Sri Lankan Biology Olympiad 2026 Examination

(August 2026)

Instructions:

This paper contains two parts, Part A and Part B.
Part A: 30 multiple choice questions with one correct answer; Total Marks 100.
Part B: 20 multiple choice questions with one or more than one correct answer; Total Marks 100.

Answer All Questions	**Time 2 hours**

Part A - Multiple Choice Questions

Select the correct or the most appropriate answer for the questions in this part and mark that in the answer sheet. For each question there should be only one response.

1. Which of the following organism/s have peptidoglycan as a component of their cell wall?

A – Archaebacteria B – Bacteria C – Cyanobacteria

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

Answer = (5)

2. During which stages of mitosis would nucleoli disappear and reappear respectively?

(1) Prophase and telophase
(2) Prometaphase and telophase
(3) Metaphase and anaphase
(4) Prophase and anaphase
(5) Prometaphase and anaphase

Answer = (1)

3. Which of the following statements is true regarding enzyme activity?

(1) Rate of reaction will not increase after a particular concentration of the substrate due to saturation of enzyme molecules.
(2) The reactions catalyzed by each enzyme are not specific but the substrate binds to a specific site of the enzyme.
(3) Toxins and poisons inhibit enzyme activity by binding reversibly through covalent bonds.
(4) When the temperature increases above the optimum level the enzymatic reaction will stop due to decreased rate of collision between the enzyme and substrate molecules.
(5) Changes in pH above or below optimum value will lead to decreased enzyme activity due to changes in the shape of the active site of the enzyme.

Answer = (1)

4. Which of the following is/are produced in both linear and cyclic electron flows of the light reaction of photosynthesis?

A – Oxygen B – ATP C – NADP+ D – NADPH

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

Answer = (2)

5. Which of the following is/are correct regarding cofactors of enzymes?

A – All are non-protein components essential for catalytic activities of some enzymes.

B – NADP+ is an organic cofactor and acts as a co-enzyme.

C – All cofactors bind to enzymes tightly but the binding is reversible under all conditions.

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

Answer = (1)

6. A single-celled organism isolated from the alimentary canal of a cow is found to possess branched hydrocarbons in its membrane lipids, a cell wall lacking peptidoglycan, circular chromosomes, histones associated with DNA, and introns in some of its genes. Which of the following correctly identifies the domain to which this organism belongs and provides the most accurate justification?

(1) Domain Archaea, because circular chromosomes and histones associated with DNA in some cells uniquely distinguish it from all other domains.

(2) Domain Archaea, because branched hydrocarbons in membrane lipids are found only in Domain Archaea.

(3) Domain Eukarya, because the presence of histones associated with DNA and introns in some genes are sufficient to classify it within Domain Eukarya.

(4) Domain Bacteria, because it possesses circular chromosomes and a prokaryotic cellular organisation.

(5) Domain Archaea, because introns present in some of its genes and circular chromosomes together uniquely place it in Domain Archaea.

Answer = (2)

7. The four main stages of biochemical evolution leading to the origin of the first cells are listed below.

A – Nucleic acids gained self-replicating capability, making inheritance possible.

B – Atmospheric conditions favoured the abiotic synthesis of small organic molecules from inorganic molecules.

C – Organic macromolecules were packaged into membranes, producing protocells.

D – Small organic molecules polymerised to form macromolecules such as proteins and nucleic acids.

The correct chronological sequence of these stages is

(1) A → B → C → D.
(2) B → D → C → A.
(3) B → C → D → A.
(4) D → B → C → A.
(5) B → D → A → C.

Answer = (2)

8. A student reads a research paper in which a newly discovered fern species from Sri Lanka has been named as *Thelypteris senanayakei* Wijesundara, 2024. Which of the following statements about this published scientific name is correct?

(1) There should be a comma between the two words s*enanayakei* and Wijesundara

(2) 'Wijesundara, 2024' should be written in italics.

(3) A fern species in a different genus could legitimately use '*senanayakei*' as its specific epithet.

(4) Since this species has been named '*Thelypteris*', no other organism on Earth can now be assigned the generic name '*Thelypteris*'.

(5) The name does not violate the rules of binomial nomenclature which indicates that the specific epithets must be derived from the local language of the country of discovery.

Answer = (3)

9. A biologist observes an animal which does not have a distinct head or segmentation, and moves using a hydraulic system of fluid-filled canals. Which of the following is a feature of the phylum to which this organism belongs?

(1) Blood is pumped into an open body cavity called a haemocoel.

(2) A calcareous endoskeleton is covered by a thin epidermis.

