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Provincial Department of Education - NWP

13 ශ්‍රේණිය තෙවන වාර පරීක්ෂණය - 2025
Third Term Test - Grade 13 - 2025

ජීව විද්‍යාව I
Biology I

09

E

I

භූය දෙකයි
Two Hours

Name / Index No.

Answer all questions

In each of the questions 1-50 pick one of the alternatives from (1), (2), (3), (4) and (5) which is correct in each of the questions or most appropriate and mark your response on the answer sheet with across (X) on the number of the correct option.

01. Growth and development are characteristic features of living organisms. Which of the following is correct regarding growth?
- (1) Quantitative increasement that occur reversibly.
 - (2) All living organisms show growth throughout their lifetime.
 - (3) Microbes have a high rate of growth.
 - (4) Growth is a characteristic shown only by organisms.
 - (5) Cell division takes place as a step of growth in all living organisms.
02. Which of the following is correct regarding protein?
- (1) Sulfur is always included as a component element.
 - (2) All bonds break down at denaturation.
 - (3) Collagen is a protein with a tertiary structure which provides strength.
 - (4) Rapid dissociation of regulatory protein is must for their functions.
 - (5) Fibrinogen is a contractile protein involved in blood clotting.
03. Which of the following combination is true regarding Vesicles in eukaryotic cytoplasm and their functions.
- | Vesicle | Functions |
|-----------------|--|
| (A) Glyoxysomes | Possession of oxidative enzymes |
| (B) Peroxisomes | Detoxification |
| (C) Lysosomes | transportation of residual material out of the cell by exocytosis. |
- (1) A and B (2) B and C (3) A and C (4) A, B and C (5) only B
04. A diploid cell with eight chromosomes undergoes meiosis. How many DNA molecules exist in this cell when it enters into the initiative phase of division in which chromosome numbers are halved?
- (1) 4 (2) 2 (3) 8 (4) 10 (5) 16
05. At enzyme reactions,
- (A) Enzymes are not being used up.
 - (B) Substrate is the reactant
 - (C) Many reactions can be catalyzed by one type of enzyme.
 - (D) Enzymes do not alter the nature or properties of the end product.
 - (E) Need high concentration of enzymes for catalyzing a reaction.
- (1) B, C and D (2) A, B and D (3) B and D (4) C and D (5) B and E

06. Which of the following phenomenal combinations is correct?

- (1) Photorespiration - occurs in all Organisms
- (2) Photosynthesis - an anabolic reaction which occurs only in chloroplast
- (3) Phototropisms - Always promotes Photosynthesis.
- (4) Photoprotection - Dissipation of excessive light energy only
- (5) Photoreceptors - Phytochromes provide the plant with information about the quality of light

07. Select the incorrect statement regarding Glycolysis

- (A) Occurs in all cells
- (B) produces four ATP molecules by substrate phosphorylation.
- (C) oxidation of two NAD^+ molecules into two NADH molecules.
- (D) Having a series of enzyme reactions.
- (E) Initiating always only with six carbon molecule.

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

08. Which statement is incorrect regarding binomial nomenclature?

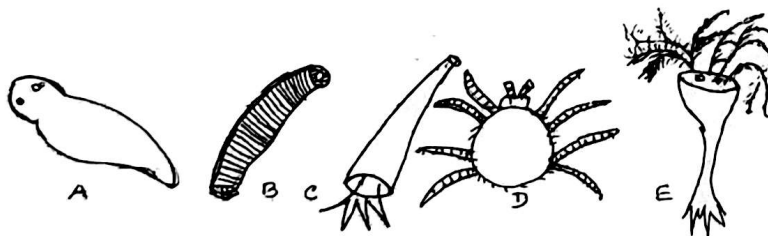
- (1) Name of the organism possesses two words
- (2) The first word is generic name which species include in
- (3) Species with close relationship possess the same specific epithet.
- (4) Latinized words
- (5) Should be underlined when hand written.

