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	අධ්යයන පොදු සහතික පතු (උසස් පෙළ) විභාගය, 2025			
	Exam Target Paper General Certificate of Education (Adv. Level), 2025			
	ලකුණු පීව විදහව I,II බා පා මිනිත්තු තිහයි.			
	Biology I,II UP E I,II Thirty Minutes			
	Biology I			
	• In each of the questions from 1 to 25 pick one of the alternative from (1), (2), (3), (4), (5), which is correct or most appropriate and mark your response on the answer sheet with a cross (x) on the number of correct or tion in correct on with the instruction.			
	number of correct option in accordance with the instructions.			
	1. Which is the following statement regarding the secondary tissue in a woody stem is correct?			
	 (1) Elongated initials of vascular cambium produce vascular rays. (2) Cork cambium breakdown after sometime a new cork cambium is initiated from its outside. 			
	 (3) Periderm is impermeable to water and gases. (4) Walls of spring wood vessels are thicker than those of summer wood vessels. 			
	(4) wans of spring wood vessels are there i than those of summer wood vessels. (5) Soft wood lacks tracheids			
	2 In which portion cork cambium originated in roots during secondary growth?			
	(1) Pericycle (2) Endodermis (3) Cortex (4) Secondary phloem (5) Primary phloem			
	3. <i>Tradescantia</i> epidermal peels are placed in sucrose solutions with different concen-			
	trations. Select the correct statement/statements regarding this experiment.			
	(1) upper epidermal peels of <i>Tradescantia</i> are placed in the above sucrose solution for 20 minutes.			
	(2) Solute potential of the tissue is calculated based on the solution that would give			
	50% plasmolysis. (3) When sucrose concentration increases more cells become turgid.			
	(4) Turgid, flaccid and incipient plasmolyzed cells can be observed under the micro-			
	scope. (5) There is a linear relationship between concentration of solutions and percen			
	of plasmolysis.			
	4. Which of the following statements is correct regarding water potential, solute poten-			
	tial and pressure potential?			
	 (1) Solute potential gets more negative value when more solutes are added. (2) Water potential is related to the kinetic energy of water molecules. 			
	(3) An increase in solute potential leads to a positive effect on water potential.			
	(4) Pressure potential gets a negative value in a living cell.(5) In a fully turgid cell, the pressure potential gets zero value.			
	5. At incipient plasmolysis, a plant cell.			
	(1) has a positive ψ_P (2) has a positive ψ_S (3) has equal values of ψ_W and ψ_S (4) has greater ψ_W than ψ_G (5) has equal values of ψ_B and ψ_W			
	Sampath LANKADHEERA -[1]- BIOLOGY			

2025	EXAM TARGET PAPER NO:	
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- 6. Two plant tissues of the same plant, are immersed in two solutions namely A and B of solute potential 1300 kPa and 1100 kPa, respectively. 50% of the cells immersed in solution A were at plasmolyzed state. What can be the pressure potential of the cells in solution B
 1. 200MPa
 2. 200kPa
 3. 2400kPa
 4. 0 kPa
 5. -2400kPa
- 7. Which of the following would happen when a turgid cell is placed in a solution which has a similar solute potential to the cell?
 - (1) Endosmosis until its water potential equals the water potential of the solution.
 - (2) Exosmosis until its water potential equals the water potential of the solution.(3) Exosmosis until plasmolysis.
 - (4) Endosmosis until its pressure potential and solute potential are at the same value.(5) Exosmosis until its pressure potential becomes zero.
- 8. Select the incorrect statement.
 - (1) Tidal volume in an adult human is about 500 ml.
 - (2) Vital capacity is equal in both male and female.

(3) Inspiratory capacity is the total volume of air that can be inspired after a tidal expiration.

(4) Residual volume is the volume of air that remains in the lungs even after forceful expiration.

(5) Functional residual capacity is the volume of air remaining in the lungs at the end of a tidal expiration.

- 9. Correct regarding regulation of ventilation in human lungs.
 - (1) Ventilation is an active process.
 - (2) Voluntary control of ventilation is regulated by the partial pressure of O2 and CO2 in the pulmonary artery.
 - (3) There is no influence in the ventilation due to temperature difference.
 - (4) Pons varolii consists of a normal respiratory rhythmicity center.
 - (5) Rate of respiration decreases with the fall of blood pH.

10. Select the correct statement regarding the breathing of a man

- (1) The fluid between the two pleural membranes plays a major role in breathing.
- (2) Since air flow against the pressure gradient inhalation is an active process.
- (3) Contraction of rib muscles contributes to exhalation.
- (4) Air is pushed into the lungs during deep inhalation.
- (5) The volume of the thoracic cavity reduces due to contraction of the diaphragm
- 11. Select the correct statement regarding the transportation of respiratory gases through blood

(1) The CO2 partial pressure is higher than O2 partial pressure in the blood coming from tissues.

