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இலங்கைப் பரீட்சைத் திணைக்களம்
Department of Examinations, Sri Lanka

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2025
கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2025
General Certificate of Education (Adv. Level) Examination, 2025

ජීව විද්‍යාව I உயிரியல் I **Biology I**	**09 E I**	පැය දෙකයි இரண்டு மணித்தியாலம் ***Two hours***

Instructions:

- *Answer **all** questions.*
- *Write your **Index Number** in the space provided in the answer sheet.*
- *Instructions are given on the back of the answer sheet. Follow them carefully.*
- *In each of the questions from **1** to **50**, pick one of the alternatives from (1), (2), (3), (4), (5) which is **correct** or **most appropriate** and **mark your response on the answer sheet with a cross** (×) on the number of the correct option in accordance with the instructions given on the back of the answer sheet.*

1. Which of the following statements regarding the nucleus of a cell is correct?

(1) Nuclear lamina is made up of protein filaments that line the exterior of the nuclear envelope.
(2) Inner and outer membranes of nuclear envelope are separated by a 20 – 40 µm space.
(3) Nuclear envelope has a pore complex to regulate the entry and exit of substances.
(4) Nucleolus is embedded in the nuclear lamina.
(5) Chromatin is present as a tightly coiled mass in non-dividing cells.

2. Experiments and observations in which of the following areas had provided evidence for the appearance of first living cells?

A – Biology B – Chemistry
C – Geology D – Physics

(1) A and B only. (2) B and D only. (3) A, B and D only.
(4) B, C and D only. (5) A, B, C and D.

3. Select the correct statement regarding the characteristics of organisms.

(1) Development is the changes that occur during the life span of an organism.
(2) Evolution is the change of an organism during its life span as a result of genetic modifications.
(3) Metabolism is the sum of all chemical activities that consume energy in an organism.
(4) Both the irritability and coordination are required for movement of organisms.
(5) Growth is the increase in dry mass of an organism.

4. Which of the following combinations of types of RNA and their features is/are correct?

Type of RNA	Features
A – mRNA	Transports genetic information from nucleoplasm to the site of protein synthesis; Linear molecule.
B – tRNA	Transports amino acids to the site of protein synthesis; Complex irregular molecule.
C – rRNA	Provides the site for assembling polypeptide chains; Three looped molecule.

(1) A only. (2) B only. (3) A and B only.
(4) A and C only. (5) A, B and C.

[See page two

5. Select the correct functions of plasma membrane proteins.
   A – Enabling nearby cells to communicate with each other
   B – Serving as receptors for interaction with specific biochemicals
   C – Helping to maintain the shape of the cell
   D – Maintaining the fluidity of plasma membrane
   (1) A and B only. (2) A and C only. (3) B and C only.
   (4) B and D only. (5) A, B and C only.

6. Which of the following 'phase - event' combinations is/are correct regarding mitosis?

Phase	Event
A – Prophase	Parts of DNA of paired homologous chromosomes break.
B – Metaphase	Chromosomes of each pair of homologous chromosomes face opposite poles.
C – Anaphase	Sister chromatids separate and are pulled towards the opposite poles of the cell.

   (1) A only. (2) B only. (3) C only.
   (4) B and C only. (5) A, B and C.

7. Select the correct statement regarding enzymes.
   (1) Every amino acid in the enzyme molecule contributes to maintain the shape of the active site.
   (2) Regulatory molecules bind covalently to the regulatory sites of the enzymes.
   (3) Some cofactors bind permanently to enzymes.
   (4) The rate of reaction of an enzyme will increase as long as the substrate concentration is increased.
   (5) Non-competitive inhibitors bind to the active site of the enzyme.

8. Which of the following statements regarding photosystems is correct?
   (1) Striking of photons of light on the pigments results in excitation of electrons in photosystem I and photosystem II.
   (2) Electrons at a higher energy state in photosystem I are accepted by a primary electron acceptor in photosystem II.
   (3) Excited electrons at photosystem II reduce $NADP^+$.
   (4) Electrons released by splitting of water neutralize the excited photosystem I.
   (5) Reaction centre complex contains organized proteins holding one molecule of chlorophyll a and one molecule of chlorophyll b.

