# Answer Key 7.1

**Marks - 25**

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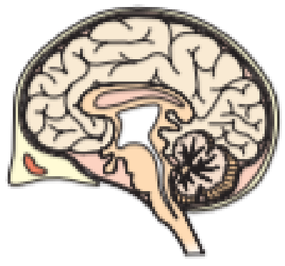
Case study based questions

10th Science

# Control And Coordination

**Passage - 1** **5 Marks**



## Control and Coordination

All the living organisms (plants and animals) respond and react to changes in the environment around them. The changes in the environment to which the organisms respond and react are called stimuli (singular of stimuli is stimulus). The living organisms show response to stimuli such as light, heat, cold, sound, smell, taste, touch, pressure, pain, water, and force of gravity, etc. The response of organisms to a stimulus is usually in the form of some movement of their body part. For example, if a man touches a very hot utensil accidently, he quickly pulls his hand away from the hot utensil. Here, heat is the stimulus and the man reacts by moving his hand away from the hot utensil. Similarly, when the sun is bright, we close our eyes. In this case, light is the stimulus and we react by closing the eyes.

Q1. (1) TRUE

Q2. (2) Living

Q3. (1) Different

Q4. (2) Limited

Q5. (1) TRUE

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# Answer Key 7.1

## Marks - 25

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## Passage - 2

## 5 Marks


The plants do not have a nervous system and sense organs like eyes, ears, or nose, etc., like the animals, but they can still sense things. The plants can sense the presence of stimuli like light, gravity, chemicals, water, and touch, etc., and respond to them. The plants can sense things like light, gravity, chemicals, water, and touch, etc., by the action of hormones in them. The stimuli like light, gravity, chemicals, water, and touch, etc., are called environmental changes. So, we can also say that the plants coordinate their behaviour against environmental changes by using hormones. The hormones in plants do not act the same way as in animals. The hormones in plants coordinate their behaviour by affecting the growth of a plant. And the effect on growth of the plant can result in the movement of a part of the plant like shoot (stem) or root, etc.

Q1. (1) Hormones

Q2. (2) No

Q3. (1) Hormones

Q4. (1) Slowly

Q5. (1) Because plants have no nervous system

## Passage - 3

## 5 Marks

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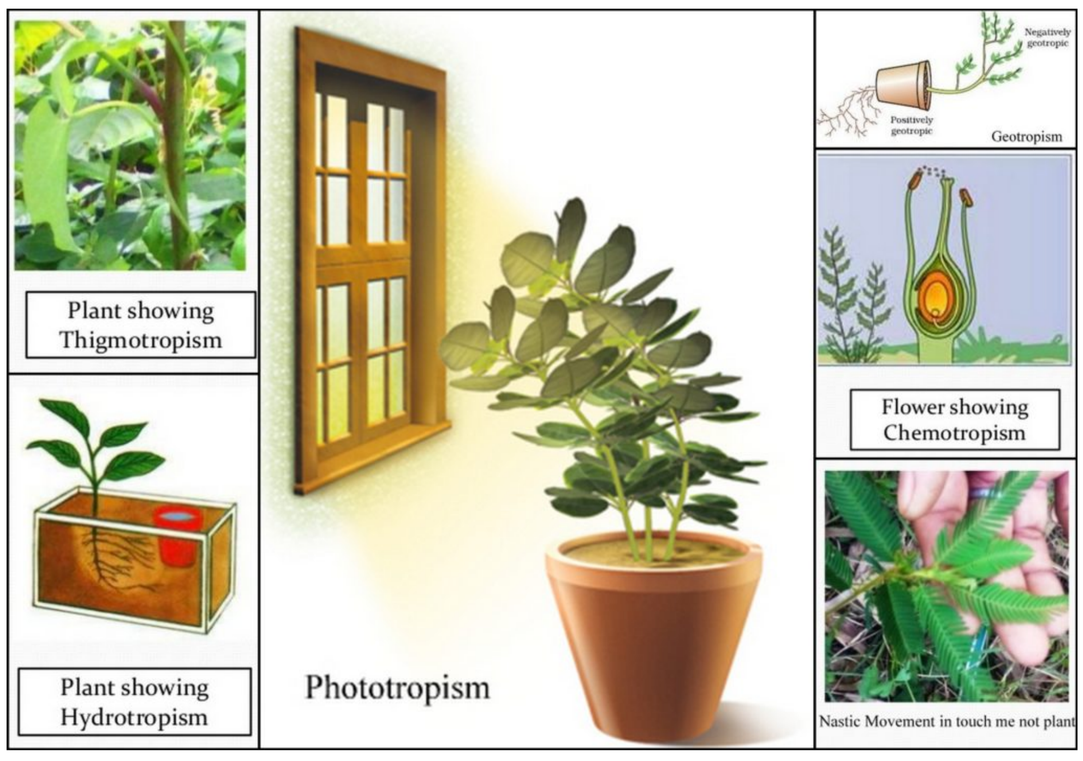
# Answer Key 7.1