09. Select the response with the correct order according to the characteristics of organisms given below:

- (A) Obligatory anaerobic organisms
- (B) Some genes have introns.
- (C) Possesses a pellicle, freshwater inhabitants
- (D) Have ground-hugging stem with dichotomously branched stem
- (E) Dorsoventrally flattened, tape-like body with suckers

- (1) *Clostridium*, *Nostoc*, *Euglena*, *Pogonatum*, *Taenia*
- (2) *Azotobacter*, *Paramecium*, *Euglena*, *Lycopodium*, *Planaria*,
- (3) *Lactobacillus*, *Ulva*, *Paramecium*, *Cocos*, *Taenia*
- (4) *Clostridium*, *Thermococcus*, *Paramecium*, *Selaginella*, *Taenia*
- (5) *Clostridium*, *Methanococcus*; *Euglena*, *Lycopodium*, *Taenia*

10.



Which of the following statements is correct regarding the organisms given in the above diagrams?

- (1) All Animals are triploblastic, coelomate, and bilaterally symmetrical.
- (2) All have a certain type of skeleton.
- (3) All animals possess a circulatory system.
- (4) All show segmentation.
- (5) All have some kind of nervous system.

11. Fungi phyla and characteristics of them are given in the table below.

Phylum	Characteristic features:
(A) Basidiomycota	- Have dominant dikaryotic mycelia
(B) Chytridiomycota	- Only multicellular forms, All are saprotrophs
(C) Zygomycota	- Sexual spores are endogenous, Asexual spores are exogenous
(D) Ascomycota	- Marine, freshwater, and terrestrial
	- Most are decomposers

Which combinations is correct regarding the above table?

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

12. Phloem tissue in Vascular plants

- (1) All cells are living.
 (2) All companion cells in phloem of plant involved in phloem loading.
 (3) No sieve cells in all vascular plants.
 (4) Substances flow from one sieve tube element to another sieve element through plasmodesmata
 (5) Sieve tube elements contain other subcellular components but no nucleus

13. Which of the following statements regarding the action of stomata in plant leaf is incorrect?

- (1) Regulation of diameter of stomata is done by changing the shape of guard cells.
 (2) Water potential gradient is important only in opening of stomata.
 (3) Opening of stomata is an active process.
 (4) Daily rhythm of opening and closing of stomata, controlled by internal clock in guard cells.
 (5) Curvature of the inner wall of the guard cells reduced by decreasing turgor due to exosmosis of guard cells.

14. You are provided a plant cell with -1.0 MPa solute potential, 2 MPa pressure potential, and Opened P, Q, R solutions with solute potentials as - 0.7 MPa, -1.5 MPa, and -1.0 MPa respectively.

Which of the following statements regarding the above data is correct?

- (1) P solution is hypertonic for the given cell.
 (2) Endosmosis takes place when the cell is immersed in the solution.
 (3) Pressure potential of the cell is 0.3 MPa when it is in equilibrium in P solution.
 (4) Pressure potential of the cell decreases when the cell at equilibrium in P solution is immersed in pure water.
 (5) The cell does exosmosis in the R solution.

15. The characteristics of the life cycle of plants given below,

- (A) Heterosporous, heterophyllous, microscopic gametophyte.
 (B) Dioecious, gametophyte, photosynthetic, dependent, gametophyte
 (C) Female gametophyte is in the matured ovule, bears archegonia.
 (D) Double fertilization, pollination, female gametophyte with one egg cell.
 (E) Pollination, flagellated sperm, production of seed.

Which of the above statements are correct regarding life cycle of cycas.