(3) Respiration occurs through book lungs.

(4) Fertilisation is internal.

(5) Excretion is carried out by protonephridia.

Answer = (2)

10. Which of the following is composed of completely non-living cells?

(1) Vascular cambium of a dicotyledonous stem
(2) Pericycle of a dicotyledonous root
(3) Mature fibers of heart wood of a dicotyledonous stem
(4) Endodermis of a monocotyledonous root
(5) Periderm of a dicotyledonous root

Answer = (3)

11. Which of the following statements about the K^+ ion flux hypothesis on stomatal movements in angiosperms is/are correct?

A: During the daytime, the guard cells passively accumulate K^+ ions from neighbouring epidermal cells.

B: Stomatal closing occurs by loss of K^+ ions from guard cells to neighbouring epidermal cells.

C: Chloroplasts present in the guard cells provide energy for the accumulation of K^+ ions.

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

Answer = (5)

12. Select the correct character combination shown by all seedless vascular plants.

(1) Independent sporophyte, independent gametophyte, heterospory, absence of microphylls
(2) Maternal care for the mature sporophyte, flagellated male gametes, circinate vernation of young leaves, sporangia containing homospores
(3) Independent sporophyte, monoecious gametophyte, sessile egg cell, embryo
(4) Lignified tissues in the sporophyte, multiple sporangia present in spore-bearing structures, multicellular gametophytes, oogamy
(5) Long-lived gametophyte, flagellated male gametes, monoecious gametophyte, independent sporophyte

Answer = (4)

13. Select the correct combination of the microelement and the plant growth regulator required for the growth of the pollen tube in flowering plants.

(1) Zinc and Auxin
(2) Boron and Gibberellin
(3) Molybdenum and Cytokinin
(4) Nickel and Gibberellin
(5) Manganese and Auxin

Answer = (2)

14. Select the correct combination where the factor given in **column K** increases/stimulates the activity given in **column L**.

K (component)	**L (response)**
(1) Concentration of cytokinin in sieve tube elements	Transportation of nutrients to the sink tissues
(2) Concentration of ABA in the cytoplasm of guard cells	Stomatal opening
(3) Thickness of diffusion shell layer	Rate of transpiration
(4) Ion concentration in the soil solution relative to the cell sap of a root hair	Active absorption of ions
(5) High concentration of auxin in leaves	Leaf abscission

Answer = (1)

15. Examples for a filter feeder and a fluid feeder are respectively

(1) clams and maggots.

(2) guppies and aphids.

(3) oysters and goldfish.

(4) sea anemones and bees.

(5) baleen whale and humming bird.

Answer = (5)

16. Which of the following statements regarding the human digestive system is correct?

(1) Oral cavity acts as a temporary reservoir for food.

(2) Secretion of the oral cavity contains antibodies and glycoproteins.

(3) Pepsin secreted by chief cells of the stomach hydrolyzes proteins.

(4) Lining of the stomach is usually replaced once a week.

(5) Mucus secreted by parietal cells protects the lining of stomach from HCl.

Answer = (2)

17. In the human small intestine

(1) conversion of fats to glycerol and monoglyceride is catalyzed by intestinal lipase.

(2) active absorption of amino acids, fructose and glucose takes place.

(3) conversion of disaccharides to monosaccharides is catalyzed by pancreatic disaccharidase.

(4) chylomicrons are formed within the cells with microvilli.

(5) conversion of nucleic acid to nitrogen bases is catalyzed by nuclease.

Answer = (4)

18. If an obese person who is 164 cm tall and weighs 90 kg wants to have a non-obese body, he has to reduce his weight by at least

(1) 4 kg.

(2) 6 kg.

(3) 8 kg.

(4) 10 kg.

(5) 12 kg.

Answer = (4)

19. An abnormality in the T wave of the electrocardiogram may indicate an issue in which of the following?

(1) Ventricular depolarization

(2) Relaxation of the ventricular muscle

(3) Atrial depolarization

(4) Atrial repolarization

(5) Ventricular contraction

Answer = (2)

20. The respiratory pigment mostly present in animals that have an open blood circulatory system is

(1) haemoglobin.

(2) haemocyanin.

(3) chlorocruorin.

(4) haemerythrin

(5) myoglobin.

Answer = (2)

21. Examples for autoimmune diseases are

(1) AIDS and type II diabetes mellitus.

(2) Type I diabetes and osteoarthritis.

(3) Allergy and chronic kidney disease.

(4) Type I diabetes and rheumatoid arthritis.

(5) rheumatoid arthritis and osteoarthritis.