9. When classifying organisms, viruses are not included in any kingdom because they
   (1) can be observed only using an electron microscope.
   (2) do not possess a protein synthesizing mechanism.
   (3) show metabolic activities only within host cells.
   (4) have RNA as genetic material.
   (5) do not have a cellular organization.

10. A homosporous terrestrial plant with a bisexual gametophyte and a dominant sporophyte is most likely to belong to the phylum
   (1) Anthophyta. (2) Bryophyta. (3) Pterophyta. (4) Gnetophyta. (5) Coniferophyta.

11. Dioecious animals are present in which of the following phylum/phyla?
   A – Nematoda
   B – Arthropoda
   C – Platyhelminthes
   D – Echinodermata
   (1) B only. (2) C only. (3) A and B only.
   (4) B and D only. (5) A, B and D only.

[See page three

12. Several types of wood and their features are given below.

Type of wood	Feature
A – Hard wood	P – Protects from fungi.
B – Soft wood	Q – Does not transport minerals.
C – Heart wood	R – Xylem vessels are absent.
	S – Found in angiosperms.

Select the option with all correct 'type of wood - feature' combinations.

(1) A – Q, B – P, C – R
(2) A – R, B – P, C – S
(3) A – S, B – R, C – P
(4) A – S, B – P, C – S
(5) A – Q, B – R, C – P

13. Some tissues that can be seen in the bark of a plant are

(1) secondary phloem, secondary xylem and vascular cambium.
(2) primary xylem, primary phloem and cork cambium.
(3) secondary xylem, secondary phloem and cork cambium.
(4) primary phloem, secondary phloem and cork cambium.
(5) primary xylem, secondary phloem and vascular cambium.

14. In many plants, sugar from mesophyll cells are transported to phloem by

(1) diffusion. (2) imbibition. (3) facilitated diffusion.
(4) bulk flow. (5) active transport.

15. Which of the following plants shows commensalism?

(1) *Cuscuta* (2) *Utricularia* (3) Epiphytic orchids
(4) *Loranthus* (5) Legumes

16. A non-photosynthetic male gametophyte and a photosynthetic female gametophyte are present in the life cycle of which of the following plants?

(1) *Pogonatum* (2) *Selaginella* (3) *Nephrolepis* (4) *Cycas* (5) Coconut

17. Plant hormones that promote triple response in seedlings and stimulate growth of fruits are respectively

(1) cytokinins and abscisic acid. (2) auxin and gibberellins.
(3) abscisic acid and ethylene. (4) ethylene and cytokinins.
(5) ethylene and gibberellins.

18. Which of the following statements regarding human saliva is/are correct?

A – It digests starch into smaller polysaccharides.
B – Its enzymes prevent tooth decay.
C – Its mucus helps to clean the mouth.

(1) A only. (2) A and B only. (3) A and C only.
(4) B and C only. (5) A, B and C.

19. If the pancreas of a person is removed due to a cancer, digestion of which of the following is most likely to be affected?

(1) Nucleic acids (2) Nucleotides (3) Disaccharides
(4) Small peptides (5) Triglycerides

20. Select the correct statement regarding the human heart.

(1) SA node is located in the myocardium of the left atrium.
(2) During complete cardiac diastole, blood flows passively to the ventricles.
(3) Atrial systole lasts 0.3 seconds.
(4) AV node sets the rhythm of the heart beat.
(5) Electrical impulses of the AV node trigger the spread of contraction waves towards the apex of the heart.

[See page four

21. Which of the following statements regarding human lungs is correct?
(1) Each lung is surrounded by outer visceral pleura and inner parietal pleura.
(2) Left lung is slightly smaller than the right lung.
(3) Right lung consists of two lobes.
(4) Mucus in alveoli traps the dust particles in inhaled air.
(5) Cilia in the alveolar epithelium help the movement of surfactant.

22. Some structural parts of the human nephron and some processes that occur during urine formation are given below.

Structural part	Process
A – Proximal convoluted tubule	P – Secretion of K^+
B – Descending limb of loop of Henle	Q – Reabsorption of HCO_3^-
C – Ascending limb of loop of Henle	R – Reabsorption of water
D – Distal convoluted tubule	

Select the option with all correct 'structural part - process' combinations.
(1) A – R, C – R, D – P
(2) A – P, B – R, D – Q
(3) A – Q, B – R, D – P
(4) A – Q, C – R, D – R
(5) A – R, C – R, D – Q

23. Sympathetic division of the human autonomic nervous system
(1) stimulates gall bladder.
(2) promotes erection of genitalia.
(3) promotes emptying of urinary bladder.
(4) stimulates adrenal medulla.
(5) constricts bronchi in lungs.

