
Total		

In Numbers	
In Letters	

Code Numbers

Marking Examiner 1	
Marking Examiner 2	
Marks Checked by	
Supervised by	

Part II A – Structured essay❖ **Answer all questions in this paper itself.***(Each question carries 100 marks)*

1.

A. (i) What is order and organization, which is one of the characteristics of organisms?

.....

.....

(ii) Name the basic unit which can be called “living” in the hierarchy of life.

.....

(iii) Name **two** examples for the tertiary structure as well as functioning as transport proteins.

.....

(iv) In which hydrophobic tails of phospholipids are made up?

.....

(v) a. Which is the single membrane bounded vesicle containing hydrolytic enzymes?

.....

b. Indicate **three** functions of the above-mentioned vesicle in (v) a.

.....

.....

.....

(vi) Indicate **three** features regarding images obtained from electron microscope which differ from light microscope.

.....

.....

.....

B. (i). Indicate the phases of mitosis for each of the following events.

a. Microtubules which are not attached to the kinetochore interact with those from the opposite poles.

.....

b. Chromosomes unwind and become less condense to form chromatin.

.....

(ii) Indicate **three** features of ATP which provides energy for the metabolic processes.

.....

.....

.....

Do not
write in this
column.

(iii) Which chemical type causes the enzyme molecule to change its shape?

.....

(iv) Indicate an example for irreversible inhibitor.

.....

(v) What are the changes occurring when photons strike on the chlorophyll a molecule of photosystem II?

.....

.....

(vi) a. Which is the location of decarboxylating enzymes in C₄ pathway.

.....

b. Indicate another enzyme, which could be found in that location you mentioned above in (vii) a, catalyses photosynthetic reactions.

.....

(vii) a. Which is the final electron acceptor in aerobic respiration?

.....

b. What is the common location of anaerobic respiration?

.....

c. What is the value of respiratory quotient when fats are used as respiratory substrate?

.....

C. (i) Write in correct sequence, the main stages by which the first cells have been produced according to the theory of biochemical evolution.

.....

.....

.....

.....

(ii) During the evolution of biodiversity, indicate about how many years ago would each of the following have occurred.

a. Colonization of land by fungi, plants and animals

.....

b. Formation of tetrapods

c. Formation of large trees differentiate into roots, stems and leaves

.....

- (iii) Indicate **three** characteristic features of phylum Annelida that can be observed when a specimen of earth worm is examined externally.

.....

.....

.....

- (iv) Indicate **three** structural features that can be seen only in class-Aves.

.....

.....

.....

- 2) A. (i) a. Which cell type of xylem tissue found in all vascular plants for water conduction?

.....

- b. Briefly describe the above cell type you indicated in (i) a.

.....

.....

- (ii) a. Give the relationships among water potential (Ψ), solute potential (Ψ_s) and pressure potential (Ψ_p) of a fully turgid *Tradescantia* lower epidermal peel cell.

.....

- b. Why the concentration of free sugars at sink is always low?

.....

.....

- (iii) Indicate **two** functions of Sulphur in plants.

.....

.....

- (iv) a. What is seed dormancy?

.....

.....

- b. Briefly describe the significance of cross pollination.

.....

.....

.....

.....

B. (i) Indicate the functions of macrophages that could be found in connective tissues.

.....

(ii) What is fluid feeder?

.....

(iii) Indicate **one** example for mutualism, an ecological relationship in man.

.....

(iv) Name an enzyme of human intestine which digest fats into fatty acids and glycerol.

.....

(v) Indicate the components which change the heart beat rate of SA node.

.....

(vi) How double circulation is mainly differing from single circulation other than blood passes through the heart twice?

.....

(vii) Which blood group contains antibody **a** and **b** in blood plasma?

.....

(viii) a. What is the life span of human erythrocytes?

b. What is serum?

.....

C. (i) Which are the characteristics of human lungs serve as an efficient respiratory surface?

.....

(ii) What is residual volume? What is the average value of this volume?

.....

(iii) What is antibody?

.....

Do not
write in this
column.

(iv) What is secondary immune response?

.....

.....

(v) Name the excretory structure of terrestrial arthropods.

.....

(vi) What is the exact location of human nephron where only water is reabsorbed?

.....

(vii) Which is secreted by human kidney, when sensors detect decrease in blood volume?

.....

3.A.(i) What is the function of hypothalamus related to the connection via anterior lobe of pituitary gland by a complex system of blood vessels?

.....

(ii) Which are the parts of medulla oblongata that controls the autonomic homeostatic functions?

.....

.....

(iii) What is the main difference between sympathetic and parasympathetic divisions of human autonomous nervous system regarding organization?