Answer = (4)

22. In the human kidney

(1) majority of nephrons are juxta medullary nephrons.
(2) K^+ ions are reabsorbed in the descending limb of loop of Henle.
(3) Na^+ ions are secreted in the ascending limb of loop of Henle.
(4) NH_4^+ ions are secreted in the proximal convoluted tubule.
(5) HCO_3^- ions are reabsorbed in the distal convoluted tubule.

Answer = (5)

23. Some parts of the human brain and their functions are given below. Select the response with all correct 'part – function' combinations.

Part	Function
A – Thalamus	P – Control of voluntary muscle contraction
B – Medulla oblongata	Q – Helping in learning motor skills
C – Cerebrum	R – Controlling blood vessel activities
D – Cerebellum	S – Sorting of sensory information

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

Answer = (4)

24. In the human male reproductive system

(1) prostate gland secretions are released into vas deferens.
(2) Leydig cells present in the seminiferous tubules secrete testosterone.
(3) vas deferens joins with the duct from seminal vesicles and forms ejaculatory duct.
(4) bulbourethral glands open to ejaculatory duct.
(5) external reproductive organs are testes and penis.

Answer = (3)

25. Which of the following statements regarding the human skeleton is correct?

(1) The strongest bone of the body is located in the skull.
(2) Knee joint shows rotatory movement.
(3) Manubrium of the sternum articulates with the clavicles and first three pairs of ribs.
(4) Last eight vertebrae of the vertebral column fuse together and form two bones.
(5) Sinuses are present in the sphenoid, ethmoid, frontal and temporal bones of the skull.

Answer = (2)

26. Two processes that can be seen in a cranial bone and a facial bone respectively are

(1) zygomatic process and styloid process.
(2) mastoid process and coronoid process.
(3) condyloid process and styloid process.
(4) styloid process and mastoid process.
(5) coronoid process and zygomatic process.

Answer = (2)

27. In a pea plant round seeds (R) are dominant to wrinkled seeds (r). A researcher crosses a pea plant with round seeds with a pure-breeding wrinkled-seeded plant. The offspring produced are 62 round-seeded and 58 wrinkled-seeded. Which of the following responses indicate the most likely genotype of the round-seeded parent and the reason for indicating so?

(1) RR – because all round offspring confirm it is pure breeding
(2) Rr – because the approximate 1:1 ratio of the offspring indicates heterozygosity
(3) rr – because wrinkled seeds appeared among offspring
(4) RR or Rr – because both genotypes produce round-seeded offspring
(5) RR – Because approximately 1:1 ratio of the offspring indicates homozygosity.

Answer = (2)

28. A colour blind woman marries a man with normal colour vision. Which of the following correctly describes their expected offspring?

(1) All daughters will be colour blind; all sons will be carriers.
(2) All daughters will be carriers; all sons will be colour blind.
(3) Half the daughters will be colour blind; half the sons will be colour blind.
(4) All daughters will be colour blind; half the sons will be colour blind.
(5) Half the daughters will be carriers; all sons will be colour blind.

Answer = (2)

29. In an ecosystem, the producers contain 1,000,000 kJ of energy. Assuming an energy transfer efficiency of 10% between each trophic level, what is the maximum energy available to the secondary consumers?

(1) 100 kJ (2) 1,000 kJ (3) 10,000 kJ (4) 100,000 kJ (5) 500,000 kJ

Answer = (3)

30. Environmental health investigators studying a coastal fishing community found that a factory discharges wastewater containing cadmium into a nearby river. Analysis showed cadmium concentrations of 0.001 mg/L in river water, 0.05 mg/kg in small fish, and 2.5 mg/kg in large predatory fish. Community members who regularly consume large fish have a significantly higher incidence of chronic kidney disease (CKD) compared to those who do not. Which of the following conclusions can be derived at by these data?

(1) The cadmium concentration in river water is too low to cause environmental concern and fish consumption is unrelated to CKD in this community.

(2) Large predatory fish absorb cadmium exclusively through gill membranes from the surrounding water, not through the food they consume.

(3) Cadmium undergoes biodegradation in aquatic environments, so its concentration decreases progressively along the food chain.

(4) Cadmium accumulates at progressively higher concentrations at each trophic level because it cannot be metabolised or rapidly excreted by organisms.

(5) CKD in the community is most likely caused by airborne pollution from the factory rather than cadmium in fish.

Answer = (4)

Part B – Multiple Choice Questions with more than one correct answer

In the questions of this part, one or more responses is/are correct. Mark the correct response/responses in the answer sheet. When any response is wrong, no marks shall be awarded to that question.