- (2) Highest amount of CO2 is transported through red blood cells.
- (3) Oxygen is transported as carboxyhemoglobin.
- (4) O2 partial pressure of pulmonary artery is higher than CO2 partial pressure.

(5) High CO2 concentration is present in blood of pulmonary veins and superior vena cava.

(b) How epitopes are different from an antigen.

(iii) Circle and shoe epitope and a an antigen in following diagram.



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(iv) (a) Include following cells under cell mediated response and humoral immune response. Cytotoxic T cell, Memory B cell, Plasma cell Helper T cell,

(b) What are examples of antigen presenting cells

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(c) What are cell clones



- 1. Describe the mechanism of movement of water from soil solution to atmosphere through plant.
- 2. Describe briefly the role of T and B lymphocytes in acquired immunity.
- 3. Write short notes on followings
 - (a) Growth rings and annual rings
 - (b) Measure solute potential of Rhoeo (Tradescantia) lower epidermal peels
 - (c) Antibodies

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	(iii) State role of saliva in prevention of microbial growth.	2025 EXAM TARGET PAPER NO:		EXHILARATING EXPERIENCE IN BIOLOGY
		12. Which of the following (1) Gaseous exchange	g statements is correct regardir between blood and alveoli air	ng respiration in humans? takes place as facilitated diffu-
	(iv) State body fluids with lysozymes.	sion. (2) When the partial pr cules of oxygen will bi (3) HCO ₃ ⁻ formed by t	ressure of oxygen in inhaled ai nd with one erythrocyte. the dissociation of H_2CO_3 results in regulating breathing	ir is extremely high, four mole- ulting from dissolving CO_2 in
B.	(i) (a) State cell types involve in internal defense	(4) All the parts of the (5) Partial pressure of c that of blood reaching a	brain stem are involved in the oxygen in blood reaching glon alveolar capillaries.	regulation of respiration. nerular capillaries is higher than
	(b) State the larger and more potent phagocytotic cell.	 13. Select the correct states (1) The process starts v (2) Medulla sends signand decrease the depth (3) Increment of pH of (4) Increment of pH of 	ment regarding the process of vith the increment of blood pF als to the intercostal muscles a and rate of breathing. Cerebrospinal fluid is detected blood is detected by the sense	homeostatic control of breathing H value. and the diaphragm to contract d by the medulla.
	(ii) State how natural killer cell differ from other cells in internal defense.	(4) Increment of prior lungs. (5) The regulation of by pons.	reathing is also modulated by	additional neural circuits in the
	(iii) (a) What are different antimicrobial proteins of innate immunity.	 14. Which of the following (1) It is inherent. (2) Response depend of (3) Innate immunity is 	g is incorrect regarding innate n characters common to group non specific	immunity. os of pathogen
	(b) State the 2 differences in action of above mentioned antimicrobial proteins.	(4) Provide immediate (5) Innate immunity pr	but general protection resent in only invertebrates	
		15. Find correct relation be (A) Skin - Significant t (B) Ciliated mucous me tract	etween component and function to entrance of microbes membranes - Lines digestive tra	on of barrier defence act, urinary tract and reproductive
	(iv) State common action of Histamine and Cytokines.	(C) Secretions - Chemi (D) Lysosome - an enz tions (1) A, B and D (2) A,C	cal barrier to protect epithelia tyme present in tears, saliva, p C and D (3) B and C (4) B, C a	l lining erspiration and mucous secre- nd D (5) all incorrect
C.	(i) State characters of acquired immunity.	16. Find correct combination A—External defence B—Internal defence C—Adaptive immunity (1) A,Q,X (2) B,J	on P— Phagocytotic cells Q— Gastric Juice y R—T Lymphocytas P,Y (3) B,R,Z (4) C,	X– Destroy toxins Y—Kill Virus Z—Kill cells with antigen R, Y (5) B,Q,X
	(ii) (a) What are antigens	 17. The function of T and B (1) Their memory cells of (2) Their effector cells a (3) B lymphocyte secret (4) They are involved in (5) They both displace t 	I lymphocytes in adaptive imm cause primary immune respon are long-living te soluble form of antigen rece naturally acquired passive in to thymus gland	nune response ise eptor imunity
		SAMPATH LANKADHEERA	-[3]-	BIOLOGY



- (1) One involve in cell mediated response and other involve humoral response
- (2) One need antigen presentation and other does not
- (3) One has receptors similar to antibodies and other does not
- (4) One form in bone marrow and other form in thymus
- (5) One form cytotoxic T-Cells and other form plasma cell
- 20. Followings show chemical produce by components of immune system. Find incorrect combination
 - (1) Interferons Proteins secreted by virus infected body cells
 - (2) Histamine Released by mast cells
 - (3) Cytokinins Promote blood flow
 - (4) Lysozyme Destroy cell wall
 - (5) Antibodies Directly kill pathogens

For each of the questions 21 to 25, one or more of the responses is/are correct. Decide which response/responses is/are correct and then select the correct number.

which responses 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	
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)

2. A. (i) (a) What substances are recognized by body as foreign?

(b) What structures of immune cells bind to foreign agents

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(ii) Sate why innate immunity is considered as non specific.