24. Which of the following structures of the human ear are filled with endolymph?
(1) Vestibular canal, tympanic canal and cochlear duct
(2) Cochlear duct, vestibular canal and utricle
(3) Tympanic canal, cochlear duct and saccule
(4) Utricle, saccule and vestibular canal
(5) Cochlear duct, utricle and saccule

25. When osmolarity of human blood is increased beyond the physiological limits, which of the following series of events occurs to bring about homeostasis?

	Release of ADH	Permeability of kidney tubules to water	Amount of urine produced
(1)	Increased.	Increased.	Increased.
(2)	Decreased.	Increased.	Increased.
(3)	Increased.	Decreased.	Decreased.
(4)	Decreased.	Increased.	Decreased.
(5)	Increased.	Increased.	Decreased.

26. Select the correct statement regarding the reproductive cycles of human females.
(1) During the menstrual flow phase, a group of oogonia in the ovary resumes growth and development.
(2) During the follicular phase, secretion of oestradiol by the growing follicle begins to increase.
(3) LH surge triggers the release of secondary oocyte arrested at prophase of meosis II from the ovary.
(4) During ovulation, shedding of uterine lining occurs to nourish the released ovum.
(5) Corpus luteum formed during the secretory phase releases progesterone throughout the pregnancy.

[See page five

27. Some functions of human foetal membranes are given below.

A – Associated with the development of urinary bladder
B – Source of primodial germ cells
C – Protects the foetus from immune responses of mother

Which of the above functions is/are carried out by the yolk sac?

(1) A only. (2) B only. (3) A and B only.
(4) A and C only. (5) B and C only.

28. Select the correct statement regarding the human vertebral column.

(1) It consists of 24 linearly arranged bones.
(2) Each cervical vertebra contains a bifid spinous process.
(3) Its thoracic curvature is convex toward the anterior.
(4) Each transverse process of a lumbar vertebra contains a foramen for passage of the vertebral artery.
(5) Sacrum contains a series of foramina on each side for passage of nerves.

29. In the human appendicular skeleton,

(1) head of humerus forms a ball and socket joint with the clavicle permitting wide range of movements.
(2) radius and ulna articulate with single articular surface at the distal end of humerus forming the elbow joint.
(3) the joint formed at the base of thumb between the first metacarpal bone and a carpal bone permits power grip.
(4) hip joint is sturdy and powerful to bear body weight when standing.
(5) knee joint formed by the femur and tibia allows rotatory movement.

30. In a pea plant population which is in Hardy-Weinberg equilibrium, allele for red colour of the flower is dominant to the allele for white colour. If the recessive allele frequency in this population is 0.3, what is the genotype frequency of heterozygous plants?

(1) 0.09 (2) 0.21 (3) 0.42 (4) 0.49 (5) 0.70

31. Which of the following statements regarding polyploidy in plants are correct?

A – It increases the size of plant organs.
B – It increases the growth rate of plants.
C – It can be artificially induced using auxins.
D – It can produce seedless fruits.

(1) A and B only. (2) A and D only. (3) A, B and D only.
(4) A, C and D only. (5) B, C and D only.

32. Which of the following is responsible for increasing the rate of translation during the synthesis of polypeptides?

(1) Polysomes (2) Signal peptides
(3) Protein trafficking (4) Methionine
(5) UAG codons

33. Which of the following statements regarding DNA repair mechanism is/are correct?

A – It helps to prevent formation of cancerous cells.
B – Gaps in the DNA strand are filled with correct nucleotides by DNA ligase.
C – Mismatched nucleotide sequences of damaged DNA strand are cut off by nuclease.

(1) A only. (2) B only. (3) C only.
(4) A and B only. (5) A and C only.

