

Plant Growth and Development

I. Select the correct answer from the following questions:

Question 1.

Three important growth promotor hormones in plants are

- (a) Auxins, gibberellins and ethylene
- (b) Auxins, gibberellins and cytokinins
- (c) Ethylene, abscisic acid and cytokinins
- (d) Gibberellins, cytokinins and abscisic acid

▼ Answer

Answer: (b) Auxins, gibberellins and cytokinins

Question 2.

First hormone isolated from human urine suffering from pellagra disease was

- (a) Gibberellins
- (b) Auxins
- (c) Cytokinins
- (d) Abscisic acid

▼ Answer

Answer: (b) Auxins

Question 3.

Indole 3 acetic acid (IAA) is a naturally occurring plant hormone called

- (a) Gibberellins
- (b) Auxins
- (c) Cytokinins
- (d) Abscisic acid

▼ Answer

Answer: (b) Auxins

Question 4.

Auxins hormone was first discovered by

- (a) Kogletal
- (b) Went
- (c) Darwin
- (d) Boysen Jenson

▼ Answer

Answer: (b) Went

Question 5.

Auxin is synthesised in the apical meristems from amino acid

- (a) Isoleucine
- (b) Methionine
- (c) Niacin
- (d) Tryptophan

▼ Answer

Answer: (d) Tryptophan

Question 6.

Growth regulator which is known to promote cell division in vascular cambium is

- (a) IAA
- (b) ABA
- (c) Cytokinins
- (d) Ethylene

▼ Answer

Answer: (a) IAA

Question 7.

Growth regulator which is known to induce parthenocarpy in plants is called

- (a) Gibberellins
- (b) ABA

- (c) Ethylene
- (d) Cytokinins

▼ Answer

Answer: (a) Gibberellins

Question 8.

The formation of seedless fruits without the act of fertilization is known as

- (a) Parthenocarpy
- (b) Pseudocarpy
- (c) Apomixis
- (d) Parthenogenesis

▼ Answer

Answer: (a) Parthenocarpy.

Question 9.

The major sites of gibberellin production in plants are

- (a) Embryos
- (b) Roots
- (c) Young leaves
- (d) All of these

▼ Answer

Answer: (d) All of these

Question 10.

Gibberellin was isolated in pure form by

- (a) Brian et al
- (b) Went
- (c) Yabuta
- (d) Kurosava

▼ Answer

Answer: (a) Brian et al

Question 11.

Internodal elongation of genetically dwarf plants is known as

- (a) Bolting
- (b) Elongation
- (c) Etiolation
- (d) None of these

▼ Answer

Answer: (a) Bolting

Question 12.

Cytokinins are in nature

- (a) Acidic
- (b) Neutral
- (c) Basic
- (d) All of these

▼ Answer

Answer: (c) Basic

Question 13.

Cytokinins help in promoting

- (a) Cell division
- (b) Stem elongation
- (c) Cell enlargement
- (d) Parthenocarpy

▼ Answer

Answer: (a) Cell division

Question 14.

The first natural cytokinins obtained from unripe maize grains is known as

- (a) Indole 3-acetic acid
- (b) ABA
- (c) Zeatin
- (d) Kinetin

▼ Answer

Answer: (c) Zeatin

Question 15.

Two important growth inhibitors in plants are

- (a) Ethylene and abscisic acid
- (b) Auxins and abscisic acid
- (c) Gibberellins and abscisic acid
- (d) Cytokinins and ethylene

▼ Answer

Answer: (a) Ethylene and abscisic acid

Question 16.

Name the plant hormone which hastens ripening of fruits and colour development is citrus, apple, mango, banana, etc.

- (a) Gibberellin
- (b) Ethylene
- (c) ABA
- (d) IAA

▼ Answer

Answer: (b) Ethylene

Question 17.

Absciscic acid (ABA) was first isolated from cotton balls by

- (a) Addicot et al
- (b) Letham et al
- (c) Brian et al
- (d) Kurosava

▼ Answer

Answer: (a) Addicot et al

Question 18.

Seeds which are influenced by light for germination are known as

- (a) Neoblastic
- (b) Hoiblastic
- (c) Photoblastic
- (d) All of these

▼ Answer

Answer: (c) Photoblastic

Question 19.

The cold induced stimulus used in vernalization is

- (a) Vernalin
- (b) Carotene
- (c) Ethylene
- (d) Florigen

▼ Answer

Answer: (a) Vernalin

Question 20.

When dark period of short day plants is interrupted by a brief exposure to light the plant will-

- (a) flower immediately
- (b) give more flowers
- (c) not flower at all
- (d) change into long day plant

▼ Answer

Answer: (c) Not flower at all

Question 21.

Which is a long day plant

- (a) Xanthium
- (b) Wheat
- (c) Soyabean
- (d) Tobacco

▼ Answer

Answer: (b) Wheat

Question 22.

Which can replace the requirement of vernalisation

- (a) Gibberellins
- (b) Auxin
- (c) Cytokinin
- (d) Ethylene

▼ Answer

Answer: (a) Gibberellins

Question 23.

Artificial ripening of fruit is accomplished by treatment with

- (a) Zeatin
- (b) NaCl
- (c) IAA
- (d) Ethylene gas

▼ Answer

Answer: (d) Ethylene gas

Question 24.

Which is a short day plant?

- (a) Glycine max
- (b) Triticum aestivum
- (c) Raphanus sativus
- (d) Daucus carota

▼ Answer

Answer: (a) Glycine max

Question 25.

The period of growth is generally divided into

- (a) Meristematic phase
- (b) Elongation phase
- (c) Maturation phase
- (d) All of these phases

▼ Answer

Answer: (d) All of these phases

II. Fill in the blanks:

Question 1.