(iii) following diagram damaged skin.



(i) (a) With a double bracket show barrier defense in above diagram.

(b) State how intact skin act as a good barrier defense.

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(b) What provides acidity to skin to prevent growth of bacteria.

(ii) State how coughing and sneezing helps external defense.



BIOLOGY

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2025 E>	KAM TARGET PAPER NO: EXHILARATING EXPERIENCE IN BIOLOGY	2025	EXAM TARGET PAPER NO:		EXHILARATING EXPERIENCE IN BIOLOGY
	(iv) Give the water potential equation	21.	Some of the plant cells are activity of vascular cambin A– Tracheids B– Comp E - Sieve cells	given below. Which of um? panion cells C– Cork c	T these cells is/ are produced by the ells D– Parenchyma cells
C.	(i) What is a respiratory cycle?	22.	Which of the following co	rrect regarding direction	n of water potential.
	(ii) (a) What is the main factor that controls breathing in man?		Ψp = 1ľ Ψs = -1	VIPa MPa	Ψp = 2MPa Ψs = -3MPa
	(b) Indicate the locations of chemoreceptors which are induced by the factor you				Ψp = 3MPa Ψs = -1MPa
	mentioned above	6	 (A) Water flow from P to R, P to Q, Q to R (B) All cells turgid at beginning (C) Equilibrium water potential in cells = 0.5 MPa 	Pa	
	(iii) (a) give three compounds present in cigarette smoke.		(D) Only one cell remain t (E) No water movement be	urgid at equilibrium etween P and Q at equil	ibrium
	(b) Indicate two effects of nicotine in human which found in cigarette smoke	23.	Select the correct compone A) Ciliated epithelium B)	ents for second line imm Sweat C) Interferon D)	nunity Neutrophiles E) Histamine
	(iv) Indicate the cellular types found in the human alveoli and give a major function of each type of cells. Type of cell Major function (v) What is functional residual capacity?	24.	Select the correct answer/s (A) Passive immunity can cipient naturally or artifici (B) Detection of nonself is (C) Antivenin is used in ar (D) Multiple sclerosis is an (E) Acidity in the gastric s Which of the following s tion? (A) WBCs enhance migra repair (B) Inflammatory response venting the spread to other (C) Heparin is an inflamm connective tissue at the site (D) Signs and symptoms o (E) Decreased permeabiliting ing of tissue fluid.	be developed as a result ally. accomplished by innate tificially acquired active acquired immune defice ecretions is the second b tatement/s is/are correct ation, destruction of int e attempts to destroy th tissues. natory signaling molect e of damage of inflammation are redrive ty of blood vessels trigge	t of transferring antibodies to a re- e immunity and adaptive immunity. e immunity. ciency disease. line defense. tt regarding the inflammatory reac- vading pathogens and aid in tissue e microbes at the site of injury pre- ule released from mast cells in the ness, heat, swelling and pain. gers localized swelling due to leak-
SAMPA	TH LANKADHEERA -[8]- BIOLOGY	SAM	IPATH LANKADHEERA	-[5]-	BIOLOGY

EXAM TARGET PAPER NO:	EXHILARATING EXPERIENCE IN E	3IOLOGY 202
	Structured Essay	1
А.		
P	× .0	H
X a	F	
1 5 10		
	A	
R	×.	
A.(i) Identify the structure sho	wn in the above diagram	
(ii) (a) Name the tissues labe	elled as P, Q, R and S in the above diagram.	
Р	Q	
R	S	
(b) How cork cambium form	ns in above structure in secondary growth?	
(iii) Draw a labelled diagram	n of the dicot stem at the beginning of secondary g	growth.
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AM TARGET PAPER NO: EXHILARATING EXPERIENCE IN BIOLOGY
(iv) Give the components of periderm that is found in a dicotyledonous plant after
the secondary growth
(i) Define the following terms of a cell.
(a) water potential
(b) Solute potential
(c) Pressure potential
(11) (a) what happens to water potential when solutes dissolve in water?
(b) what is the maximum value of pressure notential a plant cell can have?
(b) what is the maximum value of pressure potential a plant cent can have?
(iii) (a) what is plasmolysis?
(b) how much is the pressure potential of a plant cell at incipient plasmolysis?
(c) state whether the water potential is higher than, lower than or equal to solute
potential at incipient plasmolysis of a plant cell.

SAMPATH LANKADHEERA

BIOLOGY