(ii) (a) Give the locations of the sensors responsible for the control of respiratory process in human?

Sensors sensitive to blood CO2 levels:

……

Sensors sensitive to CO2 in CSF:

……

(iv) In breathing regulation,

(a) What increases the inspiration?

……

(b) What inhibits the inspiration?

……

(v) What is the reason for the reduction of gaseous exchange surface when smoking cigarette?

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Essay

1) Mention, how the primary monocot root structure differs from the primary structure of the dicot root.

2) i) Indicate the characters of a cambium and describe the processes of a cambial activity in a dicotyledonous stem during secondary growth.

3) i) Describe how the ventilation process take place in human lungs.
ii) Briefly describe how silica and asbestos affects lung health.

Exam Target Paper

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General Certificate of Education (Adv. Level), 2025

Paper No 08

ලකුණු				
	ජීව විද්‍යාව / Biology	I,II / I,II	09 E I,II	මිනිත්තු තිහයි. / 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 option in accordance with the instructions.**

1. Which of the following statements regarding the epidermis of plants is correct?
(1) It usually consists of several layers of cells. (2) It is a permanent tissue.
(3) Root hairs are multicellular projections of epidermal cells.
(4) Trichomes are specialized epidermal cells.
(5) Deposition of suberin in epidermal cells prevents water loss.

2. Which of the following statements about secondary growth in plants is incorrect?
(1) Secondary growth occurs in woody perennials, all gymnosperms, and many dicotyledonous plant species.
(2) In woody plants, primary and secondary growth occur simultaneously.
(3) Vascular rays are produced by elongated cells in the vascular cambium oriented parallel to the axis of the stem or root.
(4) Secondary growth over many years results in the deposition of secondary xylem layers.
(5) Lenticels are formed as horizontal cracks in the cork cells of the periderm.

3. Which one of the following cells do not found in the primary roots of plants.
(1) Meristematic cells. (2) Collenchyma Cells. (3) Storage Parenchyma cells.
(4) Suberinised cells walls. (5) Lignified cells walls.

4. Select the correct statement.
(1) Epidermis protects the internal structures only
(2) Endodermis contains inter cellular spaces. (3) Pericycle contain a single layer.
(4) In coconut root, pericyclic cells have meristematic function.
(5) Cuticle only present in shoot epidermis

5. Which is/are incorrect statements about structure of monocot stem.
(A) Cortex and pith are well differentiated. (B) Vascular bundles are arranged in several rings.
(C) No cambium in vascular, bundle.
(D) Monocot stem ground tissue is differentiated into pith and cortex
(E) Each vascular bundle is cells surrounded by sclerenchyma.
(1) A,B,E (2) A,B,D (3) A,B (4) B,C,D (5) A,B,E

6. Select the correct relationship
(1) Cortex of dicot stem - provide additional strength by sclerenchyma
(2) Cortex of dicot root - selective absorption of minerals
(3) Cortex of dicot stem - formation of vascular cambium
(4) Epidermis of dicot root - provide protection by cuticle
(5) Bundle sheath cells surrounding - carryout dark reaction of photosynthesis the vascular bundle of monocot stem

7. Which one of the following comparisons in between primary structure of a typical dicotyledonous root and primary structure of a typical monocotyledonous root is correct?

Dicotyledonous root	**Monocotyledonous root**
1) Vascular tissues arranged as a ring	Vascular tissues arranged as scattered
2) Casparian strip found in endodermis	Casparian strip do not found in endodermis
3) Endodermis found as a single layer inside of cortex	Pericycle found inside the cortex.
4) Xylem can be found in the cross section as a star shaped solid core.	Vascular tissue consists of a central core of parenchyma cells surround by a ring of vascular tissue.
5) Multicellular root hairs found in epidermis.	Unicellular root hairs arise from the cortex.

8. a. Secondary xylem. b. Cork cambium. c. Secondary phloem d. Cork e. Cortex.
Which of the above tissue/s make/s the periderm?
(1) only d (2) b and d (3) only b (4) b, d and e (5) a and c.

9. In which portion, the cork cambium originated in roots during secondary growth?
(1) Pericycle (2) Endodermis (3) Cortex (4) Secondary phloem (5) Primary phloem

10. Gaseous exchange takes place in woody stems,
(1) only with lenticels.(2) with lenticels and stomata. (3) only through cuticle.
(4) through both lenticels and cuticle. (5) only through epidermis.

