

INDIAN SCHOOL AL WADI AL KABIR



DEPARTMENT OF SCIENCE (2023 –2024)

CLASS: XI	SUBJECT: BIOLOGY	DATE OF COMPLETION: 14/02/2024
WORKSHEET WITH ANSWERS	TOPIC: PLANT GROWTH AND DEVELOPMENT	NOTE: A4 FILE FORMAT
CLASS & SEC:	NAME OF THE STUDENT:	ROLL NO.

1Mark Questions

1. Coconut milk contains a cytokinin called _____ which promotes plant growth.

1. Naphthalene acetic acid
2. Indole-3-acetic acid
3. Gelatin
4. Zeatin

2. One of the following is not an auxin

1. Indole-3-acetic acid
2. Malic Hydrazide
3. Indole butyric acid
4. Naphthalene acetic acid

3. _____ can stimulate the germination of barley seeds

1. α -amylase
2. Abscisic acid
3. Benzoic acid

4. Coumarin

4. Seed dormancy is triggered by

1. Indole-3-ethanol
2. Abscisic acid
3. Carbon dioxide
4. None of the above

5. The significance of the day length in plants was first shown in:

1. Barley
2. Lettuce
3. Tobacco
4. Tomato

II : Assertion and reasoning:

a) Assertion and Reason are true and Reason is the correct explanation of the Assertion.

b) Assertion and Reason are true but Reason is not a correct explanation of the Assertion.

c) Assertion is true but the Reason is false.

d) Assertion and Reason are false.

Q6. Assertion: Both at the root apex and the shoot apex, the constantly dividing cells show the meristematic phase of growth.

Reason: The cells of this region are rich in protoplasm and lack nuclei.

Q7. Assertion: Primary growth of the plants leads to the elongation of the plants along their axis.

Reason: Root apical meristem and shoot apical meristem are responsible for primary growth of the plants.

Q8. Assertion: Sigmoid growth curve consists of four parts.

Reason: Lag phase is also known as grand phase of growth.

Q9. Assertion: Due to environment, the difference in shapes of leaves produced in air and those produced in water in buttercup represent the heterophyllous development.

Reason: The phenomenon of heterophylly is an example of plasticity.

Q10. Assertion: Apical dominance is increased by removal of shoot tip.

Reason: Due to accumulation of auxin in lateral parts, growth is inhibited.

2Mark Questions

Q11. List out the Factors Affecting Plant Growth?

Q12. What is Differentiation?

Q13. What is Cell Maturation?

Q14. What is Cell Enlargement?

3Mark Questions

Q15. What are Plant growth regulators?

Q16. Which plant hormone is used to manipulate and stimulate the maturation of sugarcane crop?

Q17. What are the functions of Auxins in plant growth?

4Mark Questions

Q18. CASE STUDY QUESTIONS

Plants show another interesting phenomenon. The living differentiated cells that by now have lost the capacity to divide can regain the capacity of division under certain conditions. This phenomenon is termed as dedifferentiation. For example, formation of meristems – interfascicular cambium and cork cambium from fully differentiated parenchyma cells. While doing so, such meristems/tissues are able to divide and produce cells that once again lose the capacity to divide but mature to perform specific functions, i.e., get redifferentiated. List some of the tissues in a woody dicotyledenous plant that are the products of redifferentiation.

Development is a term that includes all changes that an organism goes through during its life cycle from germination of the seed to senescence. Plants follow different pathways in response to environment or phases of life to form different kinds of structures. This ability is called plasticity, e.g., heterophylly in cotton, coriander and larkspur. In such plants, the leaves of the juvenile plant are different in shape from those in mature plants. On the other hand, difference in

shapes of leaves produced in air and those produced in water in buttercup also represent the heterophyllous development due to environment. This phenomenon of heterophylly is an example of plasticity.

Development is considered as the sum of growth and differentiation. Development in plants is under the control of intrinsic and extrinsic factors. The former includes both intracellular (genetic) or intercellular factors (chemicals such as plant growth regulators) while the latter includes light, temperature, water, oxygen, nutrition, etc.

1.) The time differentiated cells have lost the capacity to divide, such cell regain the capacity of division under certain conditions, such phenomenon is termed as

- a) Differentiation
- b) Dedifferentiation
- c) Redifferentiation
- d) None of the above

2.) Cell produced after dedifferentiation that cell once again lose the capacity to divide but mature enough to perform certain functions are termed as

- a) Dedifferentiation
- b) Dedifferentiation
- c) Redifferentiation
- d) None of the above

3.) Give the examples of plant which shows heterophylly phenomenon.

4.) Name the factors that can affect the development of plants and animals.

5Mark Questions

Q19. Winter varieties, when planted in spring, do not produce flowers or mature grains within the span of a flowering season. Explain.

Q20. List a hormone that:

- a) Is in nature, gaseous.
- b) Is in charge of phototropism.
- c) Influences femaleness in cucumber flowers.
- d) Is utilized to kill weeds(dicots).
- e) In long-day plants, induces flowering.

ANSWER KEY

1. 4
2. 2
3. 1
4. 2
5. 3
6. c
7. a
8. c
9. b
10. d

11. The important factors affecting the growth of plants include:

Temperature.

Light.

Water.

Soil Nutrients.

Plant Growth Regulators.

12. Differentiation is defined as the process in which a cell changes from one cell type to another.

13. Maturation is defined as the process of enlarging cells, which acquire a definite shape to achieve their specific functions.

14. Enlargement is defined as the process in which the size of the cells, tissues and organs increases by the formation of protoplasm, absorption of water, developing vacuoles, and addition of cell walls to make it thicker and permanent.

15. Plant growth regulators also referred to as phytohormones or plant hormones. They are a group of organic compounds, which functions by controlling and modifying the physiological processes like the growth, development, and movement of plants.

16. Ethylene, the ripening hormone in plants helps in maturation of sugarcane crops by increasing the storage of sucrose in plants.

17. Auxins are one of the most important plant hormones. These plant hormones are generally produced at the tips of stems and roots. In all vascular plants, auxins play a vital role in:

Cell division.

Plant propagation.

Promoting flowering in plants.
Initiation of roots and stem cuttings.
Prevent premature dropping of fruits and leaves.

18. 1.) b

2.) c

3.) Plants like cotton, coriander and larkspur are the examples of plasticity, which shows heterophylly phenomenon.

4.) Development in plants is controlled by intrinsic and extrinsic factors. The intrinsic factor includes both intracellular (genetic) or intercellular factors (chemicals such as plant growth regulators). The extrinsic factors includes light, temperature, water, oxygen, nutrition, etc.

19. In some plants, flowering is either qualitatively or quantitatively reliant on subjection to lower temperatures, the process is referred to as vernalization. This limits advanced reproductive development rate in maturing season thereby allowing them to have enough time to gain maturity. Vernalisation promotes flowering by a span of low temperatures. Some plants like wheat, barley have two types of varieties – spring and winter varieties. The spring variety is planted in the spring and flowers, producing grains towards the termination of the growing season. While the winter varieties, when planted in spring fail to flower or generate mature grains within the flowering season, this is why they are planted in autumn. Over winter, they germinate and turn out as small seedlings, restarting development in the spring and are gathered in mid-summer.

20. a) Ethylene(C_2H_4)

b) Auxin.

c) Ethylene(C_2H_4).

d) Auxin.

e) Gibberellin.

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