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

16. Which of the following statement regarding seed germination is incorrect?
- (1) Red and farred light increase percentage of seed germination.
 - (2) Elongation of hypocotyl slows during seed germination when a seedling breaks ground by blue light photoreceptors.
 - (3) Gibberelin stimulate seed germination as well as seed development.
 - (4) Absciscic acid inhibits early germination of seed.
 - (5) Gravitropism starts as soon as a seed germination take place.
17. Which of the following statement is correct regarding the tissue which involve in homeostasis in animals?
- (1) Functional and structural unit is neuron.
 - (2) the most abundant cell is neuron.
 - (3) Neuroglia participate to provide strength.
 - (4) Neurons are bundled together into nerve.
 - (5) Neuroglial cells can divide.
18. Which of the following statement regarding holozoic mode of nutrition in animal is incorrect?
- (1) There are different modes of nutrition in different animal species according to food and environment.
 - (2) The last two process of food processing occur after the food digestion.
 - (3) Absorption of digested nutrient products occurs actively and passively by animal cells.
 - (4) All steps in holozoic mode of nutrition in animals occur only in the alimentary canal.
 - (5) Defecation is not considered as excretion.
19. Which of the following statements regarding functions of components in a balanced diet is not true?
- (1) Facilitates protein sparing.
 - (2) Used for growth and repairing of body cells and tissues.
 - (3) Increasing fecal bulk, promotes constipation by inhibition of peristalsis.
 - (4) Maintains normal health and metabolism.
 - (5) Maintains osmolarity and acid-base equilibrium in blood.
20. Heart of fish
- (1) Have three chambers.
 - (2) Pumps oxygen rich blood.
 - (3) have no valves.
 - (4) Recive both oxygen rich blood and oxygen poor blood.
 - (5) locate ventrally.
21. A comparison between blood circulatory system and endocrine system in human is given below. Which of the following statements regarding the comparison given is true?

Blood Circulatory Systems	Endocrine Systems
(1) Have a heart to pump fluid.	(1) Have a heart to pump the fluid.
(2) Valves are in arteries	(2) Valves are not in lymph vessels
(3) Blood flows into heart and out of the heart	(3) Fluids flow only toward the heart
(4) have capillaries with blind end	(4) Posses small lymph capillaries
(5) Composition of circulatory fluid equal to composition of interstitial fluid	(5) Composition of circulatory fluid equal to composition of interstitial fluid

22. The few events that occur during a Cardiac cycles is given below

- (A) Atrial systole - Emptying, of the atrias
- (B) Atrial diastole - last 0.3 seconds
- (C) Ventricular systole - Atrio-ventricular and semi lunar valves open
- (D) Complete cordiac distole - Closing of semi lunar valves and opening of atrio - ventricular valves

Which of the above events combination is correct?

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

23. Which of the following statements regarding human respiration is correct?

- (1) No gas exchange through membranes at external respiration.
- (2) Normal inspiration and expiration are involuntary hence they are passive processes.
- (3) The air taken into the lungs during inspiration mix with residual volume.
- (4) Total volume of air taken into lungs at inspiration exchange at alveoli
- (5) The sensors in wall of carotid artery and aorta are sensitive to high CO_2 concentration in blood.

24. Consider the events given below

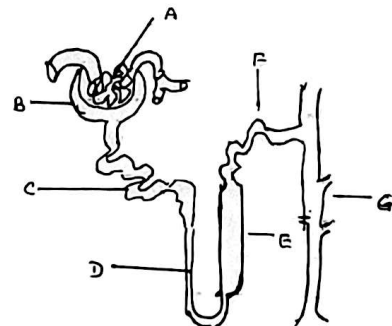
- (A) Increasing blood pressure - deposition of Low density Lipoprotein
- (B) Asbestosis - Pulmonary hypertension
- (C) Constriction of smooth muscle in wall of bronchioles - Asthma
- (D) Gastritis - Mental depression

Which combination of the above pairs are collaborate second for the first?

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

25. Which of the following is incorrect regarding the diagram given?

- (1) "A" is a capillary bed with pores.
- (2) The filtrate collect into the "B" has composition of blood plasma but no plasma protein.
- (3) "C" and "F" do secretion as well as reabsorption.
- (4) Water reabsorption take place via D and E.
- (5) Concentrated urine form when blood flow through "G"



26. Which of the following event not common for both cell mediated immunity response and fluid mediated immunity response?