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34. Select the most ecologically efficient food chain that can occur in a natural ecosystem.
(1) Deer → Leopard
(2) Grass → Wolf → Caribou
(3) Corn → Rat → Snake → Owl
(4) Grass → Zebra → Siberian tiger
(5) Grass → Grasshopper → Frog → Snake → Eagle

35. Some biomes and animals commonly seen in them are given below.

Biome	Animal
A – Savanna	P – Reindeer
B – Tundra	Q – Goat
C – Northern coniferous forest	R – Lion
D – Chaparral	S – Brown bear

Select the option with all correct 'biome - animal' combinations.
(1) A – R, B – P, C – Q, D – S (2) A – R, B – P, C – S, D – Q
(3) A – Q, B – R, C – S, D – P (4) A – R, B – S, C – Q, D – P
(5) A – Q, B – R, C – P, D – S

36. In which of the following pair/pairs, an increase in (i) is likely to cause an increase in (ii)?
A – (i) MeBr content in the atmosphere
(ii) Degradation of coral reefs
B – (i) Cattle farms
(ii) Lead content in drinking water
C – (i) CO_2 content in the atmosphere
(ii) Risk of eye diseases
(1) A only. (2) B only. (3) C only.
(4) A and C only. (5) B and C only.

37. Vaccines with which of the following properties are used for measles and cholera respectively?
A – Contains weakened live pathogens
B – Contains inactivated or killed pathogens
C – Contains inactivated toxins
D – Provides lifelong immunity
(1) A and C (2) B and A (3) C and D (4) D and B (5) D and C

38. Which of the following statements regarding composting is/are correct?
A – Degradation is initially dominated by thermophilic bacteria.
B – It can be enhanced under anaerobic conditions.
C – Actinomycetes and protozoa contribute to the process.
(1) A only. (2) C only. (3) A and B only.
(4) A and C only. (5) B and C only.

39. Coliform bacteria are
(1) rod shaped, Gram negative, non-endospore forming bacteria that ferment lactose broth to form gas within 24 hours at 60ºC.
(2) rod shaped, Gram positive, endospore forming bacteria that ferment lactose broth to form gas within 24 hours at 35ºC.
(3) spherical, Gram positive, endospore forming bacteria that ferment lactose broth to form gas within 48 hours at 35ºC.
(4) rod shaped, Gram negative, non-endospore forming bacteria that ferment lactose broth to form gas within 48 hours at 35ºC.
(5) spherical, Gram negative, endospore forming bacteria that ferment lactose broth to form gas within 48 hours at 60ºC.

[See page seven

40. Human embryonic stem cells differ from adult stem cells because they
(1) can divide mitotically without a limit.
(2) can differentiate into any cell type in the body.
(3) are undifferentiated cells.
(4) can be cultured *in vitro*.
(5) can be used to replace damaged cells.

- **For each of the questions 41 to 50, one or more of the responses is/are correct. Decide which response/responses is/are correct and then select the correct number.**

If only (A), (B) and (D) are correct ..... (1)
If only (A), (C) and (D) are correct ..... (2)
If only (A) and (B) are correct ..... (3)
If only (C) and (D) are correct ..... (4)
If any other response or combination of responses is correct ..... (5)

Directions summarised				
(1)	(2)	(3)	(4)	(5)
(A), (B), (D) correct.	(A), (C), (D) correct.	(A), (B) correct.	(C), (D) correct.	Any other response or combination of responses correct.

41. Which of the following occurs/occur during ethyl alcohol fermentation?
(A) NADH produced during glycolysis is used.
(B) One molecule of glucose is converted to one molecule of ethanol.
(C) Two molecules of NADH are produced from one molecule of glucose.
(D) Pyruvate is converted to acetaldehyde.
(E) Two molecules of CO_2 are released from one pyruvate molecule.

42. Some features of protists and the organisms that possess those features are given below.

Feature	Organism
A – Presence of a pellicle	P – *Euglena*
B – Presence of contractile vacuoles	Q – *Amoeba*
C – Photoautotrophic nutrition	R – *Paramecium*
D – Locomotion by flagella	S – *Gelidium*

Select the option/options with all correct 'feature - organism' combinations.

(A) A – R, B – Q, C – S, D – P
(B) A – R, B – R, C – S, D – P
(C) A – P, B – R, C – P, D – S
(D) A – R, B – Q, C – P, D – P
(E) A – P, B – Q, C – P, D – R

43. Which of the following are adaptations for cross pollination?
(A) Self infertility (B) Heterostyly (C) Homostyly (D) Unisexuality (E) Monoeciousness

44. Which of the following are the main functions of human epithelial tissues?
(A) Secretion (B) Insulation (C) Absorption (D) Protection (E) Support

45. Select the correct statement/statements regarding human leucocytes.
(A) Monocytes have nuclei with several lobes.
(B) Activated basophils release cytokines during an injury.
(C) Lymphocytes are involved in non-specific defence.
(D) Neutrophils can ingest pathogens.
(E) Eosinophils release histamine during inflammatory response.

