



Royal College - Colombo 07

Grade 13

Final Term Test – September 2025

Biology II

09 E II

Time : 3 Hours

Additional Reading Time : 10 minutes

Name :- Class :- Index no :-

Instructions:

- The question paper consists of 10 questions in 13 pages,
- The question paper comprises Part A and Part B. The time allotted for both parts is 3 hours and 10 minutes

Part A - Structured Essay

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

Part B - Essay

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

For Examiner's use only

Part	Question Nos.	Marks
A	1	
	2	
	3	
	4	
B	5	
	6	
	7	
	8	
	9	
	10	
Total		

Final Marks

In Numbers	
In Letters	

Part A – Structured Essay
Answer all the questions on this paper itself.
(Each question carries 100 marks)

1. A) (i) (a) What is the cause of the threat to natural resources?

.....

.....

(ii) (a) State the two consequent processes that happen during the life span of organisms.

.....

(b) How can living organisms be distinguished from non-living entities?

.....

.....

.....

(iii)(a) How does water function due to its high specific heat?

.....

(b) What proportion of the elemental composition of living matter is made up of Ca, P, S and K?

.....

(iv)(a) Name two storage, branched polysaccharides.

.....

(b) State a physical difference between saturated fatty acids and unsaturated fatty acids.

.....

(c) Name an amino acid that has a symmetric carbon atom. Draw and label it.

.....

AL API (PAPERS GROUP)

(v) (a) Why did scientists consider using of other forms of radiation instead of light rays?

.....

.....

(b) What are glyoxysomes? State a function of them.

.....
.....

(B)(i) (a) State two events that take place in the S phase of the cell cycle.

.....
.....

(b) Explain a chromosome present in the prophase of the cell cycle.

.....
.....

(c) State the differences in cytokinesis between an animal cell and a plant cell.

.....
.....

(ii) (a) Write the types of phosphorylation seen in plants.

.....

(b) How can pH lead to a decline in enzyme activity?

.....

(iii) What are the structural adaptations seen in C_4 plants for photosynthesis?

.....
.....
.....

(iv) What are the differences between the grana found in mesophyll cells and bundle sheath cells of plant leaves ?

.....
.....

(v) (a) State an active reaction that takes place in the C_4 mechanism.

.....

(b) What devices are possessed by plants to protect themselves from very high light intensities?

.....

(C)(i) State the steps of pyruvate oxidation.

.....

.....

.....

.....

(ii) Why is the citric acid cycle known as the Tricarboxylic Acid Cycle?

.....

(iii) What is the electron transport chain composed of?

.....

(iv) State the amount of ATP produced by the following molecules.

(a) NADH

(b) FADH₂

(v) State two similarities between ethyl alcohol fermentation and lactic acid fermentation.

.....

.....

2. (A)(i) What is meant by the inheritance of acquired characteristics?

.....

.....

(ii) State the genetic name of a fungus that produces exogenous sexual spores.

.....

(iii) Briefly describe the excretory structures of flatworms.

.....

.....

(iv)(a) Describe the significance of the clitellum in annelids.

.....

.....

(b) State a disadvantage of the exoskeleton of arthropods.

.....

(v) (a) What is meant by ectothermy?

.....
.....

(b) State a physiological advantage of being ectothermic.

.....

(c) What is an integument in plants?

.....

(B)(i) (a) What is the significance of the internal clock of guard cells ?

.....

(b) What is the significance of presence of chloroplasts in guard cells?

.....
.....
.....

(ii) (a) What is imbibition?

.....

(b) Give an example of imbibition.

.....

(iii) State the major events that take place in a plant cell immersed in pure water until it achieves dynamic equilibrium.

.....
.....
.....
.....
.....
.....
.....

(iv) State the minerals important for each of the following functions in plants.

(a) Maintenance of membrane structure and permeability :

(b) DNA transcription :

(v) (a) State the structural features of the gametophyte of *Nephrolepis*.

.....

.....

.....

.....

.....

(b) State two characteristics of endosperm of Anthophyta that it differs from those of *Cycas*.

.....

.....

(C)(i) Describe the structure of the repeating unit of mammalian hard bone.

.....

.....

.....

.....

(ii) (a) Describe the way of obtaining small food particles into the mouths of clams and oysters.

.....

.....

(b) State the function of pancreatic lipase.

.....

(iii) (a) Why does the SA node known as the 'Pace maker' of the heart ?

.....

.....

(b) What is represented by the 'P' wave of the electrocardiogram ?

.....

.....

(iv) (a) Name the types of muscles that aid in deep breathing in humans.

.....

(b) How do the control circuits in the medulla oblongata respond to remove excess CO₂ when a decrease in blood pH is detected?

.....

(v) (a) State the significance of elevated body temperature within limits during inflammatory responses.

.....
.....

(b) Name a disease caused by autoantibodies.

.....

(vi) (a) When is ammonia produced in the body for excretion ?

.....

(b) What is the worst condition of CKDu ?

