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සියලු ම හිමිකම් ඇවිරිණි / முழுப் பதிப்புரிமையுடையது / All Rights Reserved]

ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව இலங்கைப் பரீட்சைத் திணைக்களம்
Department of Examinations, Sri Lanka

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2016 අගෝස්තු
கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2016 ஓகஸ்ற்
General Certificate of Education (Adv. Level) Examination, August 2016

ජීව විද්‍යාව II உயிரியல் II **Biology II**	**09 E II**	පැය තුනයි மூன்று மணித்தியாலம் ***Three hours***

Index No. : .....

Instructions:

- *This question paper consists of* **10** *questions in* **09** *pages.*
- *This question paper comprises Part* **A** *and Part* **B.** *The time allotted for* ***both parts*** *is* ***three hours.***

PART A — Structured Essay (Pages 2 - 8)

- *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 9)

- *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 remove only Part* **B** *of the question paper from the examination hall.*

For Examiners' Use Only

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

Final Marks

In Numbers	
In Letters	

Code Numbers

Marking Examiner 1	
Marking Examiner 2	
Marks checked by	
Supervised by	

[see page two

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Part A - Structured Essay

*Answer **all** questions on **this paper itself**.*
(Each question carries 10 marks.)

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1. (A) (i) What are macromolecules?

.....

.....

(ii) Name the three types of macromolecules found in living organisms.

.....

.....

.....

(iii) Name the disaccharide sugar found in the following and indicate the constituent monosaccharide unit of each of them.

	Disaccharide sugar	Monosaccharide unit
(a) Sugarcane plant	.....	.....
(b) Germinating seeds	.....	.....
(c) Milk	.....	.....

(iv) What is the monosaccharide unit found in NAD and ATP?

.....

(v) Lipids are one of the major organic compounds in living organisms. State **two** important characteristics of lipids which distinguish them from other major biological molecules.

.....

.....

(vi) Name five major types of lipids found in organisms.

.....

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(B) (i) What are mutations?

.....

.....

(ii) State the significance of mutations in evolution.

.....

.....

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(iii) Some human genetic disorders are inherited as mutations. State **three** such genetic disorders indicating the type of mutation in each of them.

Disorder	Type of mutation
.....	.....
.....	.....
.....	.....

(C) (i) What is Biological Oxygen Demand (BOD)?

.....

.....

(ii) What happens when a large amount of waste with high Biological Oxygen Demand (BOD) is discharged into an aquatic system?

.....

.....

.....

(iii) State **two** methods used in current waste water treatment plants to reduce Biological Oxygen Demand (BOD) by oxidation of organic matter.

.....

.....

(iv) Solid waste disposal has caused serious environmental issues in Sri Lanka. What are the adverse effects of open dumping of solid waste on land?

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.....

(v) What are the methods that can be used to minimize the issues of disposal of solid waste?

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.....

[see page four

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2. (A) (i) What is homeostasis?

.....

.....

(ii) State **three** factors that are homeostatically regulated in man.

.....

.....

.....

(iii) State **two** advantages of homeostasis in man.

.....

.....

(iv) State **one** disadvantage of homeostasis in man.

.....

(v) Human liver plays a variety of roles in homeostasis. State **four** such roles.

.....

.....

.....

.....

(vi) Give **two** examples of positive feedback mechanisms operating in man.

.....

.....

(B) (i) What is lactation?

.....

.....

(ii) What is the most abundant component in human milk?

.....

(iii) Name **two** placental hormones which act on the breast.

.....

(iv) Name **two** components of colostrum.

.....

(v) What is the role of oxytocin in lactation?

.....

.....

(vi) Name **two** hormones which inhibit milk production in women.

.....

(vii) State **three** advantages of breast feeding.

.....

.....

.....

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(C) (i) State the **three** main functions of the human nervous system.

.....

.....

.....

(ii) Name **two** phyla having animals with double ventral nerve cords.

....

(iii) Name a phylum having animals with radial nerves.

.....

(iv) State **two** advantages of nervous regulation over endocrine regulation.

.....

.....

(v) What is a receptor?

.....

.....

(vi) State **three** features of receptors.

.....

.....

.....

(vii) Name **three** receptors sensitive to touch.

.....

.....

.....

1

3. (A) (i) Some external features of five invertebrates labelled as A, B, C, D and E are as follows.

A - Flattened, bilaterally symmetrical body with eye spots
B - Cylindrical, radially symmetrical body with a mouth surrounded by tentacles
C - Cylindrical, bilaterally symmetrical body with numerous setae and without a clitellum
D - Cylindrical, bilaterally symmetrical body with a clitellum
E - Umbrella shaped, radially symmetrical body with many tentacles around its edge

Complete the following dichotomous key using correct numbers and the letters A, B, C, D and E.

(1) Bilaterally symmetrical body .....
Radially symmetrical body .....

(2) Flattened body .....
Cylindrical body .....

(3) Tentacles around the edge of the body .....
Tentacles around the mouth .....

(4) Clitellum present .....
Clitellum absent .....

(ii) State the class of each of the animals labelled as A, B, C, D and E.

A - .....

B - .....

C - .....

D - .....

E - .....

[see page six

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Do not write in this column

(B) (i) Name the parts that can be seen in a longitudinal section of a mature unfertilized ovule of an angiosperm.

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....

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....