11. Correct statement regarding secondary growth of stem or root.
(1) Vascular cambium is several cell layers in thickness.
(2) Medullary rays form from its initials which are oriented perpendicular with their long axis.
(3) In roots, cork cambium arises from the cortex.
(4) Cork cambium produces cork cells to the exterior, and to the interior.
(5) Cork cambium can be found permanently in the stem or root.

12. Which of the following statement is correct?
(1) only young secondary phloem involve in phloem translocation
(2) Soft wood consists of all living cells.
(3) Wood found in gymnosperms known as sap wood.
(4) Sap wood is more darker than that of heart wood.
(5) Secondary xylem of the plants are known as soft wood.

13. Select the correct invertebrate – respiratory structure combination
(1) scorpion – book lung (2) squid – external gills (3) earth worm – internal gills
(4) Echinodermata – tracheal system (5) spider – body covering

14. Four respiratory volumes of a resting person are as follows.
Inspiratory reserve volume = 2500 ml Tidal volume = 450 ml
Expiratory reserve volume = 1450 ml Residual volume = 1100 ml
Inspiratory capacity, functional residual capacity and vital capacity of this person in correct sequence are
(1) 2950 ml, 2550 ml and 4400 ml. (2) 1900 ml, 1550 ml and 5050 ml.
(3) 2950 ml, 1900 ml and 4400 ml. (4) 2550 ml, 3950 ml and 5050 ml.
(5) 2950 ml, 2550 ml and 5500 ml.

2. (A) (i) What is a respiratory surface?

……

……

(b) State 2 characteristics that effective respiratory surfaces of animals should have other than a large surface area

……

……

(ii) (a) Name one respiratory surface common to both vertebrates and invertebrates.

……

(b) what is the respiratory surface of the following organisms?

a. garden snail : ……

b. star fish : ……

c. scorpion : ……

(iii) name the cells that make the alveoli of the human lungs

…… ……

(iv) (a) What is tidal volume?

……

……

(b) What is residual volume?

……

……

(c) What is vital capacity? And what is its volume of a normal healthy adult man?

……

……

(iv) What is known as anatomical dead space? And what is the volume of the anatomical dead space of a normal healthy adult person?

……

……

(v) Indicate one respiratory function of trachea

……

B. (i) Explain why expiration is a passive process.

……

……

……

……

ii) Name the plant genera which showing secondary thickenings/secondary growth

……

iii) What are the lateral meristems involved in secondary growth? And indicate two effects of each lateral meristem.

....

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....

.....

iv) How vascular bundle of dicotyledonous plant stem differ from vascular bundle of monocotyledonous.

.....

.....

v) Draw labelled diagram of T.S of primary structure dicototyledonouns plant stem.

C) i) a) What is meant by bark

……

b) What are the tissues included in the bark?

……

iii) Indicate the cell type that are produced by short initials of the vascular cambium and give one function of each those cells.

.....

.....

iv) What is indeterminate growth in plants?

.....

.....

15. In which of the following, is (ii) caused by (i) during the homeostatic control of breathing of man?
A: (i) Carbon dioxide level in tissues increases.
(ii) Blood pH decreases.
B : (i) Medulla oblongata increase breathing rate.
(ii) Blood O_2 level change slightly.
C : (i) Sensors in aorta detects high concentration of carbon dioxide in blood.
(ii) Medulla oblongata receives signals from aorta.
(1) In A only (2) In A and B only (3) In A and C only. (4) In B and C only. (5) In A, B and C

16. Important for continuous exchange of gas in the alveoli and to prevent the collapse of the alveoli during expiration.
(1) functional residual capacity (2) vital capacity (3) inspiratory capacity
(4) inspiratory reserve volume (5) expiratory reserve volume

17. This question is based on the following.

(A)	(i) Air pushed in to lungs	(ii) Rib muscle and diaphragm contracts
(B)	(i) Mucus swallowed in to the esophagus	(ii) Beating of cilia moves mucus in the trachea towards pharynx.
(C)	(i) Air pushed into the respiratory passage	(ii) Pressure decreases in to the thoracic cavity.
(D)	(i) Diaphragm gets dome shape	(ii) Diaphragm contracts.

