

BIOLOGY EXERCISE ON PLANT STRUCTURE (ROOTS, STEMS AND LEAVES)**Section A****MARKING GUIDE**

1	A	6	D	11	A	16	D	21	A	26	A
2	B	7	D	12	B	17	C	22	D	27	A
3	A	8	A	13	A	18	D	23		28	D
4	D	9	C	14	B	19	A	24		29	B
5	A	10	C	15	B	20	C	25	C	30	A

1. The figure below is plant leaf. What is it modified for?

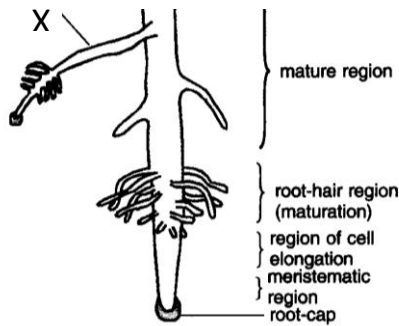


- A. Vegetative propagation
 - B. Climbing
 - C. Support
 - D. Photosynthesis
2. An underground short condensed stem having outer dry scale leaves and some inner thick fleshy leaves is
- A. Stolon
 - B. Bulb
 - C. Rhizome
 - D. sucker
3. Which one of the following plant organs is responsible for process of photosynthesis
- A. Leaves

- B. Stems
 - C. Roots
 - D. flowers
4. Which part of the plant carries out the function of absorbing water for the plant
- A. Stems
 - B. Leaves
 - C. seeds
 - D. Roots
5. The part of the stem responsible for strengthening it is
- A. Collenchyma
 - B. Parenchyma
 - C. Phloem
 - D. Lenticels
6. Which one of the following is not an underground stem
- A. Rhizome
 - B. bulb
 - C. corm
 - D. sucker
7. Which one of the following is not a characteristic of stems
- A. Have nodes
 - B. Have internodes
 - C. Have veins
 - D. Have root hairs
8. The part of the stem between two nodes is called
- A. Internode
 - B. Axil
 - C. stolon
 - D. Axillary
9. Which of the following is not part of the shoot system
- A. Nodes
 - B. stem
 - C. root hair
 - D. Axil
10. Which of the following is not a characteristic of a plant stem
- A. Possession of internodes
 - B. Possession of nodes
 - C. Possession of prop roots
 - D. Possession of leaves
11. The role of phloem in plant stem is to?
- A. Transportation of food substance from leaves to other parts of the plant
 - B. Transportation of water and mineral salts from leaves to other parts of the plant
 - C. Transportation of food and mineral salts from leaves to other parts of the plant

- D. Transportation of mineral salts and water from roots to other parts of the plant
12. The role of root hairs in roots is to;
- Give support to the plant
 - Absorb water and mineral salts from the soil
 - Absorb food substances which are essential for the plant
 - Carry out photosynthesis so that plants get own food
13. Which of the following parts of the plant is used to manufacture food
- Leaves
 - roots
 - fruits
 - flowers
14. The part of the cassava modified for food storage is?
- Stem
 - Root
 - Fruit
 - Foliage

15. The part labeled X in the figure below is?



- Main root
 - Lateral root
 - Axillary root
 - Prop root
16. Which of the following plants contains modified leaves
- Cassava
 - sweet potato
 - irish potato
 - onions
17. Which of the following parts of a carrot is modified for storing food
- Stem
 - Leaf
 - root
 - None of these
18. Which of the following is not a modification for leaves to carry out an usual function?

- A. Buds for vegetative propagation
- B. Turned into leaf tendrils for support
- C. Turned into prickles and spines for defence
- D. Possesses chloroplasts for photosynthesis

19. Which one of the following is a modified taproot?

- A. carrot tuber
- B. onion bulb
- C. cassava tuber
- D. sweet potato tuber

20. Which of the following are NOT characteristic stem features found in rhizomes

- A. Scale leaves
- B. Buds
- C. Tap roots
- D. Adventitious roots

21. The type of roots shown in the figure below is



- A. Breathing roots
- B. Clasping roots
- C. Prop roots
- D. Buttress root

22. The tissue responsible for conducting water to the leaves from the roots is.....

- A. Parenchyma
- B. Cortex
- C. Phloem
- D. Xylem

25. Which part of the bulb stores food?

- A. Underground roots
- B. Underground stem
- C. Leaves
- D. Aerial stem

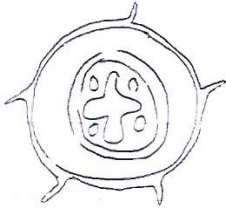
26. Which one of the following flowering plants has tendrils?

