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ஊவா மாகாண கல்வித் திணைக்களம்
Uva Provincial Department of Education

අධ්‍යයන පොදු සහතික පත්‍ර උසස් පෙළ විභාගය - පෙරහුරු පරීක්ෂණය 2025
General Certificate of Education (Advanced Level) Examination – Practice Test 2025

Grade 13	09	E	I	ජීව විද්‍යාව I BIOLOGY I	කාලය : පැය දෙකයි. *Time : Two hours*

Instructions :

- Answer all the questions.
- In each of the questions (01) to (50) pick one of the alternatives from (1), (2), (3), (4) and (5) which is correct or most appropriate and mark your response.
- On the answer sheet with a cross (X) on the number of the correct option in accordance with the instructions given on the back of the answer sheet.

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01. Which is correct regarding water?
(1) In water molecule oxygen atom is slightly positive and hydrogen atom is slightly negative.
(2) Attraction between water molecules and other substances due to formation of hydrogen bonds are known as cohesion.
(3) At 4^0C temperature water freeze and forms a crystalline lattice called ice cubes.
(4) Versatility as a solvent is given to water due to their polarity.
(5) Due to high het of vaporization water will function as thermal buffer.

02. Which of the following structures of cell and its function is correctly matched.

(1)	Cytoskeleton	-	Provide protection and support to the cell.
(2)	Peroxisomes	-	Covert fatty acids into sugar.
(3)	Golgi apparatus	-	Production of peroxisomes.
(4)	Smooth endoplasmic reticulum	-	Synthesis of glycoprotein.
(5)	Rough endoplasmic reticulum	-	Synthesis of membrane phospholipids.

03. Some events occur is meiosis are given below.
A. Crossing over
B. Homologous chromosomes arrange randomly at metaphase plate.
C. Separate sister chromatids.
D. Genetically non identical nuclei are formed within a cell.

Events occur in meiosis I among those,
(1) Only A (2) Only A, B and D (3) Only A and B
(4) Only A, B and C (5) All above

04. Consider the following statements and reasons.

	Statement	Reason
A	Activity of the enzyme rapidly decline beyond the optimum temperature.	Alter the complementary nature of the active site by denaturation of enzyme.
B	Competitive enzymes reduces the rate of enzymatic reaction.	Substrate molecules cannot bind to the enzyme due to alterations in active site.
C	Increase the rate of reaction by enzymes.	Reduce the activation energy of the reaction.

From the above correlations,

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(1) Only the statement A and its reason is correct.
(2) Statements A, C and their reasons are correct.
(3) All three statements and their reasons are correct.
(4) Statements A, B and their reasons are correct.
(5) All three statements are correct but reasons are incorrect.

05. Which event occurs only in linear electron flow of light reaction in photosynthesis.
(1) Excitation of electrons from the photosystem I to the higher energy state.
(2) Splitting of water takes place as a result of an enzyme catalyzed reaction.
(3) Photophosphorylation.
(4) Stricking of photons of light on the pigments.
(5) Electrons will accepted by the primary electron acceptor of photosystem I.

06. In cellular respiration maximum number of net ATP are produced in,
(1) Glycolysis
(2) Oxidation of pyruvate
(3) Electron transport chain
(4) Fermentation of Lactic acid.
(5) Citric acid cycle.

07. Which is correct regarding diversification of eukaryotes.
(1) 700 million years ago - Colonization of land by fungi, plants and animals.
(2) 670 million years ago - Ancestors of Arthropods originated.
(3) 500 million years ago - Vascular plants originated.
(4) 365 million years ago - Evolution of sponges.
(5) 195000 years ago - Divergence of human lineage from other primates.

08. Consider the following characteristics.
A. Storage food is laminarin.
B. Present chlorophyll a as photosynthetic pigment.
C. Possess cell walls with cellulose.
D. Multicellular thalus with holdfast.
Characteristics only can be found in *Sargassum* from the above.
(1) Only A
(2) Only A and C
(3) Only D
(4) Only A, B and C
(5) Only A, C and D

09. Which plant group evolutionary more closer to the horn worts?
(1) *Marchentia*
(2) *Nephrolepis*
(3) *Pogonatum*
(4) *Gnetum*
(5) *Cycas*

10. Select the most suitable answer regarding the phyla of kingdom animalia.
(1) Cnidaria - Present a branched gastrovascular cavity.
(2) Nematoda - Possess segmented cylindrical bodies.
(3) Annelida - All members possess suckers.
(4) Platyhelminthes - Incomplete digestive system with mouth and without anus.
(5) Mollusca - Body is divided into three part as head, food and visceral mass.