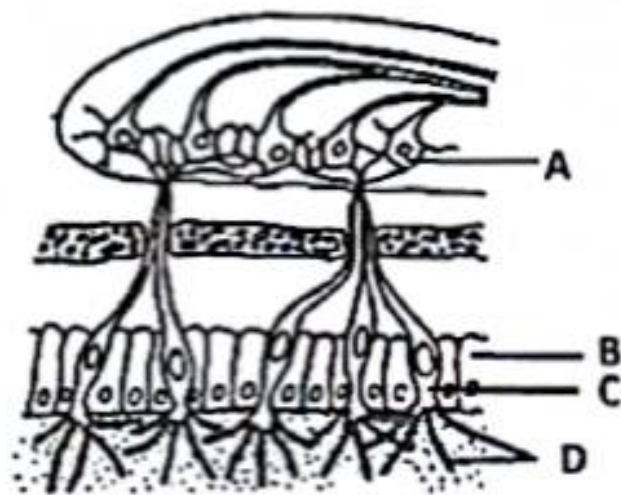
.....
.....

3. (A)(i) Name a phylum which includes animals with a brain, dorsal nerve cord, nerves and ganglia.

.....

(ii) The diagram given below shows the location of a sensory receptor in humans.

Name the structures labelled as A, B, C, and D.



A :
B :
C :
D :

(iii) State the structures of the eye located inside of the eyeball.

.....
.....
.....

(iv) State the sensations detected by the sensory receptors in the skin.

.....
.....
.....
.....

(v) State two methods, other than taking medicine to control type II diabetes.

.....
.....

(vi) State three ways insulin contribute to lowering blood glucose levels.

.....
.....
.....

(B)

(i) What is known as the zygote?

.....
.....

(ii) State two differences between male and female gametes.

.....
.....

(iii) What is known as a follicle located in human ovary?

.....

(iv) State two events in the ovarian cycle regulated by negative feedback mechanisms.

.....
.....
.....
.....

(v) What is the reason for using hCG as early pregnancy detection test.

.....
.....
.....
.....

(vi) State two structures present in embryo that can be considered as foreign to mother's immune system.

.....
.....

(vii) State three main ways of achieving contraception using different contraceptive methods.

.....

.....

.....

(C)(i) How does skeleton provide support to animals?

.....

.....

.....

(ii) State two ways animals move through air.

.....

.....

(iii) What is the reason for limited movements between two rows of carpal bones?

.....

(iv) State four adaptations of human lower limb for the erect posture and bearing body weight.

.....

.....

.....

.....

(v) Which joint permits the power grip?

.....

4. (A)(i) (a) What is meant by gene linkage?

.....

.....

.....

.....

(b) Give an example of gene linkage.

.....

.....

(ii) Name a chemical used to induce polyploidy artificially in plants.

.....

(iii) State two differences between DNA replication in eukaryotes and prokaryotes.

.....
.....
.....
.....

(iv)(a) Which molecule is used for the energy requirement of the elongation process of translation of polypeptide synthesis ?

.....

(b) What is the significance of the formation of polyribosomes?

.....

(v) What is nondysjunction?

.....
.....

(vi) State an advantage of the use of YACs as vectors.

.....
.....

(vii) What is BXN cotton?

.....

(B)(i) What is represented by the dry weight of biomass in the pyramids of biomass?

.....
.....

(ii) State a characteristic of each of the given below types of organisms found in tropical rainforests.

(a) Small animals

(b) Large animals

(c) Birds

(iii) (a) State the conditions to which marshlands plants are adapted.

.....

(b) Give an example of such plant

.....

(iv) How does the over exploitation lead to danger of biodiversity being completely lost?

.....

.....

.....

.....

(v) State an example for indigenous animal species in Sri Lanka.

.....

(vi) (a) What are conducted under the Fauna and Flora protection ordinance?

.....

.....

.....

(b) Which authority is responsible for enforcing the laws of above ordinance?

.....

(C) (i) State the pore size of membrane filters used in sterilization.

.....

(ii) (a) What is toxigenicity?

.....

(b) Give an example of a toxin that kills host cells by enzymatic attack.

.....

(iii) How do entomopathogenic fungi function as bio-pesticides?

.....

(iv) How do the microorganisms contribute to the formation of soil aggregations?

.....

(v) (a) What is a major criterion for selecting an indicator organism used in testing drinking water quality?

.....

(b) State four characteristics of this indicator organism.

.....

.....

.....

.....

(c) What is carried out at the second step of an urban water treatment plant?

.....

(vi) What is the objective of sanitary landfilling?

.....

(vii) Name two chemicals used in food preservation.

.....

.....

(viii) (a) State three symptoms that accompany the sudden onset of fever in dengue.

.....

.....

.....

(b) Name the subspecies of the bacteria used in the controlling measures of the dengue vector.

.....



Royal College - Colombo 07

Grade 13

Third Term Test – September 2025

Biology II

09 E II

PART B - Essay

Instructions:

* Answer four questions only.

Give clear labelled diagrams where necessary.

(Each question carries 12 marks)

- 05) Briefly explain the regulation mechanisms of enzymatic activity in cells.
- 06) a) Describe the types of symbiosis in plants.
b) Describe the process of fertilization in angiosperms from the time of pollination.
- 07) a) Describe the way Cell mediated immune responses develops in the body when an antigen enters.
b) Describe the acquired immunodeficiency with examples.
- 08) a) Describe the structural features of human vertebral column that contribute to maintain upright posture.
b) Explain the processes which are involved in producing a clear image on the retina.
- 09) Describe the hereditary disease in humans, caused by an alternation in the haemoglobin protein of red blood cells.
- 10) Write short notes on followings.
a) Ways of conservation
b) Rhizosphere
c) Filarial vector



AL API

PAPERS GROUP