- (1) Activation of immunity by lymphocytes.
- (2) Production of clones by Identifying antigen and sensitization.
- (3) Attacking to the infected cells.
- (4) Production of memory cells.
- (5) Production of effector cells for primary immune response.

27. Which of the following statement regarding the part of the human brain that locate cardiovascular centre is true?

- (1) Regulation of visual and auditory reflexes. (2) The lowest part of the brain stem.
- (3) Control sleep and wake cycle. (4) learning and remembering motor skills.
- (5) Important in regulation of body temperature.

28. Select the correct pathway of moving of pressure wave and nerve impulses for hearing

- (1) External auditory canal → tympanic membrane → malleus → stapes → incus → round window → perilymph in vestibular canal → temporal lobe → cochlear duct → auditory nerve → temporal lobe of the cerebrum → auditory nerve
- (2) External auditory canal → tympanic membrane → malleus → incus → stapes → Oval window → perilymph in vestibular canal → endolymph in cochlear duct → Organ of Corti → auditory nerve → temporal lobe of the cerebrum
- (3) External auditory canal → malleus → incus → stapes → round window → perilymph in vestibular canal → organs of corti → temporal lobe
- (4) External auditory canal → tympanic membrane → incus → oval window → endolymph in cochlear duct → organ of corti → auditory nerves → frontal lobe
- (5) Tympanic membrane → malleus → incus → perilymp in tympanic canal → organ of Corti → auditory nerve → temporal lobe

29. The series of events that occur from fertilization of egg of woman to implantation are given below

- (A) formation of morula as dense ball
- (B) Starting of division of zygote after 24 hours at fertilization
- (C) Connecting blastocyst to endometrium
- (D) Moving of cleavaging zygote towards the uterus via oviduct
- (E) Development of blastocyst

Select the correct order of above events

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

30. A symptom that exhibits through sexually transmitted disease is given below.

"Fallopian tubes in female filled with pus"

This disease.

- (1) Caused by *Treponema pallidum* bacteria
- (2) Caused by virus.
- (3) Ichy painful sores around genital area
- (4) may result in infertility.
- (5) May cause cancerous condition in lymph tissue

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

- (1) It consists only with long bones
- (2) All bones in this skeleton are in skull
- (3) Human pelvis form by articulating only of two pelvic bones
- (4) Ulna is the most lateral bone in lower arm.
- (5) Both Ulna and radius are parallel to each other at supination

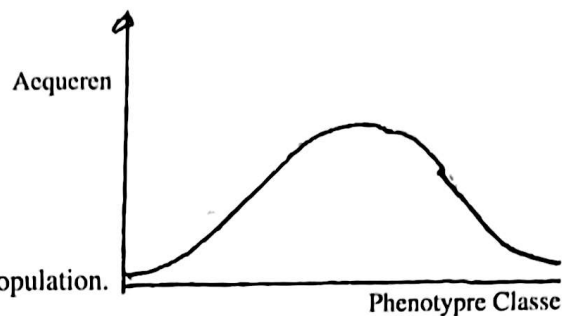
32. Which of the following statement regarding Striated muscle contraction is incorrect?

- (1) Describe by sliding filament theory.
- (2) Thick and thin filaments in every sarcomeres slides with each other.
- (3) Two groups of filaments in sarcomeres get short as sarcomeres shorten.
- (4) Head of the myosin release from the actin binding site when ATP binds with myosins head.
- (5) Ca^{+2} are important for opening of actin binding site for binding myosin head.

33. A living population exhibits distribution of phenotype for a certain character as given in the graph below

Which of the following statement regarding the above graph is true?

- (1) This trait follows Mendelian genetics.
- (2) More than two alleles involve for Phenotype.
- (3) A cumulative expression of two or more genes and a character is quantitative.
- (4) This kind of distribution is shown by widow's peak in human population.
- (5) This type of inheritance is in feather colours of fowls.



