

Topic :- Plant Growth & Development

- 1 **(b)**
Rapid and dramatic increase in shoot length is called **bolting**. Gibberellins induce stem elongation in 'rosette plants'. *E.g.*, cabbage, henane, etc, such plants show retarded internodal growth and profuse leaf development. In these plants, just prior to the reproductive phase, the internodes elongate enormously causing a marked increase in stem height, *i.e.*, bolting.
- 2 **(d)**
Environmental heterophylly is the difference in shapes of leaves produced in air and water. Buttercup represents the heterophyllous development due to environment
- 3 **(a)**
The application of **gibberellins** to certain dwarf mutant is known to restore the normal growth and development in many plants, *e.g.*, dwarf pea, dwarf maize. Cytokinins promote cell division and organ formation.
- 4 **(b)**
The increased growth per unit time is termed as growth rate. Thus, rate of growth can be expressed mathematically. An organism, or a part of an organism can produce more cells in a variety of ways. The growth rate shows an increase that may be (i) Arithmetic and (ii) Geometrical
- 5 **(b)**
Absciscic acid is a natural growth inhibitor. It promotes stomatal closure, *i.e.*, it is a stress hormone and helps the plant to cope with adverse enviromental conditions especially drought. It also induces dormancy of seeds and buds. These seeds sprout only when ABA is overcome y GA.
- 6 **(b)**
Embryo development shows both the phases of growth (*i.e.*, geometric and arithmetic)
Most of the animals or organism show sigmoid growth in natural condition
- 7 **(a)**
Conditions in which the duration of light is less than the critical period of time don't promote the flowering due to photoperiodism. (Response of plants to periods of day/light)
- 8 **(b)**
Abscission the shedding of a body part, commonly refers to the process by which a plant intentionally drops one or more of its parts, such as a leaf, fruit, flower or seed.

- 9 **(b)**
Asexual stage of this fungus is *Fusarium moniliformae*.
- 10 **(b)**
Cytokinins are amino purines which are derived from autoclaving sperm DNA.
- 11 **(c)**
Geotropic response is perceived by root cap.
- 12 **(d)**
This first natural cytokinin was obtained from unripe maize **grains** or **kernels** by **Lenthán et al.** it is known as **zeatin** (6-hydroxy 3-methyl trans2-butenyl amino -purine). It also occurs in **coconut milk**.
- 13 **(a)**
The exponential growth or phase of geometrical growth of the plant can be expressed as $W_1 = W_0 e^{rt}$, where
 W_0 = Initial size at the beginning of the period
 W_1 = Final size at the beginning of the period
 r = Growth rate
 t = Time of growth
 e = Base of natural logarithms
 Here, the relative growth rate is also the measure of the ability of the plant to produce new plant material, which is referred to as efficiency index. Hence, the final size, W_1 depends on the initial size, W_0
- 14 **(b)**
Cytokinins are produced in actively growing tissues such as embryos, developing fruits and roots. cytokinins have so far been extracted from coconut milk (liquid endosperm), tomato juice, ect. In conjugation With auxins, they stimulate cell division even in permanent tissue. The root and auxin ratio.
- 15 **(c)**
Phototropism of stem and roots are due to differential hormonal effect. Mechanism is believed to be **Cholodny-Went theory**, which states that unilateral light produces more auxin (IAA) and hence, more growth in the shaded side resulting in bending.
- 16 **(c)**
Growth, at cellular level, is principally a consequence of increase in the amount of protoplasm. Since, increase in protoplasm is difficult to measure directly, one generally measures some quantity which is more or less proportional to it. Growth is, therefore, measured by a variety of parameters some of which are; increase in fresh weight, dry weight, length, area, volume and cell number
- 17 **(b)**
ABA (abscisic acid) is a naturally occurring growth inhibitor in plants.
- 18 **(c)**

Abscisic acid (ABA). *Its important functions are*

- (i) Promot abscission
- (ii) Promot dormancy
- (iii) Plant growth inhibitor
- (iv) Inhibit seed germination
- (v) Seed development
- (vi) Antagonist to GA
- (vii) Stomata closure

19 **(a)**

Thigmotropism movement is due to contact with a foreign body. It is most conspicuous in tendrils, which coil around support and help the plant in climbing, *e.g.*, tendrils of Cucurbitaceae.

20 **(d)**

Auxin is produced by growing apical part of the plant, *i.e.*, apices of stems and roots. Then, it goes to the lateral parts (basipetal) and causes, the apical (root and shoot) parts of the plant to elongate

ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	B	D	A	B	B	B	A	B	B	B
Q.	11	12	13	14	15	16	17	18	19	20
A.	C	D	A	B	C	C	B	C	A	D