In which of the above pair, does the (ii) contribute to the (i)?
(1) A and D. (2) A and C. (3) B and C. (4) B and D. (5) C and D.

18. During the inspiratory process in human,
(1) internal inter costal muscles contracts (2) volume of the thoracic cavity decreases
(3) pressure in between plural cavity increases (4) air exhaust from lungs
(5) diaphragm gets flattened

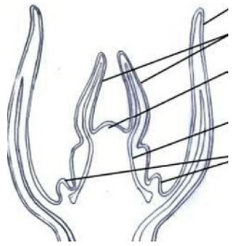
19. The following parts are related to the ventilation process in human.
A. Medulla oblongata center B. Receptors on major blood vessels.
C. Pons varolii center D. Stretch receptors of lungs
Which of the above are responsible to detect CO_2 level?
(1) A and C (2) A and B (3) A and D (4) C and D (5) A, B and C

20. Which of the following statement is correct regarding respiration in human?
(1) During inspiration diaphragm constricts and become convex.
(2) CO_2 produced in tissues is mainly transported as carboxy-haemoglobin.
(3) Internal respiration takes place between respiratory surface and alveolar air.
(4) Vital capacity of the male lungs is approximately 3.5 dm^{-3}.
(5) Anatomical death space volume never contributes for gas exchange

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.
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)

21. During the primary growth of roots,
(A) root apical meristem produces new cells to both sides.
(B) the cells produced outward by the root apical meristem form root cap.
(C) vascular tissues are produced by vascular cambium.
(D) some cells produced outward by the root apical meristem elongate and push the root through soil.
(E) epidermis splits due to being pushed outward.

22. Which of the flowing is correct regarding the diagram shown blow.



(A) Structure involves only in primary growth
(B) Includes both meristems and permanent tissues
(C) Bear lateral meristems
(D) Dome shaped mass of dividing cells present
(E) Cells produced outwards undergo elongation and differentiation

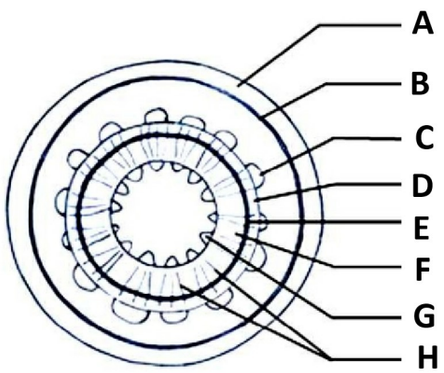
23. Correct statement regarding the structure and function of the human respiratory system
(A) vocal cord produces sound when inspired air rushes across the vocal cord.
(B) mucus escalator is the removal of mucus towards the pharynx.
(C) parietal pleura adheres the outer surface of the lungs.
(D) larynx and trachea strengthened by elastic bands of muscles.
(E) During swallowing larynx move upward which allows the glottis close the opening of epi-glottis

24. Smoking
(A) stimulates the secretion of mucus by goblet cells in the respiratory tract.
(B) causes tuberculosis and asthma. (C) decreases the oxygen transport in blood.
(D) inhibits the action of cilia in the respiratory tract. (E) reduces heartbeat.

25. Select the features that can be seen in the tissues of the respiratory system of man.
(A) Single layer of platelike cells (B) Single layer of cells of different heights
(C) Single layer of dice shaped cells (D) Matrix with chondroitin sulphate
(E) Single layer of brick shaped cells

Structured Essay

1) A)



i) a. Identify the above diagram.

.....

(b) Name A to H in the above diagram.

A. ..... B. .....

C. ..... D. .....

E. ..... F. .....

G. ..... H. .....

ii) (a) Give the exact location of E.

.....

(b) How B is originated?

.....

iii) State one function of each of the following plant tissues

(a) Vascular cambium:

……

……

(b) Cork cambium:

……

……...

iv) What are known as hard wood and soft wood?

(a) Hard wood :

……

……

(b) Soft wood:

……

……

v) (a) What is known as heart wood?

……

……

……

……...

(b) What is sap wood?

……

……

……

B) i) What is known as secondary growth in plants?

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