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11. Select the correct statement regarding plant tissues.
    (1) Intercalary meristems can be found at the bases of stems and leaves of monocot plants.
    (2) Stem, roots and leaves of woody plants are covered by epidermis.
    (3) Ground tissue mainly consist of inner to vascular tissue as the cortex.
    (4) A sieve tube form by aligning sieve tube elements end to end with perforation plate.
    (5) Living cells with large central vacuoles are present in vascular tissues.

12. Select the correct statement,
    (1) Present collenchyma cells just beneath the epidermis of dicot plant root.
    (2) In primary structure of plant stem each vascular bundle is surrounded by sclerenchyma.
    (3) Produce vascular rays oriented perpendicular to the axis of the stem or root.
    (4) Age of the trees growing in tropical regions can be estimated by counting annual rings.
    (5) Cellulose microfibrils are radially arranged to form inelastic hoops around stomata cells.

13. Which of the following statement is correct regarding water potential.
    (1) The protoplast of the cell pulls away from the cell wall during turgidity.
    (2) Osmotic potential is inversely proportional to the molarity of a solution.
    (3) When water enters into a cell decreases $\pi\Psi$ of the cell.
    (4) ψ_s of a cell becomes more negative due to the sugars and minerals present in the cell.
    (5) Plasmolysis of a cell occurs when ψ_p of the cell becomes maximum.

14. Death of terminal buds in roots and stems of plants was observed in a cultivated field. Which of the following element deficiency effects for this condition?
    (1) Zn (2) Mo (3) Ni (4) Fe (5) Ca

15. Select the correct statement regarding life cycles of plants.
    (1) Two monocious gametophtes as male and female are produced in *Pogonatum*.
    (2) Rhizoids develop on the dorsal surface of the gmetophyte of *Nephrolepis*.
    (3) A single archegonium develop at the upper regions of the female gametophyte of *Selaginella*.
    (4) Male cone of the *Cycas* composed of microsporophylls.
    (5) Microspores present within the pollen sacs produce haploid male gametophyte by meiosis.

16. Auxin,
    (1) Delay leaf senescence.
    (2) Stimulate fruit growth
    (3) Modify apical dominance
    (4) Retards leaf abscission
    (5) Promote root and root hair formation.

17. Epithelium found in places where secretion or active absorption is important,
    (1) Transitional epithelium
    (2) Simple cuboidal epithelium
    (3) Simple squamous epithelium
    (4) Simple columnar epithelium
    (5) Psedostratified columnar epithelium

18. In human small intestine,
    (1) DNA and RNA converts into nitrogenous bases, pentose sugars and phosphates by nucleotidase.
    (2) Conversion of proteins into small polypeptides catalyze by pepsin.
    (3) Conversion of triglycerides into glycerol, fatty acids and monoglycerides catalyze by intestinal lipase.
    (4) Conversion of smaller polypeptides into small peptides catalyze by pancreatic carboxypeptidase.
    (5) Intestinal amylase catalyze the conversion of polysaccharides into disaccharides.

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19. The vitamin affects for heart failure is,
    (1) Vitamin K (2) Vitamin B_1 (3) Vitamin B_{12}
    (4) Vitamin B_5 (5) Vitamin C

20. Which of the following statement is correct,
    (1) In cartilage fish O_2 poor blood and O_2 rich blood completely separated .
    (2) O_2 poor blood pump into the lungs through pulmonary artery by right ventricle during atrial contraction.
    (3) Aortic valves are present at the points where pulmonary artery and aerta leave the heart.
    (4) Aortic ventricular node locates in the wall of the atrial septum between the left and right atria.
    (5) Complete occlusion of a coronary artery leads to chest pain.