## Marks - 25




The control and coordination in plants is done by plant hormones. The plant hormones coordinate the activities of the plant by controlling one or the other aspect of the growth of the plant. So, the plant hormones are also known as plant growth substances. The growth of a plant can be divided into three stages : cell division, cell enlargement and cell differentiation (or cell specialisation), and these stages have particular locations in a plant. These three stages of plant growth as well as promotion of dormancy, breaking of dormancy, stomata control, falling of leaves, fruit growth, ripening of fruits and ageing in plants are controlled by the various plant hormones.

Q1. (2) Phytohormones

Q2. (3) Cytokinins

Q3. (4) Abscisic acid

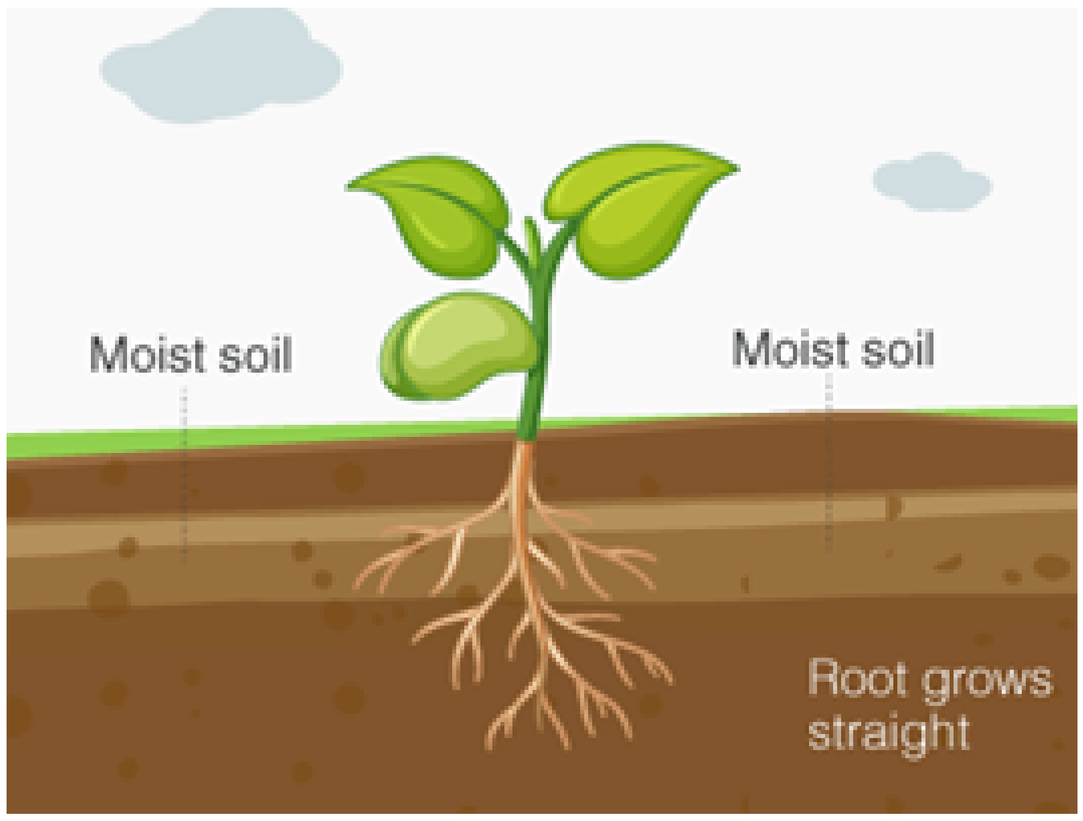
Q4. (1) Yes

Q5. (4) Abscisic acid

**Passage - 4** **5 Marks**

# Answer Key 7.1

**Marks - 25**




The plants are fixed at a place with their roots in the ground, so they cannot move from one place to another. That is, plants do not show locomotion (movement of the entire body). However, movements of the individual parts or organs of a plant (like shoot, root, leaves, etc.) are possible when they are subjected to some external stimuli like light, force of gravity,chemical substances, water, and touch, etc.