[See page eight

46. Association areas of the human cerebral cortex are responsible for
(A) receiving and processing sensory information for pain and temperature.
(B) directing skeletal muscle movements.
(C) recognition and interpretation of sensory information.
(D) integration and processing of complex mental functions.
(E) receiving and processing sensory information for sight and hearing.

47. Human sperm
(A) are not produced before puberty.
(B) contain trypsin in the head.
(C) live about 48–72 hours in the female reproductive tract after ejaculation.
(D) get nourishment from Leydig cells.
(E) become motile within seminiferous tubules.

48. Which of the following methods is/are used in domestic food processing in Sri Lanka?
(A) Sugaring
(B) Salting
(C) Use of acetic acid
(D) Drying
(E) Use of radiation

49. Which of the following statements regarding bacteria is/are correct?
(A) *Escherichia coli* is facultative anaerobic.
(B) *Lactobacillus* sp. is microaerophilic.
(C) *Clostridium* sp. is obligate aerobic.
(D) *Nitrobacter* sp. is chemoautotrophic.
(E) Purple sulphur bacteria are photoheterotrophic.

50. DNA probes
(A) are single stranded labelled DNA fragments.
(B) are used in DNA fingerprinting.
(C) are used in DNA sequencing.
(D) can hybridize with complementary RNA.
(E) are used to cut specific DNA sequences.

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இலங்கைப் பரீட்சைத் திணைக்களம்
Department of Examinations, Sri Lanka

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2025
கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2025
General Certificate of Education (Adv. Level) Examination, 2025

ජීව විද්‍යාව II
உயிரியல் II
Biology II

09 E II

පැය තුනයි
மூன்று மணித்தியாலம்
Three hours

අමතර කියවීම් කාලය - මිනිත්තු 10 යි
மேலதிக வாசிப்பு நேரம் - 10 நிமிடங்கள்
Additional Reading Time - 10 minutes

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

Index No. : .....

Instructions:

- *This question paper consists of* **10** *questions in* **11** *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 - 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 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		

Total

In Numbers	
In Letters	

Code Numbers

Marking Examiner 1	
Marking Examiner 2	
Marks checked by	
Supervised by	

[see page two

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

Do not write in this column

1. (A) (i) State **two** properties of monosaccharides.

.....

.....

(ii) (a) What is the indicator used in the lipid test?

.....

(b) What is the first step of a simple test carried out to identify non-reducing sugars in a solution?

.....

(iii) Name **one** structural protein having each of the following structures.

(a) Secondary structure : .....

(b) Quaternary structure : .....

(iv) Name the site in prokaryotic cells and **two** specific sites in eukaryotic cells where 70S ribosomes are present.

(a) Prokaryotic cells : .....

(b) Eukaryotic cells : .....

.....

(v) What is the main component in the middle lamella of plant tissues?

.....

(B) (i) Name a subcellular component of eukaryotic cells that carries out each of the following functions.

(a) Manufacturing cellulose : .....

(b) Converting fatty acids to sugar : .....

(c) Synthesis of glycoproteins : .....

(d) Metabolism of carbohydrates : .....

(e) Maintaining water balance : .....

(f) Detoxification : .....

(ii) State the stages of meiosis where each of the following occurs.

(a) Separation of sister chromatids : .....

(b) Crossing over : .....

(c) Reforming of nuclear envelope : .....

(iii) State **two** specific sites where substrate phosphorylation occurs during the aerobic cellular respiration of a glucose molecule in a eukaryotic cell.

.....

see page three

(iv) How is an enzyme catalyzed reaction affected when the temperature increases above the optimum level?

.....

.....