21. Which of the following statement is correct regarding homeostatic control of breathing.
    (1) A pair of breathing control centers which regulating the breathing rhythm found in pons varolii.
    (2) Receptors present in the medulla oblongata for regulate breathing stimulate due to the increase of pH value in cerebrospinal fluid.
    (3) Sensors present in the lungs inhibit inhalation during controlling of breathing.
    (4) Sensors present in the aorta and carotid arteries send impulses to the medulla oblongata when O_2 concentration decreases.
    (5) Increase the depth and rate of breathing by removing CO_2 and decrease blood pH value until 7.4.

22. Select the correct combination.
    (1) Plasma cells - Bind to the surface of abnormal cells and destroy them by producing chemical substances.
    (2) Macrophages - Increase permeability and dialation of blood capillaries by releasing histamine.
    (3) Neutrophills - Discharge cytokines to promotes blood flow to the infected site.
    (4) Helper T cells - Contribute to immunological memory.
    (5) Memory T cells - Contribute to provide secondary immune responses by producing antibodies.

23. The substances / ions reabsorbed in each segment as it travels along an excretory duct in a human kidney from Bowman's capsule to the renal pelvis respectively.
    (1) Cl^-, H_2O, NaCl, HCO_3, NH_3
    (2) Glucose, HCO_3, K^+, Na^+, H^+
    (3) Amino acids, H_2O, Na^+, K^+, H_2O
    (4) K^+, H_2O, Na^+, NaCl, H_2O
    (5) Na^+, H_2O, Na^+, K^+, H^+

24. Which function occur only in the lowest part of the brain stem,
    (1) Coordinates large scale body movements such as running and climbing.
    (2) Coordinates auditory and visual reflexes.
    (3) Controls some involuntary reflexes through reflexes centers.
    (4) Controls autonomic nervous system.
    (5) Integration and processing of complex mental functions such as judgment, reasoning and emotions.

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25. Utricle and saccule in human ear,
    (1) Found in cochlear duct.
    (2) Contain cochlear hair cells.
    (3) Nerves arise from these transmit impulse to the temporal lobe of the cerebrum.
    (4) Chambers filled with endolymph.
    (5) Present in semicircular canals perceive position with respect to gravity and linear movements.

26. Consider the following pairs of hormones.
    A. Insulin - Glucagon
    B. Calcitonin - PTH
    C. Oestrogen - Progeserone
    D. TRH - GHRIH
    Among the above pairs of hormones, the hormones that can work opposite each other,
    (1) Only A and B (2) Only A, B and C (3) Only C
    (4) Only A (5) Only B

27. Hormone / hormones contribute to the survival of corpus luteum of a female,
    (1) Only LH
    (2) Only LH and FSH
    (3) Only oestrogen and progesterone.
    (4) Only progesterone.
    (5) Only LH and hCG.

28. In human back bone,
    (1) Intervertebral discs are thicker in the places where secondary curvatures found.
    (2) In seven vertebrae a pair of foramen can be found on each side of the transverse processes.
    (3) Primary curvatures are convex anteriorly.
    (4) The body and transverse processes of largest vertebrae have factors for articulation with the ribs.
    (5) Two primary curvatures can be clearly observed after 3 months of brith.

29. Which of the following is correct regarding reproduction of animals.
    (1) Budding is the only asexual reproductive method of cnidarians.
    (2) Numerous sponges asexually reproduce by fragmentation and regeneration.
    (3) In a population of bees female bees are develop through parthenogenesis.
    (4) Parthenogenesis can be observed commonly in lizards and fish among vertebrates.
    (5) Genetically identical offspring to the parent can be produced in sexual reproduction.

30. Not a Mendelian character cause by the effect of dominant alleles.
    (1) The pointed contour of the hairline on the forehead.
    (2) Bent thumb
    (3) Detached ear lobe
    (4) Ability to rolling the tongue.
    (5) Dimples on cheek.

31. Ability to roll the tongue is a dominant trait found in human. In a human population 16% cannot roll their tongue. Dominant allele frequency and heterozygous frequency of this population respectively,
    (1) 0.4, 0.48 (2) 0.6, 0.48 (3) 0.6, 0.36
    (4) 0.16, 0.48 (5) 0.4, 0.36

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32. Consider the following statements regarding genetic materials present in living cells.
    a. Chromosomes attach to the plasma membrane.
    b. Present linker DNA.
    c. Radial loops attach to a protein core.
    d. have extra chromosomal genetic elements.