34. A, B, C and D are the dominant alleles of four genotypic characters and are segregated independently. These also contain recessive alleles as a, b, c and d. Select the probability of obtaining AABbCcDd, when plant that heterozygous for all these characters hybrid with plant of AaBBccDd.

- (1) 4/64
- (2) 2/256
- (3) 2/64
- (4) 1/256
- (5) 1/64

35. Which of the following statement regarding lagging strand and leading strand is incorrect?

- (1) Leading strand is continuous but lagging strand is discontinuous.
- (2) only one RNA primer contribute at leading strand. While more RNA primers are contribute in lagging strand.
- (3) Phosphodiester bonds forms at both lagging strand and leading strand.
- (4) Both strands forms 5' - 3' direction towards replication fork.
- (5) may need action of Exonuclease enzyme.

36. Which of the following statement is incorrect regarding mutations?

- (1) Gene mutations are small scale mutation.
- (2) Insertion and deletion may not always be a point mutation.
- (3) A mutation does not express always.
- (4) Sickle cell anemia is a chromosomal mutation.
- (5) Having one extra chromosome in a cell is polyploidy. It is a chromosomal mutation.

37. Which of the following statement is correct?

- (1) Annual rainfall in arctic tundra is higher than the alpine tundra.
- (2) Energy and material flow in an ecosystem is unidirectional.
- (3) Depth of the wetland at low tide should not be exceed 6m according to Ramsar protocol.
- (4) Number of living species and diversity of ecosystem include in biological diversity only.
- (5) Coral reef consider as rain forests in oceans because of diversity of organisms live in them.

38. The few statements regarding biodiversity conservation are given below

- A. Main purpose is sustainable survival of all living species.
- B. Basically a large enough population is establish in insitu conservation.
- C. In exsitu conservation ensured survival and reproduction of living species.
- D. Minneriya National Park is an exsitu conservation.
- E. Appropriate habitat space has to be ensured in exsitu conservation.

Which of the statements regarding above are correct?

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

39. Which of the following statement regarding activities of microorganisms is incorrect?
- (1) Retting - loosening fibres from woody stems
 - (2) Bio remediation - Removing of damages only occurred by environmental pollution
 - (3) Nitrification - Oxidizing of Nitrogen in Ammonium ion for producing nitrate
 - (4) Food intoxication - Entering of microorganisms into digestive tract by consuming spoiled food
 - (5) Microbial leaching- Extractions of some metals from ore
40. Which of the following statement regarding various vegetative propagation methods used in floriculture in Sri Lanka is incorrect?
- (1) Climbers are used in separation and division.
 - (2) Usage of cuttings is important method in cloning regeneration.
 - (3) *Sensavaria* can propagate by pieces of leaf.
 - (4) Budding can use in propagation of orchid.
 - (5) Layering can be done for *Hibiscus*.
- 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 Summary				
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 activity/activities need energy as ATP/GTP?
- (A) Calvin cycle in photosynthesis
 - (B) Glycolysis
 - (C) Electron transport chain in aerobic respiration
 - (D) Translation in polypeptide synthesis
 - (E) Light reaction in photosynthesis
42. Some characteristic features of kingdom animalia are given below
- (A) Triploblastic, Coelomate, possess radula
 - (B) Clitellum, setae, Parapodia
 - (C) No segmentation, Having closed circulatory system without hearts
 - (D) unisexual, show external fertilization, larva is bilaterally symmetrical
 - (E) Possession of endoskeleton, thin epidermis covers the body, no cephalization
- Which of the characteristic/s given above is/are shown by phylum echinodermata?

43. Which of the following statement/statements regarding ascent of sap is/are correct?
- (A) Occurs via positive pressure gradient.
 - (B) Energy in plant use for lifting of xylem sap.
 - (C) Transpiration pull can extend down to the root through unbroken chain of water.
 - (D) Create water potential gradient between the soil solution and atmosphere through the plant body.
 - (E) Xylem sap pull upwards by diffusion.