1. Which of the following 'sugar–feature' combinations is/are correct?

Sugar	Feature
X – Galactose	A – A reducing sugar
Y – Fructose	B – Crystalline
	C – An aldose
	D – Water insoluble

(1) X-A, X-C, Y-B
(2) X-B, X-D, Y-A
(3) X-D, Y-C, Y-B
(4) X-A, X-C, Y-A
(5) X-A, X-D, Y-C

Answer = (1), (4)

2. Which of the following is/are true regarding the plasma membrane?

(1) The heads of phospholipids in the membrane face the aqueous environment of both inside and outside of the cell.
(2) Most integral proteins are transmembrane proteins that have hydrophilic channels.
(3) Polar tails of the phospholipids enable nearby cells to communicate with each other.
(4) Animal cell membranes have cholesterol side chains and glycolipids to provide rigidity to the membrane.
(5) Carbohydrates that bind to some proteins and lipids of the plasma membrane act as receptor molecules.

Answer = (1), (2)

3. Which of the following subcellular components carry enzymes needed for photorespiration?

A – Mitochondria B – Peroxisomes C – Lysosomes D – Golgi Apparatus E – Chloroplast

(1) A and B
(2) B and C
(3) B and D
(4) A and C
(5) B and E

Answer = (1), (5)

4. A population of lizards colonises a new island covered with dark volcanic rock. Over many generations, lizards with darker body colouration become increasingly common while pale-coloured individuals become rarer. Which of the following statements correctly explain/explains this observation according to Darwin-Wallace theory of natural selection?

(1) Pale-coloured lizards actively changed their skin colour during their lifetimes in response to the dark background.
(2) Variation in body colour existed among individuals in the original lizard population.
(3) Darker colouration provided a survival advantage by making lizards less visible to predators.
(4) The lizard population produced more offspring each generation than the environment could support.
(5) Darker colouration was an acquired characteristic that lizards developed during their lifetime and passed on to offspring.

Answer = (2), (3), (4)

5. A student examining stored bread under a microscope observes hyphae without cross walls except where reproductive structures form, and spherical structures at the tips of upright hyphae containing genetically identical haploid spores produced endogenously. When two samples from different loaves were placed together, a sturdy multinucleated structure resistant to drying and freezing was formed. Which of the following statements about this organism is/are correct?

(1) This organism belongs to phylum Zygomycota.
(2) The spherical spore-containing structures observed are asci.
(3) The resistant structure formed during the sexual process is a zygosporangium.
(4) The spores produced asexually within the spherical structures are called sporangiospores.
(5) This organism is autotrophic and obtains energy through photosynthesis.

Answer = (1), (3), (4)

6. Which of the following statements correctly describe/describes phylum Arthropoda?

(1) They have an open circulatory system in which blood circulates through a haemocoel.
(2) Aquatic arthropods respire through book lungs.
(3) Excretion is carried out by Malpighian tubules.
(4) The exoskeleton is made up of chitin.
(5) The nerve cord is solid, segmented and ventrally located.

Answer = (1), (3), (4), (5)

7. Which of the following statements is/are correct regarding the symplastic pathway in plants?

(1) Cytoplasmic channels are important for water movement.
(2) Water and solutes move along the continuum of cytosol.
(3) During phloem loading, translocation of sugar from leaf mesophyll to sieve tube elements occurs through symplast.
(4) It requires energy in the form of ATP to move water across the plasma membrane.
(5) Both diffusion and active transport involve in transport of solutes from symplast.

Answer = (1), (2), (3), (5)

8. When plants respond to cold stress,

(1) Water in the cell wall and intercellular spaces freezes before freezing the solute-rich water in the cytosol.
(2) Before the onset of winter, the cells of frost-tolerant plants increase cytoplasmic levels of specific solutes.
(3) Plants respond to cold stress by increasing the proportion of saturated fatty acids content in plasma membrane.
(4) The reduction of liquid water in the cell wall lowers the intracellular water potential.
(5) Cell membrane cools below a critical temperature and is locked into a crystalline structure.

Answer = (1), (2), (5)

9. Select the correct statement/statements on plant responses to external and internal signals.

(1) Blue-light photoreceptors initiate light induced opening of stomata in plants.
(2) Exposure to direct sunlight stimulates vertical growth of trees.
(3) The aggregation of statoliths at low points of root cap cells triggers the lateral transport of auxin within the root.
(4) In thigmonasty shown by *Mimosa* leaves, touching results in a sudden loss of turgor of cells in the pulvini.
(5) When a seedling breaks ground, hypocotyl elongation is mainly initiated by phytochrome photoreceptors.