..... is regarded as one of the most fundamental and conspicuous characteristics of a living being.

▼ Answer

Answer: Growth

Question 2.

Plant growth is because plants retain the capacity for unlimited growth throughout their life.

▼ Answer

Answer: Unique

Question 3.

This form of growth wherein new cells are always being added to the plant body by the activity of the meristem is called the

▼ Answer

Answer: open form of growth

Question 4.

Growth is, therefore, measured by a variety of parameters some of which are dry weight; length; area volume and cell number.

▼ Answer

Answer: increase in fresh weight

Question 5.

The period of growth is generally divided into three phases, namely,, and

▼ Answer

Answer: meristematic, elongation, maturation

Question 6.

The increased growth per unit time is termed as

▼ Answer

Answer: growth rate

Question 7.

In arithmetic growth, following cell division, only one continues to divide while the other differentiates and matures.

▼ Answer

Answer: mitotic, daughter cell

Question 8.

Measurement and comparison of total growth per unit time is called the

▼ Answer

Answer: absolute growth rate

Question 9.

The growth of the given system per unit initial parameter is called the

▼ Answer

Answer: relative growth rate

Question 10.

..... helps in releasing metabolic energy essential for growth activities.

▼ Answer

Answer: Oxygen

Question 11.

..... is a term that includes all changes that an organism goes through during its life cycle from germination of the seed to senescence.

▼ Answer

Answer: Development

Question 12.

....., and are very closely related events in the life of a plant.

▼ Answer

Answer: Growth, differentiation, development

Question 13.

The plant growth regulators are, of diverse chemical composition.

▼ Answer

Answer: small, simple molecules

Question 14.

..... is used to speed up the malting process in brewing industry.

▼ Answer

Answer: GA₃

Question 15.

..... is highly effective in fruit ripening.

▼ Answer

Answer: Ethylene

III. Mark the statement True (T) or False (F):

Question 1.

Ethylene also promotes root growth and root hair formation, thus helping the plants to increase their absorption surface.

▼ Answer

Answer: True

Question 2.

Absciscic acid (ABA) was discovered for its role in regulating abscission and dormancy.

▼ Answer

Answer: True

Question 3.

The former group of plants are long day plants while the later ones are termed short day plants.

▼ Answer

Answer: False

Question 4.

Flowering in certain plants depends not only on a combination of light and dark exposures but also their relative durations. This is termed photoperiodism.

▼ Answer

Answer: True

Question 5.

Biennials are monocarpic plants that normally flower and die in the second season.

▼ Answer

Answer: True

Question 6.

Vernalisation refers specially to the promotion of flowering by a period of low temperatures.

▼ Answer

Answer: True

Question 7.

Environmental signals such as light and gravity also affect certain phases/stages of growth.

▼ Answer

Answer: True

Question 8.

An S-shaped curve is a characteristic of the living organism growing in a natural environment. It is typical for all cells, tissues and organs of a plant.

▼ Answer

Answer: True

Question 9.

In arithmetic growth, following mitotic cell division, only one daughter cell continues to divide while the other differentiates and matures.

▼ Answer

Answer: True

Question 10.

Wherein new cells are always being added to the plant body by the activity of the meristem is called the close form of growth.

▼ Answer

Answer: False

Question 11.

Development is the sum of two processes: growth and differentiation.

▼ Answer

Answer: True

Question 12.

AH plant organs are made up of a variety of tissues.

▼ Answer

Answer: True

Question 13.

The plant cells grow in size by cell enlargement which in turn requires water.

▼ Answer

Answer: True

Question 14.

Cells positioned away from shoot apical meristems differentiate as shoot-cap cells, while those pushed to the periphery mature as epidermis

▼ Answer

Answer: False

Question 15.

PGRs could be indole compounds (indole-3-acetic acid, IAA); adenine derivatives (N6- furfurylamino purine, kinetin), derivatives of carotenoids and fatty acids (abscisic acid, ABA); terpenes (gibberellic acid, GA₃) or gases (ethylene, C₂H₄)

▼ Answer

Answer: True

IV. Match the items of column I with the items of column II

Column I	Column II
(a) Terpenes	1. for example, root apices, developing shoot buds, young fruits etc.
(b) Plant growth promoters e.g.,	2. a phenomenon called apical dominance.
(c) This ability is called plasticity e.g.	3. malting process in brewing industry.
(d) The 'bakane', (foolish seedling) a disease of rice seedling was caused by	4. gibberellic acid, GA ₃
(e) Skoog and Miller	5. Kinetin
(f) Auxins, like IAA and indole butyric acid (IBA) have been	6. heterophylly in cotton, coriander and darkspur.
(g) In most higher plants, the growing apical bud inhibits the growth of lateral (axillary) buds,	7. auxins, gibberellins and cytokinins.
(h) GA ₃ is used to speed up the	8. isolated from plant.
(i) Natural cytokinins	9. a fungal pathogen Gibberella fujikuroi
(j) ABA stimulates the closure of stomata in the epidermis and increases the tolerance of plants to various kinds of stresses.	10. Stress hormone.
(k) Short day plant	11. Vernalisation
(l) Long day plant	12. Those plants which flower when the day length is more than a critical photoperiod.
(m) The chilling treatment given to shoot tips or seeds is called	13. in biennial plants
(n) Example of vernalisation is seen	14. Those plants which flower when the day length is less than a critical photoperiod.
(o) Flowering in certain plants depends not only on a combination of light and dark exposures	15. but also their relative durations. This is termed photoperiodism.

▼ Answer

Answer:

Column I	Column II
(a) Terpenes	4. gibberellic acid, GA ₃
(b) Plant growth promoters e.g.,	7. auxins, gibberellins and cytokinins.
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