44. The following table show comparison between human hormone and functions of them.
Select the incompatible response/responses among them

Hormone	Functions
(A) GHIRH	Inhibitions of secretion of TSH
(B) Prolactin	Stimulating milk production
(C) Cortisole	Stimulating breakdown of Glycogen into glucose
(D) Progesterone	Maintaining corpus leuteum
(E) Inhibin	Inhibition of secretion of FSH

45. Which of the following statement/s regarding human skin is/are incorrect?
- (A) Production of vitamin D by sebaceous glands.
 - (B) The most deepest layer in dermis is germinative layer.
 - (C) Peripheral blood capillaries dialates when environmental temperature increses.
 - (D) Keratinized layer protect body from UV rays.
 - (E) Meisner corpuscles sensitive to light pressure.

46. Which of the follwing is/are correct regarding DNA finger printing?
- (A) Used in forensics.
 - (B) This is based on genetic variations in persons.
 - (C) At present speicfic sequences are probed by using a marked marker.
 - (D) It is advantageous having a large numbr of characterized STRs in a genome.
 - (E) A nucleotide sequence in DNA with gene called repeating unit is considred here.

47. Which of the following combination/combinations correctly matches global environmental issues and remedies for them?

- (A) Destification - poor land management
- (B) Depletion of ozone - Methane gas
- (C) increasing global temperature - increasing blak carbon in lower atmosphere
- (D) Acid rain - Relasing of oxides of Nitrogen by burning fossil fuel
- (E) Global temperature and changes - Over usage of production of agro chemicals.

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48. Which of the correct need/s and appropriae step/steps regarding preparation of microbial culture is/are?
- (A) Essential nutrients, appropriate moisture, and optimum pH value are essential.
 - (B) Sodium chloride should be added to the media that used for cultivating fungi.
 - (C) Sterilization of dense culture media is done by exposing them into open flame.
 - (D) Agar used as solidifying agent when preparation of dense culturre media.
 - (E) Nutrition agar used for making a bacteria culture.

49. The enzymes need for making complementary DNA libraries is/are.

- (A) Reverse transcriptase
- (B) DNA Polymerase
- (C) Helicase
- (D) Restriction endonuclease
- (E) Primase

50. Usage of stem cell is/are

- (A) To replenish bone marrow of patients with leukemia
- (B) repairing damaged heart muscles
- (C) for treating diseases such as AIDS
- (D) repairing damaged spinal neurons
- (E) for treating pneumonia

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Provincial Department of Education - NWP

13 ශ්‍රේණිය - තෙවන වාර පරීක්ෂණය - 2025
Third Term Test - Grade 13 - 2025

09 E II

ජීව විද්‍යාව II
Biology II

පැය තුනයි
Three Hours

අමතර කියවීමේ කාලය - මි. 10 යි
Additional Reading Time - 10 minutes

Name / Index No. :

Use Additional reading time to go through the question paper, select the questions and decide on the questions that you give priority in answering

- This question paper comprises part A and part B. The time allotted for both parts is three hours.
- **Part A (Structured Essay)**
 - Answer all questions in this paper.
 - Answer each question in the given space. Please note that the space provided is sufficient for answer and that 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 the answers to the parts A and B together so that part A is on top and hand them to the supervisor.
 - You are permitted to remove only parts B of the exam paper from the examination hall.

For examiner's use only

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

Total Marks

Part I	
Part II	
Total (In number)	
Total (In letters)	

Part A
Structured essay

- 01.A. (i) a. Write 2 instances where knowledge and application of biological concept is important in solving some legal issues
-
-
- b. Mention the bio-technological method which used in above type circumstances.
-
- (ii) a. What is expressed by base-pair rule.
-
-
- b. Mention a difference between DNA & RNA when pairing nitrogenous bases.
-
-
- (iii) Mention a subcellular component, without membrane & with nucleic acid which suspended in the cytosol of all living cells and write its function
- Subcellular component
- Function
- (iv) Write the steps of building the complex that initiates the function performed by the mentioned subcellular component
-
-
-
-
- (v) a. what is the organell that can be seen abundantly in secretory cells.
-
- b. What is the supporting structure of Eukaryotic cells.
-
- c. What are the main components, that make up it and mention a specific feature of it.
-

B. (i) a. What is the structure which formed by the cells produced outward to the apical meristem?

.....

b. State the growth substance functions in gravitotropism.