- A. Pumpkin
- B. Cassava
- C. Maize
- D. Cassia

27. Which one of the following plants has leaves modified as spines?

- A. Cactus
- B. Bongainvella
- C. Passionfruit
- D. Onion

28. Which part of a flowering plant is represented by the figure below?

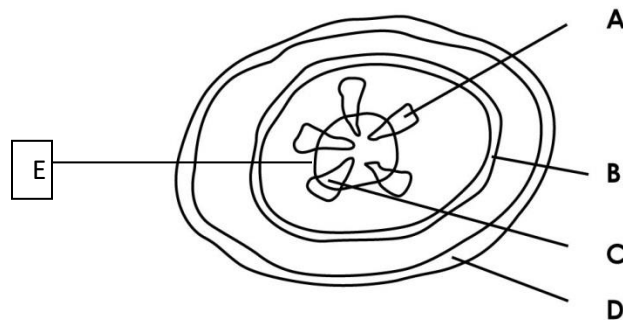


- A. Monocotyledonous stem
- B. Dicotyledonous
- C. Monocotyledonous root
- D. Dicotyledonous root

29. Which part of the stem is responsible for secondary growth
- Xylem
 - Cambium
 - Pericycle
 - Cortex
30. The cells in the leaf with the highest number of chloroplasts is?
- Palisade layer cells
 - Spongy mesophyll cells
 - Lower epidermal cell
 - Guard cells

Section B

31. (a) name the parts labeled in the figure below (5 marks)



- Phloem*
- Pericycle*
- Xylem*
- Epidermis*
- Cambium*

- b) State the functions of the parts labeled (4 marks)

- Phloem transports manufactured food from the leaves to other parts of the plant*
- transports water and mineral salts from the roots to other parts of the plant*
- For secondary growth in plants*
- Protects the internal parts of the plant*

- c) State the possible part of the plant from which the figure above was extracted from (1 mark)

stem

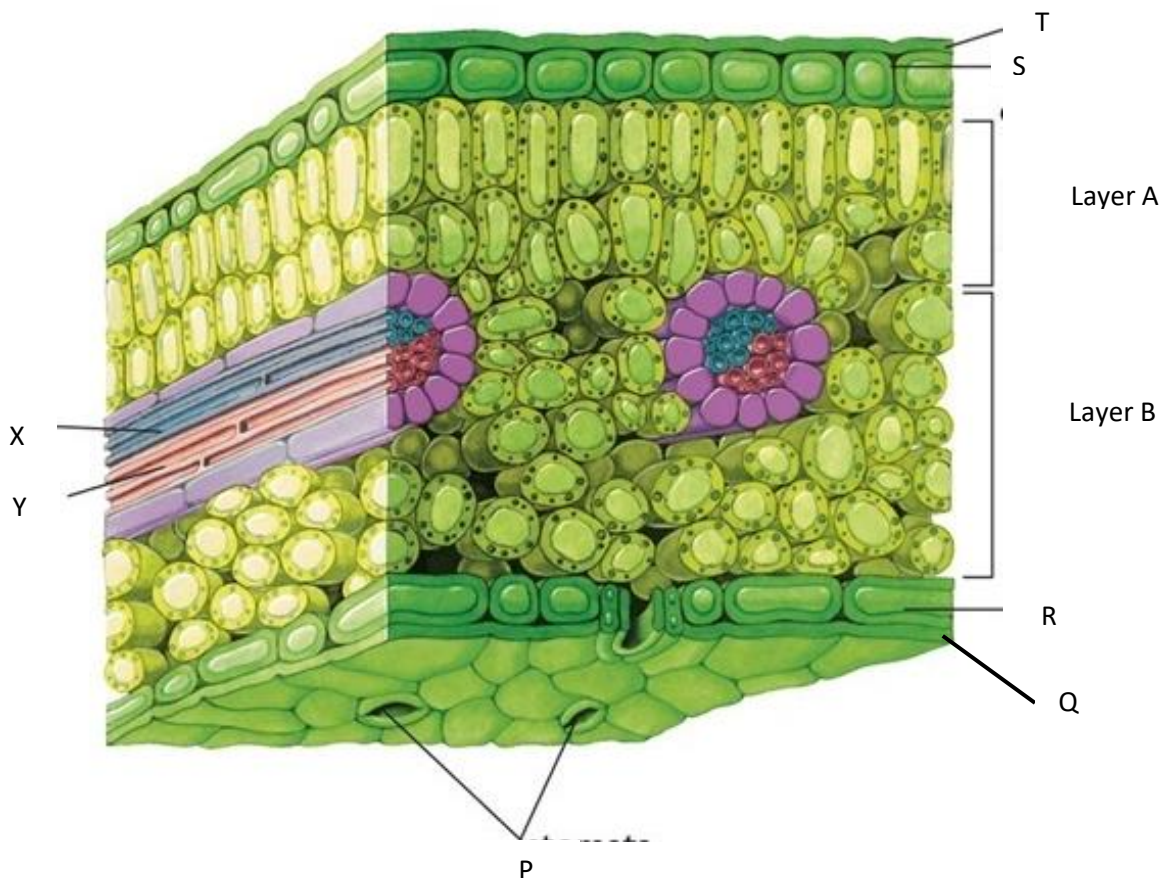
d) Give any three functions of roots to plants (3 marks)