Q1. (2) Unequal

Q2. (1) TRUE

Q3. (2) Fixed

Q4. (1) TRUE

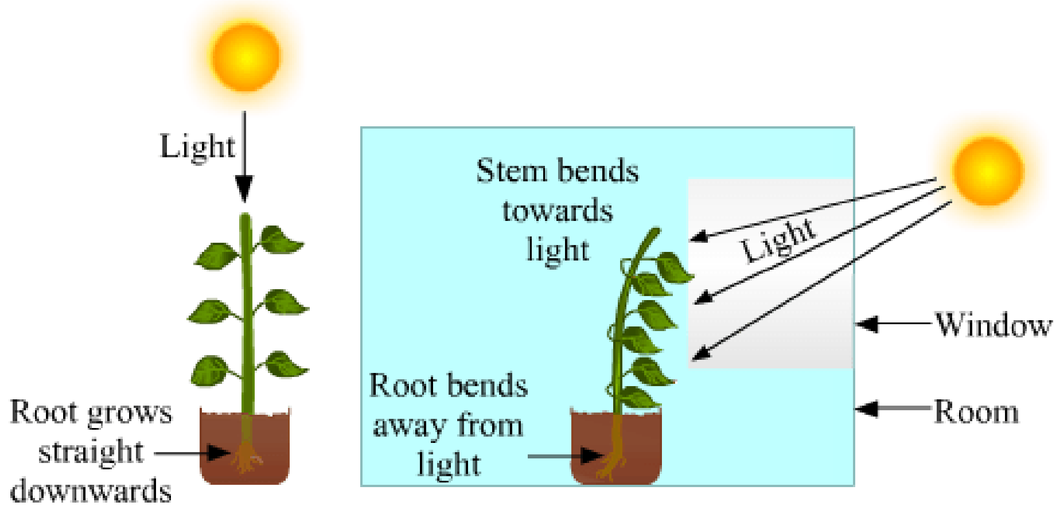
Q5. (1) TRUE

## Passage - 5

**5 Marks**

# Answer Key 7.1

**Marks - 25**




A growth movement of a plant part in response to an external stimulus in which the direction of stimulus determines the direction of response is called tropism. Thus, tropism is a directional movement of the part of a plant caused by its growth. The growth of a plant part in response to a stimulus can be towards the stimulus (in the direction of stimulus) or away from the stimulus (against the direction of stimulus) due to which we can have a positive tropism or negative tropism, respectively.

Q1. (1) Positive

Q2. (2) Negative

Q3. (1) Positive

Q4. (1) TRUE

Q5. (1) TRUE

# Answer Key 7.2

**Marks - 25**

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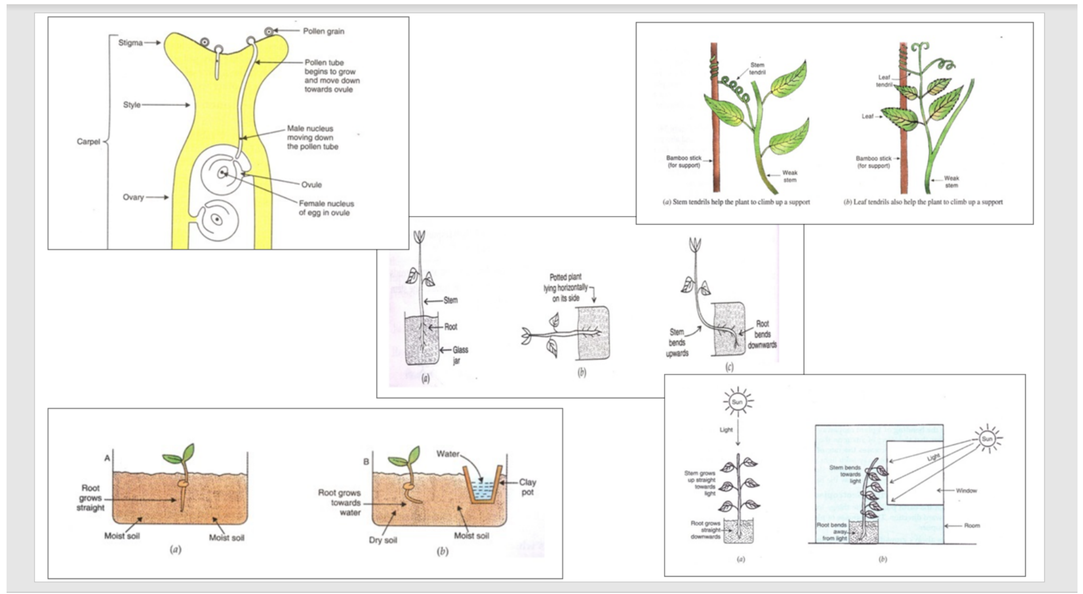
Case study based questions