    Characteristic/s can be found in prokaryotic cells,

    (1) Only a and d (2) Only a, c and d (3) Only b and c
    (4) Only d and c (5) All a, b, c and d

33. Select the correct statement regarding Polypeptide synthesis.
    (1) Correct initiator sequence present in the cording strand of DNA
    (2) Always RNA polymerase enzyme move behind the primase enzyme.
    (3) Present codones in RNA and absent anticodones.
    (4) RNA polymerase continues to add nucleotides in $5'$ to $3'$ direction until it reaches the transcription termination site.
    (5) First step of the translation process is formation of promoter complex.

34. Ecosystems in Sri Lanka which found Naa, Nelli and Heeressa plant species respectively,
    (1) Tropical wet low land rainforests, Savanna, Tropical thorn scrubs.
    (2) Tropical dry mixed evergreen forests, Tropical montane forests, Savanna.
    (3) Tropical dry mixed evergreen forests, thron scrubs, Patana.
    (4) Savanna, Tropical thron scrubs, Tropical dry mixed evergreen forests.
    (5) Tropical wet low land rainforests, Tropical dry mixed evergreen forests, Savanna.

35. Select the false statement regarding the substrate and gasses on the increase of green house effect.
    (1) Paddy cultivation is a source of methane.
    (2) Black carbon particles have ability to absorb heat than CO_2
    (3) Most common gas contribute to the global warming is CO_2.
    (4) Carbon monoxide can remain very long time in the atmosphere.
    (5) Chlorofluoro carbon is man made industrial green house gas.

36. Among the bacteria,
    (1) *Acetobacter* sp. is a facultative anaerobic species.
    (2) Purple non sulfur bacteria use organic carbon as the carbon source.
    (3) Chemoautotrophs use organic chemicals as the energy source.
    (4) *Escherichia coli* connot lives in anaerobic environment.
    (5) All the bacteria which use inorganic carbon as the carbon source, use light as their energy source.

37. When preparation of a simple culture medium and inoculation with a sample yoghurt.
    (1) Add glucose and sodium chloride during the preparation of potato dextrose agar.
    (2) Culture media sterilize at 15 lb / sq inch pressure for 2 hours at 121^0C temperature.
    (3) (PDA) potato Dextrose Agar media is more favorable for bacterial growth.
    (4) Pour 30 mℓ of sterilized nutrient agar into sterilized petri dishes.
    (5) Inoculate loop full of the yoghurt sample in a septic condition.

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38. Select the correct combination regarding the microorganisms applied in several industries.
    (1) Production of citric acid - *Steptococcus* sp.
    (2) Production of insulin - *Saccharomyces cerevisae*
    (3) Vitamin C - *Pseudomonas* sp.
    (4) Metal extraction - *Acetobacter* sp.
    (5) Production of Hepatitis B - *Aspergillus niger*

39. Which is not an environmental impact of ornamental fish culture.
    (1) Invasive aquatic plants escaped to natural environment could affect native organisms.
    (2) With imported live fish non – indigenous disease causing agents may also come.
    (3) Reintroduce fish species to habitats in which they have been eliminated.
    (4) The immunity of fish is reduced and they get sick more often.
    (5) Release of antibiotics contain water into natural environments may cause antibiotic resistance on pathogenic microorganism.

40. Which is not a factor associated with transmission of filaria.
    (1) Frequency of human vector contact.
    (2) Number of infected persons.
    (3) Characteristics of host which affect the growth of the vector.
    (4) Density of microfilaria in blood of infected persons.
    (5) Density of vector mosquitoes.

- Questions from **41** to **50** one or more answers 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 correct 5

Directions Summarized				
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. Select the correct statement/statements regarding extra cellular components and cells.
    (A) Tight junctions - Prevent leakage of extra cellular fluids through intercellular space.
    (B) Desmosomes - mechanically attach the cytoskeletons of adjoining cells.
    (C) Cell walls - limits and control cell growth.
    (D) Extracellular - provide protection and support to the cell.
    (E) Gap junctions - connect the plasma membrane of adjacent cells.

42. Common characteristic/s for both class chondrichthyes and class osterichthyes.
    A. Ectothermic
    B. Possess rough scales.
    C. Possess fins for locomotion and balancing.
    D. Possess gill for respiration.
    E. Possess operculum.