.....

.....

(iv) Briefly describe the functioning of sodium potassium pump found in the plasma membrane of neuron.

.....

.....

.....

(v) Indicate the location of utricle and saccule in the human ear and give the function of them.

.....

.....

(vi) Name the main structure that secrete each of the following hormone in a non-pregnant woman.

- a. Estradiol.....
- b. Progesterone

(vii) What is deamination?

.....

.....

B (i) Which are the external organs of reproductive system of man?

.....

(ii) Indicate the cell stages that are arrested in the oogenesis and respective phases.

Cell stages that are arrested **phase**

.....

.....

(iii) Indicate **two** proteins that could be found in human milk.

.....

(iv) Which are the acellular substances that could be found in the exoskeleton of Arthropods?

.....

(v) a. Indicate the characteristics of sinuses of human cranium.

.....

.....

.....

b. What are the functions of sinuses?

.....

.....

(vi) Indicate **two** risk factors for the osteoporosis in man.

.....

C (i) Briefly give the Mendel's law of segregation.

.....

.....

.....

- (ii) Which is the dominant trait regarding the ear lobe of human Mendelian trait?
.....
- (iii) In a non-evolving population of about 100,000 persons, about 36,000 persons are unable to roll their tongues. About how many persons able to roll their tongues are homozygous to that trait?
.....
- (iv) What is the impact of epigenetics due to two types of expressions for same DNA sequence?
.....
- (v) What is polygenic inheritance?
.....
.....
- (vi) Give **two** disorders in man having a recessive X-linked allele.
.....
.....
- (vii) What is the impact of absence of certain Y-linked genes in man?
.....
4. A. (i) Give the differences between prokaryotic and eukaryotic DNA replication.
.....
.....
.....
- (ii) Indicate the final products of gene.
.....
.....
- (iii) What is codon recognition in translation?
.....
- (iv) Which is found in a pre mRNA and not found in a mature mRNA?
.....

- (v) Indicate the only known viable monosomic syndrome in human.

.....

- (vi) What is personalized medicine?

.....

.....

- (vii) UV radiation can covalently link two adjacent thymine bases, distorting the DNA molecule. Such distorted locations are usually recognized and repaired by the DNA repair mechanism of the cell before it becomes permanent. Name the enzymes may cut off the mismatched sequences in the damaged strand and replace with correct nucleotides.

.....

B.

- (i) Name **three** biomes where the temperature less than 0 °C.

.....

.....

- (ii) Name an ecosystem for each of the following animals could be found.

a. Sambar

b. Elephant

c. Loris

- (iii) a. What is endemic species?

.....

.....

- b. Write the species name of a plant found in tropical wet low land rain forest as well as endemic to Sri Lanka.

.....

- (iv) Indicate two educational / scientific values of biological diversity.

.....

.....

- (v) Which are the key legislations on environment conservation in Sri Lanka?

.....

.....

C.

Do not write
in this
column.

- (i) Name an example virus that exhibits more than one form of symmetry.

.....

- (ii) Name the type of cyanobacteria that reproduce by fragmentation.

.....

- (iii) Indicate the reproductive methods which are showed by phytoplasma and mycoplasma.

.....

.....

- (iv) Which are the steps to be taken prior to sterilize glass wares by dry heat sterilization using oven?

.....

.....

.....

- (v) What is denitrification?

.....

.....

- (vi) Name a bacterial species which fix nitrogen independently.

.....

- (vii) Indicate the exact location of microfilariae live during day time and during night in human body.

a. Day time

b. Night time

- (viii) What should be carried out by tropical countries when products are transported securely?

.....



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Grade 13 (2026)

09

E

II

Biology

II

Part B - Essay

- ❖ Answer **four** questions only.
- ❖ Give clear labelled diagrams where necessary.
 (Each question carries 150 marks).

5. a. Briefly describe the mechanism of enzyme action.
 b. Briefly describe on biological toxins.
6. a. Briefly describe the upward movement of water and minerals in a plant.
 b. Briefly describe the functions of plant growth regulators such as gibberellins and ethylene in the growth and development of plants.
7. a. Describe the structure of human nephron.
 b. Briefly indicate what is Chronic Kidney Disease of unknown etiology in Sri Lanka and briefly describe the hypothesized reasons for this disease.
8. a. Describe in sequential order, the processes from fertilization to implantation in human.
 b. Briefly describe the birth control methods in male and female.
9. a. Briefly describe the characteristics of genetic code.
 b. Briefly describe the principles and its importance of tissue culture.
10. Write short notes on the followings:
 - a. Natural classification.
 - b. Codominance.
 - c. Conservation