(ii) List the postfertilization changes that take place in the major structures of the angiosperm ovary.

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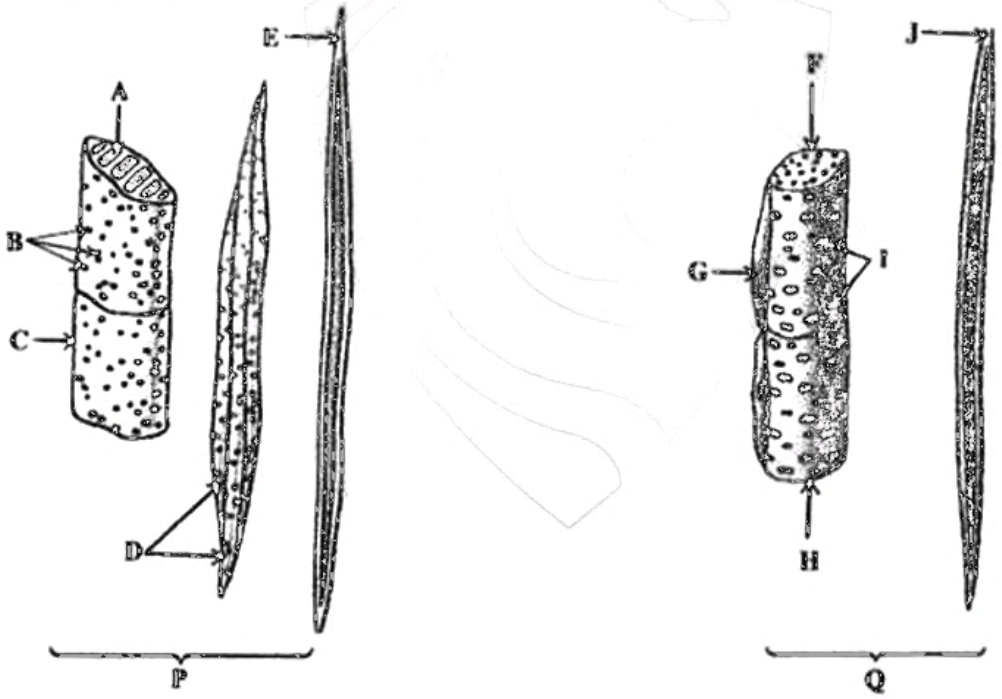
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(C) The diagrams **P** and **Q** given below show some constituent elements of the two vascular tissues in angiosperms.



(i) Identify the two vascular tissues shown in the diagram.

P : .....

Q : .....

(ii) Name the constituent elements indicated with arrows.

A ..... **F** .....

B ..... **G** .....

C ..... **H** .....

D ..... **I** .....

E ..... **J** .....

[see page seven

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4. (A) (i) What is an ecosystem?

.....

.....

.....

(ii) What are the major biotic components of an ecosystem?

.....

(iii) How are the biotic components of an ecosystem connected with each other?

.....

.....

(iv) Define 'ecological niche'.

.....

.....

(v) (a) What is meant by gross primary productivity of an ecosystem?

.....

.....

.....

(b) State the main primary producer of each of the following ecosystems.

Ocean : .....

Villu : .....

Patana : .....

(B) (i) Explain what is a biome?

.....

.....

.....

.....

.....

(ii) What are the three main terrestrial biomes in the tropics?

.....

(iii) What is the largest terrestrial biome?

.....

(iv) What is a keystone species?

.....

.....

.....

(v) Explain the concept of flagship species.

.....

.....

[see page eight

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(C) (i) What is globai warming?

.....

(ii) (a) Name five atmospheric gases that contribute to global warming.

.....

.....

(b) Explain how the gases stated in (a) above contribute to global warming.

.....

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(iii) Explain what is an invasive species.

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(iv) Explain how agriculture contributes to biodiversity loss.

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අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2016 අගෝස්තු
கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2016 ஓகஸ்ற்
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ජීව විද්‍යාව	II
உயிரியல்	II
Biology	II

09 E II

Part B - Essay

Instructions:

* *Answer four questions only.*
  Give clear labelled diagrams where necessary.
  (Each question carries **15** *marks.)*

5. (*a*) Describe the basic chemical nature and general structure of proteins.

(*b*) Briefly discuss the specific roles of DNA and RNA in protein synthesis.

6. (*a*) Describe the location of the human kidney.

(*b*) Briefly describe the microscopic structure of a typical human nephron.

(*c*) Briefly explain how human kidney regulates blood osmotic pressure.

7. (*a*) Describe briefly the nature and distribution of microorganisms in soil.

(*b*) Discuss the specific role of microorganisms in the natural cycling of carbon and nitrogen in the biosphere.

(*c*) State the significance of interactions of soil microorganisms relevant to plant growth.

8. (*a*) What are the general characteristics of plant growth substances?

(*b*) State the major types of plant growth substances and sites of their production in plants.

(*c*) Explain how natural growth substances regulate growth and development of plants.

9. (*a*) What are the four main forest ecosystems in Sri Lanka?

(*b*) Describe the main features of each of these ecosystems with reference to their distribution, rainfall and characteristics of vegetation.

10. Write short notes on the following.

(*a*) Human pancreas

(*b*) Biodiversity hotspots

(*c*) Mechanisms of stomatal closure and opening

* * *