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43. Function / functions of red light receptors in photomorphogenesis.
(A) Seed germination (B) Inhibit hypocotyl elongation (C) flowering
(D) Phototropism (E) Shade avoidance

44. Respiratory pigments present in Annelids.
(A). Haemoerythrin (B). Chlorocruorin (C). Haemocyanin
(D). Haemoglobin (E). Myoglobin

45. An object that is very close to a person can be seen in colour intense light. The truth about the functioning of that person's eye is,
(A) Reduction of the pull of the suspensory ligaments due to cillary muscle contraction.
(B) Stimulation of rods present in retina leads to colour vision of an object by converting light energy to voltage change.
(C) Only the eye lens can change its refractive power depending on the position of the object being observed.
(D) External eye muscle action occurs due to autonomic control is very important.
(E) Ganglion cells receive information from photoreceptor cells in retina transmit to the optic nerve through bipolar neurons.

46. Events occur within a Male's body when blood testosterone concentration increases.
(A) Inhibit GnRH secretion.
(B) Inhibit FSH and LH secretion.
(C) Stimulate inhibin secretion.
(D) Promote spermatogenesis.
(E) Anterior pituitary positively stimulated.

47. Joints in the human skeletal system and bones contribute to form them are correctly mentioned in,

	Joint		**Bones contribute to form**
(A)	Knee joint	-	Femur, tibia and Fibula
(B)	Hip joint	-	Scapula, Femur
(C)	Wrist joint	-	radius, ulna, Carpal
(D)	Pivot joint	-	occipital bone, atlas vertebra
(E)	Ankle joint	-	tibia, Fibula, tarsal bones

48. Substance / substances needed for Polymerase chain Reaction (PCR).
(A) Mg^{2+} (B) RNA polymerase (C) dNTP
(D) template strand (E) Ca^{++}

49. Which are correct regarding IUCN red data book,
(A) Maha madu is an endangered species.
(B) Butter cup is a critically endangered species.
(C) Punchi Lena is a vulnerable species.
(D) Glant tortoise was extinct in the wild.
(E) *Lantana camara* became extinct organism.

50. Which are true regarding sanitary land filling.
(A) Used only marginal lands.
(B) 4/5 of honspital wastes removed by this method.
(C) Greatly reducing the volume of the waste by compact arrangements.
(D) Permanently spread waste layers covered by soil.
(E) Should not use the locations with low ground water levels.

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ஊவா மாகாண கல்வித் திணைக்களம்
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අධ්‍යයන පොදු සහතික පත්‍ර උසස් පෙළ විභාගය - පෙරහුරු පරීක්ෂණය 2025

General Certificate of Education (Advanced Level) Examination – Practice Test 2025

13 ශ්‍රේණිය	09	E	II	ජීව විද්‍යාව II BIOLOGY II	කාලය : පැය තුනයි Time : Three hours

Instructions :

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

PART A – Structured Essay

- ❖ Answer **all four** questions on this paper itself.
- ❖ Write your answer 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

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

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For Examiner's Use only.

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

Final Marks	
In Numbers	
In Words	

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Part A - Structured Essay

(1).A)i). State the hierarchical levels of organization of living things.

.....

.....

ii). How does a glycosidic bond form?

.....

.....

.....

iii). State the major functions of following carbohydrates.

(a) Lactose - .....

(b) Inuline - .....

(c) Pectin - .....

iv).a).What is a resolution power of a microscope?

.....

.....

b).State two differences between transmission electron microscope and scanning electron microscope.

.....

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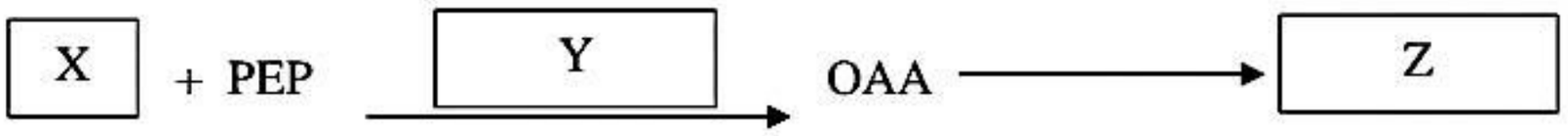
v). a).State the number of ATP produced by the oxidation of coenzymes result from the citric acid cycle of a glucose molecule.