.....

c. Write the role of the above growth substance in the above effect.

.....

.....

.....

(ii) Mention the special advantage given by the below adaptations in phloem.

- cytoplasm reduced into a thin peripheral layer

.....

- Presence of sieve plate at the end walls between sieve tube elements

.....

(iii) a. What are the two types of lateral meristems in woody plants?

.....

b. What is known as Periderm?

.....

.....

(iv) State the venation types of monocot & dicot leaves.

.....

(v) Explain what is water potential.

.....

.....

C, (i) a. What is the process that removes water droplets from leaf tips or leaf margins of some herbaceous plants?

.....

b. Write 2 plants that can be seen above process:

.....

(ii) Complete the table:

Element	Forms of intake	Function
P		
N		

(iii) Mention 2 genus of plants which show fiddlehead young leaves:

.....

.....

(iv) a. Write 2 significance of cross-pollination:

.....
.....

b. Write 2 processes that occur in a seed during seed germination.

.....
.....

(v) Draw the structure of the female gametophyte & name the cells present in it.

03. A. (i) a. What are known as non-essential amino acids?

.....

b. Write 2 examples for non-essential amino acids.

.....

(ii) Mention the method of transporting given nutrients across the epithelium of small intestine.

Fructose

Amino Acid

Water

(iii) a. What are known as vitamins

.....
.....

b. Mention a mineral and a vitamin contained in tea:

mineral

vitamin

(iv) a. What are the components in the plasma which buffer the blood?

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

b. Name a substance which is widely used clinically as an anticoagulant.

.....

B. (i) a. Mention an antimicrobial protein which increases the inflammatory response.

.....

b. Explain the way of identifying an antigen by T cells and B cells.

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

(ii) a. What are known allergies?

.....
.....

b. Mention 2 common allergens.

.....

- (iii) a. What is the reason of considering the secretion as an essential process occurs in the formation of urine.

- b. Write one substance each that is actively and passively secreted in the distal convoluted tubule of the nephron.
 actively
 passively
- (iv) a. Name the efferent neurons of peripheral nervous system.

- b. State the reason of causing Alzheimer's disease.

- (v) a. Write two hormones that have opposing effects on blood calcium level.

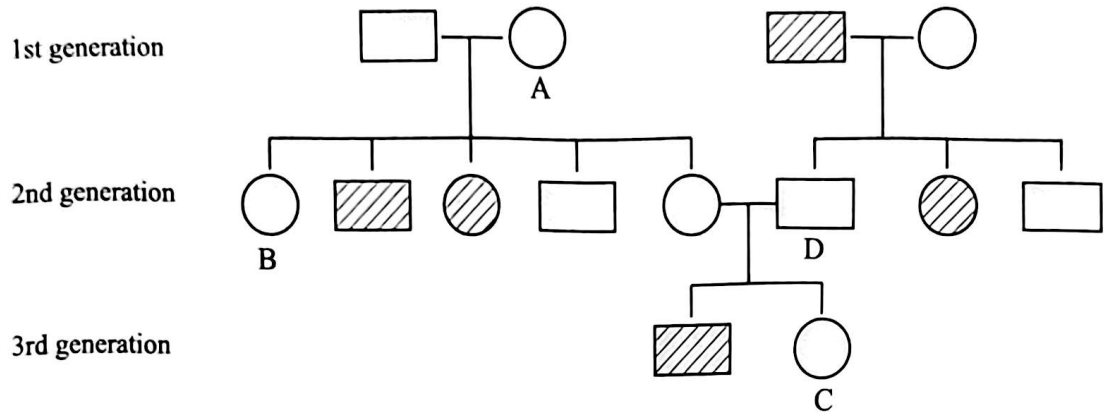
- b. What secretes the hCG hormone?