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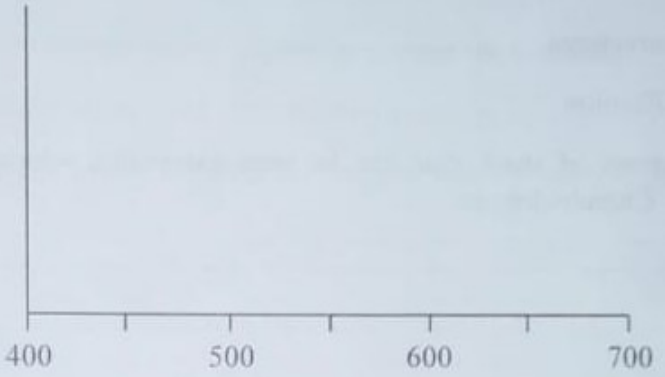
.....

.....

Do not write in this column

(v) Indicate below the absorption spectrum of chlorophyll b using a labelled graph.



(C) (i) How many ATP molecules are synthesized when one NADH molecule and one $FADH_2$ molecule are oxidized in the electron transport chain?

NADH : .....

$FADH_2$: .....

(ii) Name the **three** products of the link reaction of aerobic respiration of a glucose molecule.

.....

(iii) Based on fossil records, about how many years after the origin of prokaryotic cells did eukaryotic cells originate?

.....

(iv) Name the group of animals from which the earliest tetrapods have evolved.

.....

(v) During the evolution of biodiversity, about how many years ago would each of the following have occured?

(a) Appearance of first food chains : .....

(b) Differentiation of large trees into roots, stems and leaves : .....

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[see page four

Do not write in this column

2. (A) (i) How is the name of the person who introduced the name to a species of organisms indicated in scientific writing?

.....

.....

.....

.....

.....

(ii) Name **two** classes of phylum Chordata that show each of the following features.

(a) Endothermy : ....., ...

(b) Keratinized structures : ....., ...

(c) External fertilization : ....., ...

(iii) State **three** structures of shark that can be seen externally, which are characteristic features of class Chondrichthyes.

.....

.....

.....

(iv) Name **three** phyla which include animals that do **not** possess respiratory structures other than body wall.

.....

(v) Name **three** photosynthetic pigments that are present in both brown algae and golden brown algae.

.....

(B) (i) How do the xylem vessels of spring wood structurally differ from those of summer wood in plants?

.....

.....

(ii) What is the chemical compound used to stain a cross section of a secondary thickened dicot stem?

.....

(iii) How does phloem sap mainly differ from xylem sap?

.....

(iv) Name the element which is involved in signal transduction in plants.

.....

(v) (a) What is the structure produced from the ovary wall during fruit development in plants?

.....

(b) How do plants detect gravity?

.....

[see page five

(C) (i) Why is bone tissue considered as a connective tissue?

.....

.....

(ii) (a) A person who does not take any medicine such as aspirin was diagnosed to be suffering from gastritis. State **two** most possible reasons for this condition.

.....

.....

(b) Name **two** vitamins that act as antioxidants.

.....

(iii) (a) Name **three** respiratory pigments present in annelids.

.....

(b) Why doesn't CO_2 compete for oxygen binding sites in haemoglobin?

.....

.....

.....

(iv) How does cigarette smoke contribute to cause bronchitis?

.....

.....

(v) How do sebaceous glands contribute to innate immunity of humans?

.....

.....

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3. (A) (i) (a) State **two** factors that influence the excretory products of metabolic substrates in animals.

.....

.....

(b) State the place to which the malpighian tubules of insects open.

.....

(ii) What is the function of the hormone secreted by human kidney?

.....

(iii) (a) Why is a coordination between stimuli and responses needed in animals?

.....

.....

(b) Name a phylum which includes animals with radial nerves.

.....

[see page six

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(iv) (a) State the main parts of the human peripheral nervous system.

.....

.....

.....

(b) Name the structure of the human brain that connects the two cerebral hemispheres.

.....

(c) State the parts of the human brain that regulate respiration.

.....

.....

(v) (a) What are the receptor cells for the following sensations in humans?

- Olfaction : .....
- Angular movements of head : .....

.....

(b) State the function of each of the following structures of the human eye.

- Ciliary muscles : .....
- Choroid : .....

.....

(B) (i) (a) State the main function of parathyroid hormone.

.....

(b) Name **three** target sites of parathyroid hormone.

.....

.....

(ii) (a) Name an invertebrate that shows parthenogenesis.

.....

(b) Using a labelled diagram, show the major steps of spermatogenesis in man starting from a primary spermatocyte.

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(iii) Name **three** structures other than tissue layers and blood vessels, which can be seen in a transverse section of the human ovary under the light microscope.