.....

b). Mention the final electron acceptor of the aerobic cellular respiration.

.....

vi).Mention X, Y, Z of the following reaction occur within the mesophyll cells in C_4 pathway of photosynthesis.



X - ..... Y - .....

Z - .....

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B). i). State the principles of the theory of Lamarck.

.....

.....

ii). State the biological definition of a species.

.....

.....

iii). Complete the following table regarding kingdom Plantae Mention only the name of genera as examples.

Plant group	Phylum / Phyla	Example
Non vascular plants	(a)	***Pogonatum***
	Anthocerophyta	(b) .....
Seedless vascular plants	(c)	***Selaginella***
	(d)	***Nephrolepis***
(e)	Gnetophyta	(f) .....
	(g)	***Cycas***

iv).State the phyla with following characteristics.

a). Parapodia - .....

b). Tube feet - .....

v). What is the primary growth of a plant.

.....

.....

(C).i). State two benefits of thickening the tracheids in Xylem by lignin.

.....

ii).State two functions of bark present in the plant stem which secondary growth has occurred.

.....

.....

.....

iii).a). How does the apoplastic route blocks in radial transportation.

.....

.....

b). State the reason why does phloem loading always occurs actively.

.....

.....

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iv). a). In which environment do carnivorous plants grow?

.....

b). State a genus of a carnivorous plant.

.....

v). a). Indicate how gametophyte form by the germination of a *Pogonatum* spore by a flow chart.

.....

b). How the formation of genetic variation by cross pollination is important to a plant?

.....

.....

c). What is meant by plant stresses?

.....

.....

(2). A)i). State the types of muscles which form the human esophagus and mention their functions.

.....

.....

ii). a). State a function of water present in saliva.

.....

b). State two essential amino acids for human.

.....

.....

iii). State the vessels found in corners of the lobules of liver.

.....

.....

.....

iv). State the reason why closed circulatory system is more efficient as compared the open circulatory system..

.....

v). a). State the diastolic pressure value of a normal healthy adult.

.....

b). Name the blood group / groups which can transfuse to a recipient with blood group A.

.....

.....

c). How does heparin prevents blood clotting?

.....

.....

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B). i). a). State the nature of alveoli walls.

.....

b). State the function of surfactant which surrounds human alveoli.

.....

ii). State how the process of exhalation occurs in a person at rest.

.....

.....

.....

.....

iii). State three methods which activate macrophages in human body.

.....

.....

.....

iv). a). Mention two diseases which readymade antibodies are given to induce artificially acquired passive immunity.

.....

.....

b). Mention an instance where artificially acquired passive immunity is used in addition to diseases.

.....

c). Mention how to prepare the vaccine used for it.

.....

.....

v). How does Rheumatoid arthritis (an auto immune disease) can cause?

.....

C).i). a). Mention an excretory gland which is not contributes to remove nitrogenous wastes.

.....

b). State two animal groups which the above excretory gland can be found.

.....

.....

ii). a). State the main function of human kidney.

.....

b). Mention the blood vessels and capillary network pass by the blood supplied to the human kidney by aorta until transported to inferior vena cava respectively.

.....

.....

c). Name the hormone that acts on nephrons when a person's blood pressure drops and the endoorine organ that secretes it.

.....

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iii).a). State the phase / phases of action potential which most K^+ channels open and Na^+ channels close when an impulse transmit through the axon of a neuron.

.....

.....

b). Name common neurotransmitters found in human which are not gaseous components, besides acetylcholine.

.....

.....

iv).How does accommodation of eye occurs for the vision of near objects.

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.....

v). Mention how does the human liver contributes to the metabolism of proteins.

.....

.....

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(3).A)i). a).State the constituents in the thin, milky fluid secreted by an accessory gland associated with the male reproductive system.

.....

.....

b).State the function of leydig cells present within testes.

.....

.....

ii). a).State the order of increasing hormone concentration in blood when mature follicle present in the ovary.

.....

.....

b).State the stage of ovulation of the cell present in matured follicle?

.....

c).State the cell division stage of above (b).

.....

.....

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iii). State the time periods of following events occur during human embryonic development.

a) Cleavage of zygote begins - .....

b) Morula reaches the uterus - .....

c) developing blastocyst - .....

iv). a).Name a movable joint found associate with human skull.