Answer = (1), (3), (4)

10. Oxygen rich blood flows through which of the following valves?

(1) A semilunar valve and Mitral valve
(2) Bicuspid valve and pulmonary valve
(3) Tricuspid valve and aortic valve
(4) Mitral valve and aortic valve
(5) Pulmonary valve and tricuspid valve

Answer = (1), (4)

11. In the human heart

(1) SA node is located closer to superior vena cava than the AV node.
(2) SA node transmits electrical impulses to AV node through AV bundle.
(3) AV node is located closer to the tricuspid valve than the SA node.
(4) Bundle of His originates from AV node and immediately divides into Purkinje fibres within the ventricular myocardium.
(5) Contraction wave of the heart begins at the apex of the myocardium.

Answer = (1), (3), (5)

12. Smoking

(1) decreases the amount of oxygen transported by blood.
(2) reduces blood pressure leading to inadequate supply of blood to the brain.
(3) retards proliferation of bronchial epithelial cells.
(4) increases the release of lytic enzymes by lung tissue.
(5) may cause cancer in lungs and other organs.

Answer = (1), (4), (5)

13. Which of the following are involved in innate immunity?

(1) Memory B cells and interferons
(2) Natural killer cells and complement proteins
(3) Neutrophils and cytokines
(4) Plasma cells and histamines
(5) Cytotoxic T cells and mucus

Answer = (2), (3)

14. Which of the following statements regarding action potential is/are correct?

(1) During repolarization inflow of Na^+ ions occurs.
(2) During hyperpolarization potassium channels are opened.
(3) During depolarization outflow of Na^+ occurs.
(4) Repolarization makes the inside of the neuron negative.
(5) Depolarization makes the outside of the neuron less negative relative to inside.

Answer = (2), (4)

15. Persons suffering from schizophrenia mostly

(1) experience voices that can be heard only by them.
(2) are not interested in enjoyable activities.
(3) lose their ability to recognize friends.
(4) think that others plan to harm them.
(5) show speech problems.

Answer = (1), (4)

16. Which of the following statements regarding the human skin is/are correct?

(1) Removing melanin pigments in the skin increases the risk of skin cancer.
(2) Exposure to sunlight converts a glycoprotein in the skin to vitamin D.
(3) Extent of oxygen saturation in the blood circulating in the dermis affects skin colour.
(4) Skin excretes urea.
(5) When heat stressed, keratinized epithelium of the skin is rubbed off.

Answer = (1), (3), (4)

17. Which of the following organs secrete/secretes hormones that increase blood pressure?

(1) Kidneys
(2) Thyroid
(3) Ovary
(4) Adrenals
(5) Thymus

Answer = (1), (4)

18. Which of the following statements regarding genetics and inherited disorders is/are correct?

(1) Golden rice is produced by inserting vitamin D-producing genes into the paddy genome.
(2) A female who carries the recessive allele for haemophilia on one of her X chromosomes will show symptoms of haemophilia.
(3) When two heterozygous tall pea plants are crossed, the genotypic ratio among the offspring is 1 : 2 : 1.
(4) Linked genes are located on different chromosomes and do not assort independently during gamete formation.
(5) Bacteria and fungi are used in the production of antibiotics.
Answer: (3) and (5)

19. Which of the following statements regarding the greenhouse effect and ozone layer depletion is/are correct?

(1) Chlorofluorocarbons (CFCs) contribute to both the greenhouse effect by trapping outgoing infrared radiation, and to ozone layer depletion by releasing chlorine atoms in the stratosphere.

(2) The greenhouse effect is an entirely human-created phenomenon because without human activity, the earth's atmosphere would not retain any heat.

(3) Ozone layer depletion is caused by chlorine atoms released from CFCs, which catalytically destroy ozone molecules in the stratosphere.

(4) Increase in the atmospheric carbon dioxide level is the main cause of ozone layer depletion in the stratosphere.

(5) An enhanced greenhouse effect can contribute to loss of coastal habitats.

Answer = (1), (3), (5)

20. Which of the following statements regarding sustainable development and environmental management is/are correct?

(1) The carbon footprint of a product is the CO_2 emitted during its manufacturing process.

(2) Greater the food miles higher the emission of greenhouse gases.

(3) The 'Replace' component of the 4R waste management framework involves substituting single-use or non-renewable materials with reusable or more sustainable alternatives.

(4) Reforestation does not contribute to reducing atmospheric CO_2 content until the planted trees reach full maturity.

(5) Organic farming eliminates the need for pest control entirely, as natural ecosystems maintain their own balance without any intervention.

Answer = (2), (3)