- 1) *They hold the plant firmly in the soil*
 - 2) *They absorb water and mineral salts for the plant from the soil.*
 - 3) *They conduct the absorbed water and mineral salts up to the stem.*
- Others are*
- 4) *In some plants roots are modified into root tubers which store food e.g. cassava, carrot sweet potato.*
 - 5) *Some roots are modified for breathing e.g. white mangrove.*

(e) Give any three modifications of plant roots stating what they are modified for (6 marks)

- a) **Stilt root.** Stilt roots provide additional support to the plant.*
- b) **Buttress roots.** They provide extra support to the plant by anchoring it firmly in the soil.*
- c) **Clasping roots.** The roots enable the plant to cling onto another plant for support.*
- d) **Prop roots.** They provides extra support to the plant. They are found growing in plants such as maize, sorghum, sugar cane etc.*
- e) **Epiphytic roots** they absorb moisture from the atmosphere.*
An epiphyte is a plant that grows and gains support from other plants.
- f) **Sucking roots.** They grow from a stem and then penetrate the host plant. The roots then absorb water, mineral salts and food substance from the host plant*

32. The figure below is an internal structure of a leaf,



(a) Parts X and Y are vascular bundles, Name them (2 marks)

X. Xylem

Y. Phloem

(b) What function is performed by each of the parts labelled (2 marks)

X. Transports water to the different parts of the leaf

Y. Transports manufactured food from the leaf to other parts of the plant

(c) Name the parts (5 marks)

P. Stomata

Q. cuticle

R. Lower epidermal cell

S. Upper epidermal cell

T. cuticle

(d) What functions are performed by the parts labelled (2 marks)



P. Allows movement of gases in and out of the leaf

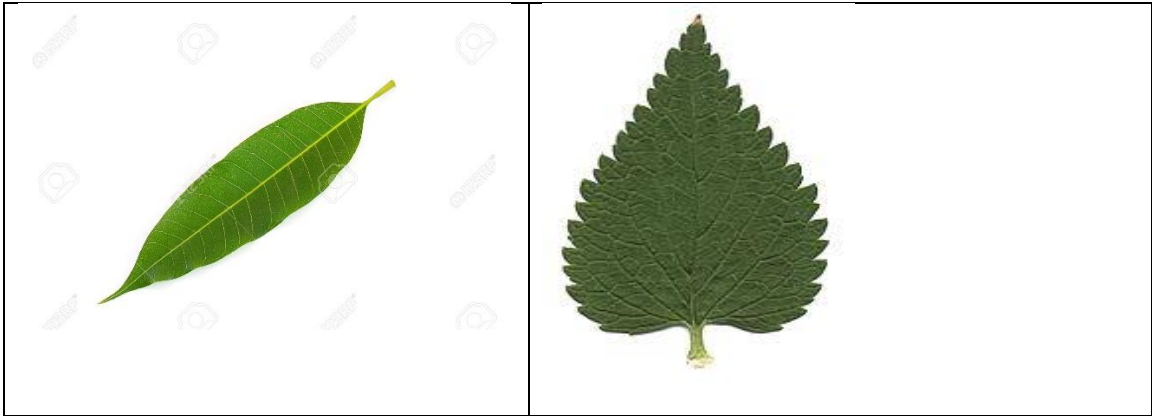
T. Protects the internal parts of the leaf from damage and bacterial invasion; it also prevents the loss of water from the leaf.

(e) Give any four observable differences between layer A and layer B (4 marks)

Layer A	Layer B
<i>Regular shape of cells</i>	<i>Irregular shape of cells</i>
<i>Has many chloroplasts</i>	<i>Has few chloroplasts</i>
<i>Has no air spaces</i>	<i>Has air spaces</i>
<i>Cells are packed</i>	<i>Cells less packed</i>

(f) You are provided with the leaves below

A	B
	
C	D



Fill the table below stating the observable characteristics of the leaves A, B, C and D (12 marks)

	A	B	C	D
Venation	Parallel	Network	Network	Network
Number of leaflets	1	3	1	1
Margin	Entire	Entire	Entire	Serrated

(g) Construct a dichotomous Key to represent the leaves A, B, C and D using the features in the table above (3 marks)

1(a) Leaves with network venation.....go to 2

1(b) leaf with parallel venation.....A

2(a) Leaf with three leaflets.....B

2(b) Leaves with one leaflet.....go to 3

3(a) leaf with entire margin.....C

3(b) leaf with serrated margin.....D