.....

b).How it forms?

.....

.....

c).State the single facial bones found in human skull.

.....

.....

v). State the importance of ATP for sliding filament theory which is currently accepted model of muscle contraction.

.....

.....

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.....

B). i).State the Mendel's second law.

.....

.....

.....

.....

ii). Consider the following cross regarding three characteristics of an organism. Dominant characters denote in English capital letters and recessive characters denote in English simple letters.

AaBbcc x aaBBCc

a).State the probability to obtain oragnisms with AaBBcc genotype in F_1 generation from the above cross.

.....

b). State the probability to obtain homozygous dominant genotypes for two characteristics among the organisms of F_1 generation.

.....

.....

.....

iii). What is meant by "inbreeding" of animal fertilization. State an example for it.

.....

.....

iv). State two examples for animals which produced by interspecific breeding without involving male or female donkey as a parent.

.....

.....

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v). State the phenomena which should not occur within a population to describe the population as not evolving according to the Hardy – Weinberg equilibrium.

.....

.....

.....

vi). a). What are "pure lines" according to genetics.

.....

b). For which breeding technique maintaining pure lines are important?

.....

.....

vii). Phenotypic ratio for a normal dihybrid cross according to the Mendel's principal is 9 : 3 : 3 : 1. Which non mendelian inheritance change the phenotypic ratio as 9 : 7?

.....

C).i). State the role of DNA polymerase in DNA replication.

.....

.....

.....

ii). State two characteristics of prokaryotic DNA replication which differ from eukaryotic DNA replication.

.....

.....

.....

iii).State an example for protein which rapidly degenerate after completing its function.

.....

iv).State an example for each trisomy given below.

(a) Do not show any syndrome - .....

(b) Occur in an autosomal chromose and show a syndrome - .....

v). a). What is the most frequently used technique for separation of DNA?

.....

b). State another two molecules which can separate by using above technique.

.....

.....

.....

vi). State two enzymes used to prepare CDNA.

.....

.....

vii). From which cell type is factor (viii) extract for use in treating heamophilia?

.....

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(4).A).i). State the organizational levels which contain only livings among the several levels of organization recognized by environmental biologists.

.....

ii). Define "niche".

.....

.....

iii). Name two biomes found along the Earth's equator.

.....

.....

iv). Name a blome that has the following characteristics.

a). Wet summer - .....

b). Dry summer - .....

v). Mention two threats facing Sri Lanka's biodiversity.

.....

.....

vi). State an example for a common mangrove associate plant.

.....

vii). State the three categories of wetlands in Sri Lanka according to the Ramsar definition.

.....

.....

.....

B).i). State two characteristic features of bacteria used to test the drinking water quality in many countries.

.....

.....

ii). State the material sterilize by using hot air sterilization method. Give two examples.

.....

.....

iii). a). State two methods used by viruses for multiplication.

.....

.....

b). State the main difference in between above 2 methods.

.....

.....

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iv). State a structural and functional character of viroids which differ from viruses.

a) Structural character : .....

.....

b) Functional Character : .....

.....

v). State the external factors influence on food spoilage.

.....

.....

.....

.....

vi). State the disease caused by the bacteria *Salmonella typhi*.

.....

C).i). State an fish species that have been conserved via ornamental fish production.

.....

ii). State two methods can be used to prevent growth of brown algae on the side glasses of aquarium.

.....

.....

iii). State an fish species and a bacterial species can be used to control the dengue vectors.

.....

.....

iv). State the conditions must be completed to initate seed germination for sexual progpagation in floriculture industry.

.....

.....

.....

v).State plants as example for each propagation method used in the floriculture industry.

a). Propagation by seeds - .....

b). Division - .....

vi). State two elements / compounds used as nano particles for sterilization of operation theatres in hospitals.

.....

vii). What is the nano technology application used to treat pain?

.....

(40 x 2.5 = 100)

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Part B - Essay

Answer the only four questions.

(5). a). Explain the allosteric activation and inhibition of enzyme.

b). Explain the chemical nature of proteins.

(6). Explain the sexual reproductive structure of Anthophytes and its role.

(7). a). Explain the transport process of respiratory gases in human blood.

b). Explain the role of T lymphocytes in acquired immunity.