- C. (i) a. State the 2nd law of inheritance.

- b. Write 2 circumstances where the mendel's second law is applied today.

- (ii) A true breeding plant with purple petals and yellow round seeds was crossed with a plant with white petals and green wrinkled seeds.
 All F₁ plants were purple petals and yellow round seeds. Find the probability of exhibiting at least two recessive characters in the F₁ generations which obtain by the self pollination of F₁ plants.

- (iii) Given below is a pedigree chart showing the inheritance of attached ear lobes. Explain the genotypes of A, B, C, and D.



A

B

C

D

04. A. (i) State what is an eco-system

.....

.....

(ii) a. Name an animal group live in temperate grasslands.

.....

b. Write 3 broad categories, of wetlands that can be seen in Sri Lanka which fit into the Ramsar definition

.....

.....

.....

(iii) a. What is known as biological resources.

.....

.....

b. Write 3 environmental service value of biodiversity

.....

(iv) Name 2 plants that are threatened by over exploitation of humans:

.....

(v) a. What is known as global warming?

.....

.....

b. What is the most common greenhouse gas to contribute to global warming and climate change events?

.....

B. (i) State what are chromatin

.....
.....

(ii) Write one each of the stages in the cell cycle, when chromosome become condense and they become less condense.

.....
.....

(iii) a. What are known as benign tumor.

.....
.....

b. What is the beginning of tumor in a person

.....
.....

(iv) a. State the importance of ATP being a mobile molecule

.....
.....

b. In living cells energy in ATP is transformed into various energy forms, which are used for different function. According to that fill the blanks

Type of energy	Uses
1. Light	
2. Mechanical energy	

(v) a. What is known as action spectrum.

.....
.....

b. Write a conclusion that can be identified according to the action spectrum.

.....
.....

.....
.....

C (i) a. What is the harmful reaction.that occurs in chloroplast when light is present

.....
.....

b. What is the disadvantage of that reaction to those plants,

.....
.....

(ii) What does the induced fit mechanism confirm ?

.....
.....

(iii) a. Explain the respiratory substrate with 0.8 respiratory quotient enter the aerobic respiratory cycle.

.....
.....

b. Name the equipment and specimens used for the following laboratory experiments.

Photosynthetic rate

Respiratory rate

Stage of meiosis

(iv) a. What is known as inheritance of acquired characteristics.

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

b. What is known as a taxon

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

(v) a. State what is Morphological species concept

.....
.....

b. Some Archaea live in extreme environmental conditions. Give an example and write a benefit derived from them.

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

02. A, (i) a. What are the two parts use when writing a name according to the binomial nomenclature?

.....

b. Although the members of kingdom Plantae were evolved from green algae, some characteristics that members of plant life possess are not possessed by algae. List 3 of these characteristics.

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

(ii) State 2 different characteristics that can be seen in *Gelidium* and *Sargassum*

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

(iii) State a phyla of vascular plants that grow as an epiphyte and without seeds

.....

(iv) a. Why do sperm in seed plants not need motility?

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

b. What are the groups of plants which have sperm without flagella?

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

(v) Mention 4 characteristic features of phylum Anthophyta

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

Part B - Essay

Answer 4 questions only.

05. (a) Describe the levels of protein structures which play important roles in their functions.
(b) Briefly explain the protein digestion processes occur in the small intestine.
06. (a) Briefly explain the mechanism of phloem translocation .
(b) Describe the process of stomatal transpiration.
07. (a) Describe the structure of the cerebrum.
(b) Briefly explain the mechanism of transmission of nerve impulses through chemical synapses.
08. (a) Describe the location and structure of female ovary.
(b) Briefly explain the main steps in an urban water treatment plant.
09. (a) Describe the gene mutations, specifically in a single nucleotide pair substitution.
(b) Describe the structure of a sarcomere
10. Write short notes on following
a) - Hot - air sterilization
b) - Interbreeding
c) - warning signs of dengue.

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