.....

.....

.....

(iv) (a) State **two** components in the human breast milk that help the baby to resist microbial infections.

.....

.....

(b) How do some drugs induce non-surgical abortion within seven weeks after conception?

.....

.....

(v) Name **two** sexually transmitted bacterial infections in humans.

.....

(C) (i) (a) How does the hydroskeleton of nematodes aid in locomotion?

.....

.....

.....

(b) Why is fusiform body shape of birds important for movement through air?

.....

(ii) Name the **two** paired bones in the human cranium.

.....

(iii) (a) State a function of the human sternum other than support and protection of internal structures.

.....

(b) Name a degenerative non-inflammatory disease that causes pain in the joints of humans.

.....

(iv) In skeletal muscle contraction, what is required for breaking the existing cross bridges to begin new cross bridge cycles?

.....

[see page eight

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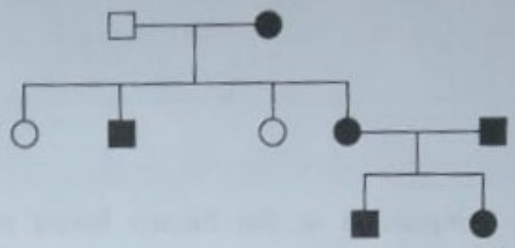
(v) Inheritance of a dominant trait in three generations is shown in the pedigree chart given below.

1st generation

2nd generation

3rd generation



Considering the dominant allele as H and recessive allele as h, indicate the genotypes of the parents of the 3rd generation.

Father : ..... ; Mother : .....

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4. (A) (i) (a) What are the main components of the translation initiation complex formed during the synthesis of polypeptides?

.....

(b) Name the protein involved in preventing the re-pairing of separated DNA strands during DNA replication.

.....

(ii) State **three** techniques used in DNA analysis other than PCR.

.....

.....

.....

(iii) Define each of the following.

(a) Community : .....

.....

(b) Ecosystem : .....

.....

(iv) (a) Why is the soil of tundras moist even though they receive a small amount of precipitation?

.....

.....

(b) State the major abiotic characteristics of salt marshes.

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(v) (a) What is a flagship species?

(b) State **two** characteristics of biodiversity hot spots.

(B) (i) What are the **two** main driving forces of desertification?

(ii) (a) What is controlled by Basel convention?

(b) Name the international agreement relevant to the protection of ozone layer.

(iii) Name a chemical used for sterilization of each of the following.

(a) Mattresses in hospital beds :

(b) Enclosed building areas contaminated with endospores of *Bacillus anthracis* :

(iv) State in correct sequence the steps of a procedure to prepare a smear for staining microorganisms in a toddy sample.

(v) State **two** properties of *Salmonella typhi* toxin other than the ability to cause disease.

(C) (i) How are phosphate solubilizing bacteria involved in releasing phosphorus in to the soil solution?

(ii) Name a bacterial genus that produces vitamin B_{12}.

[see page ten

(iii) State the internal factors that influence food spoilage.

.....

.....

(iv) Name a bacterial genus other than *Vibrio* that contaminates water supplies.

.....

(v) State **two** conditions that have to be completed by a viable seed for germination.

.....

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இலங்கைப் பரீட்சைத் திணைக்களம்
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අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2025
கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2025
General Certificate of Education (Adv. Level) Examination, 2025

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Biology	II			

Part B - Essay

Instructions:

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

5. (a) Explain the Calvin cycle of photosynthesis.

(b) Briefly describe the characteristic features of kingdom Fungi.

6. (a) Describe the primary structure of a dicot root.

(b) Discuss the impacts of low temperatures on plants and explain how plants respond to cold stress.

7. (a) Explain the role of natural killer cells in immunity of humans.

(b) Describe the active immunity of humans.

8. (a) Briefly describe the structural arrangement of a synapse and explain the mechanism of transmitting a nerve impulse through a chemical synapse.

(b) Briefly describe the symptoms and associated reasons of Parkinson disease in humans.

9. (a) Explain the process of DNA isolation in gene technology.

(b) Describe the main steps and associated principles in purification of industrial wastewater.

10. Write short notes on the following.

(a) Common human traits that show Mendelian pattern of inheritance

(b) Tropical thorn scrubs in Sri Lanka

(c) Environmental impacts of ornamental fish culture

* * *