(8). a). Briefly explain the structure of human skin.

b). Explain the sensory receptors found in human skin and its function.

(9). (a). Briefly explain the gene mutations occur due to substitution.

(b). Explain the toxigenecity of a pathogen to cause a disease.

(10). Write short notes on the followings.

(a) Bio diversity conservation.

(b) Genetical determination of ABO blood groups in human.

(c) Protected cultivation of crops.

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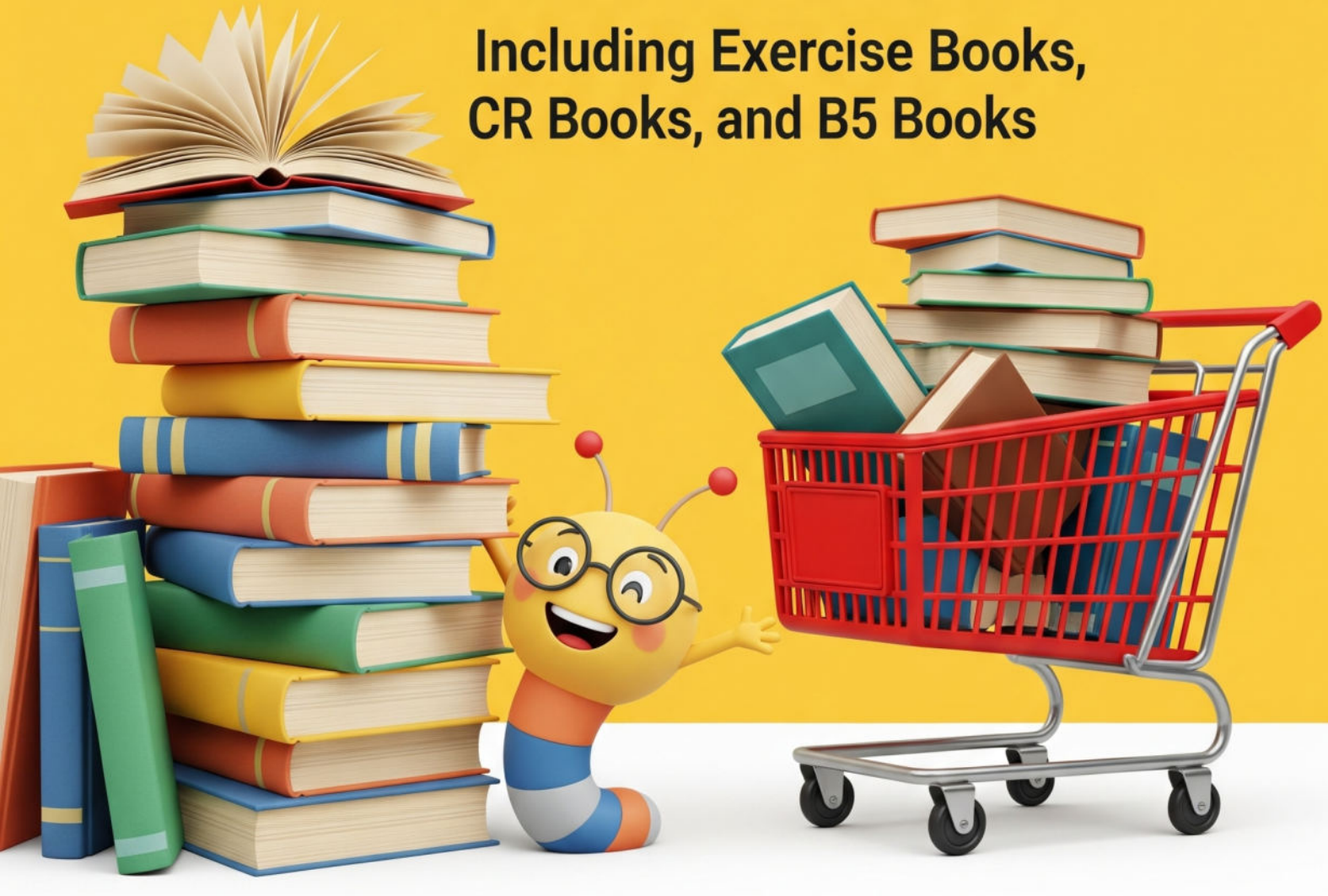
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