

**CBSE TEST PAPER-01**  
**CLASS - XI BIOLOGY**  
**(Plant Growth and Development)**

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**General Instruction:**

- All questions are compulsory.
  - Question No. 1 to 3 carry one marks each. Question No. 4 to 6 carry two marks each. Question No. 7 and 8 carry three marks each. Question No. 9 carry five marks.
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1. What is growth?
2. Which hormone act as “stress hormone”?
3. Name a non-acidic growth substance.
4. What would happen to tissue culture of parenchyma if-
  - a) Auxin and cytokinin were present in equal quantities.
  - b) More cytokinin than auxin was present.
  - c) More auxin than cytokinin was present
5. Define vernalization?
6. What is heterophylly?
7. What are the conditions necessary for growth?
8. What does the sigmoid growth curve of a population mean?
9. What is photoperiodism? How do you categories the angiosperms on the basis of their flowering response.

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**[ANSWERS]**

Ans 01. Irreversal permanent increase in size of an organism.

Ans 02. Absciscic acid (ABA)

Ans 03. Kinetin.

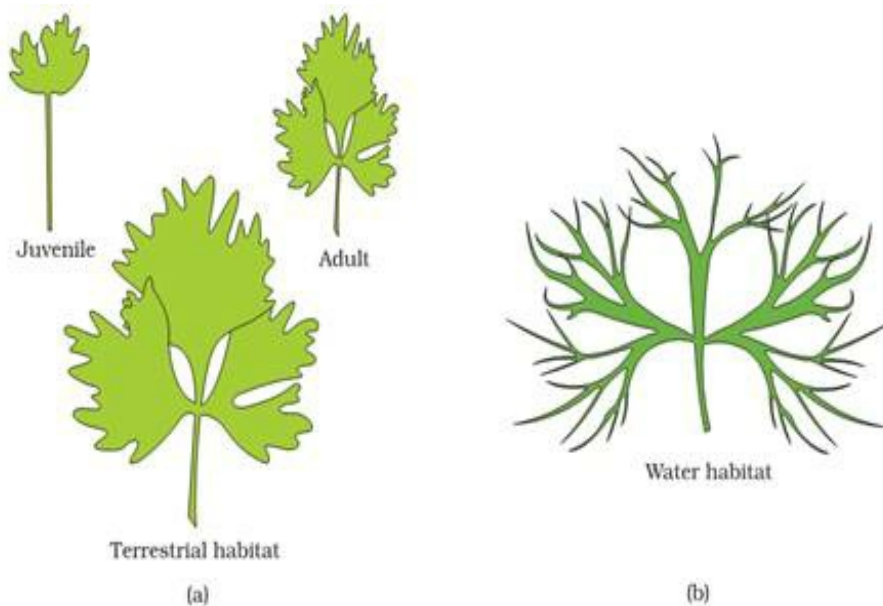
Ans 04. i) cells divide but do not differentiate

ii) shoot buds develop from the callus.

iii) Root develop.

Ans 05. The term vernalization is promoter of flowering by a previous cold treatment. In flowering plant, plants requiring cold treatment usually behave as biennials. They germinate and grow vegetative in first season and produce flower in second season.

Ans 06. The plants follow various pathways in response to environment / phase of life to form different kind of structures. It is known as plasticity. Some examples are heterophylly in cotton, coriander and larkspur. The leaves of juvenile plants are different in shape from those in mature plant. Difference in the shapes of leaves produced in air and those produced in water in buttercup also represent the heterophyllous development due to environment. The phenomenon of heterophylly is an example of plasticity in plants.



**Figure 15.9** Heterophylly in (a) larkspur and (b) buttercup

Ans 07. The necessary conditions for growth are water, oxygen and nutrients. The plant cell grows in size by cell enlargement that needs water. The plant growth and further

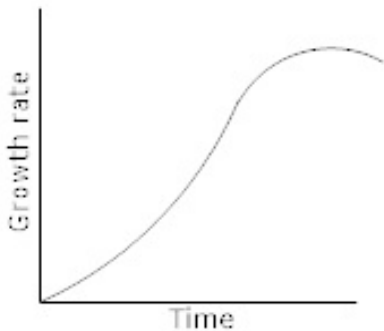
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development are intimately linked to water status of plants. Water provides medium for enzymatic activities needed for growth.  $O_2$  helps in releasing metabolic energy for growth.

Nutrients both macro and micro essential elements are needed by plants for synthesis of the protoplasm. Moreover, they act as source of energy.

Every plant has an optimum temperature range best suited for its growth. Any deviation from it may be detrimental to its survival. Environmental signal like light and gravity also influence various phases or stages of growth in plants.

Ans 08. In biological organization growth occurs at many levels, from the molecular level upto the ecosystem level. It can be measured at different levels such as the growth of cell organism or population. If it is measured in length, area, volume, mass or number of cells or individuals and plotted against time, an s-shaped curve is obtained. This is known as sigmoid curve. An analysis of this curve shows a lag phase during which slow growth occurs. This gradually attains a rapid growth, followed by a period of slow growth and ultimately a decline called stationary phase. Since the same patterns of growth is sigmoid curve observed at all levels of organization it is said to be universal.



Ans 09. Photoperiodism – The phenomenon of inducing flowering in plants with response to length of daily period of light or relative day & night length is called photoperiodism.

The angiosperms are classified into the following three categories on the basis of photoperiodism.

(i) short day plants (SDP) – They require a relatively short day length than critical period for flowers e.g. chrysanthemum, Nicotiana, soybean.

(ii) Long day plants (LDP) – They require a relatively longer day length than critical period for flowering e.g. wheat, Maize, Radish.

(iii) Day neutral Plants (DNP) – The flowering response in these plants remains unaffected by the length of day. These plants are also called as photoneutrals or indifferent plants e.g.

Cotton, Pea, Tomato & sunflower.