10th Science

# Control And Coordination

**Passage - 1** **5 Marks**




There are five common stimuli in the environment : light, gravity, chemicals, water and touch (or contact). These five stimuli give us five types of tropisms : phototropism, geotropism, chemotropism, hydrotropism and thigmotropism. In phototropism, the stimulus is light ; in geotropism the stimulus is gravity, in chemotropism the stimulus is a chemical, in hydrotropism the stimulus is water, and in thigmotropism the stimulus is touch (of a solid surface). It is obvious that the tropisms are named according to the stimulus.

Q1. (1) Phototropism

Q2. (2) Geotropism

Q3. (3) Chemotropism

Q4. (4) Hydrotropism

Q5. (1) Thigmotropism

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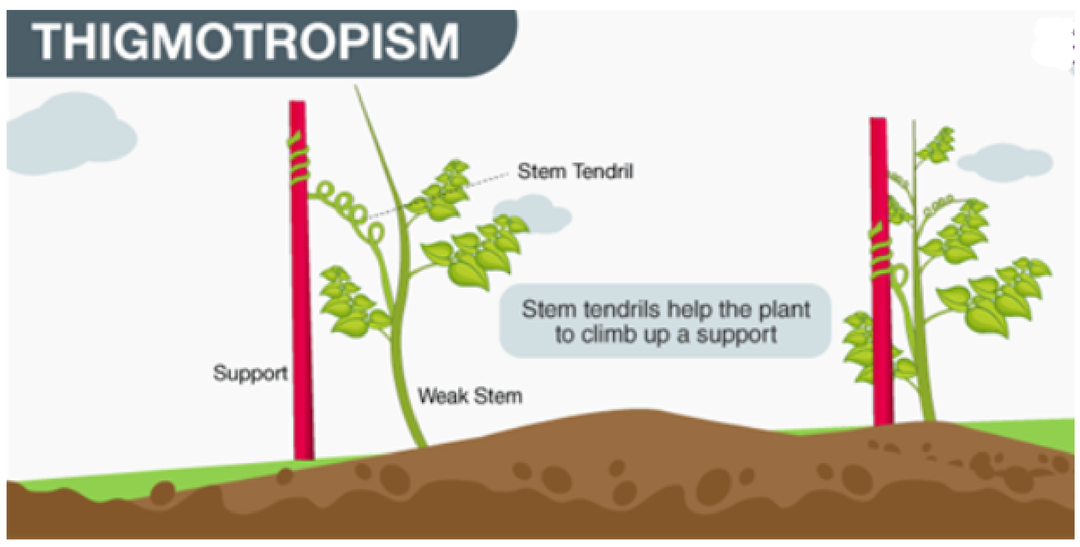
# Answer Key 7.2

**Marks - 25**

## Passage - 2

**5 Marks**




There are some plants called 'climbing plants' which have weak stems and hence cannot stand upright (or erect) on their own. The climbing plants have climbing organs called tendrils. Tendrils are the thin, thread-like growths on the stems or leaves of climbing plants. Thus, there are two types of tendrils : stem tendrils and leaf tendrils. Tendrils are sensitive to the touch (or contact) of other objects. That is, tendrils have cells which can sense their contact with a nearby solid object like a bamboo stick, or the stem of another plant. So, when a tendril touches an object, then the side of tendril in contact with the object grows slowly than its other side. This causes the tendril to bend towards the object by growing towards it, wind around the object and cling to it. The winding movement of the tendril of a climbing plant is an example of thigmotropism. The stimulus in thigmotropism is the touch (or contact) of an object. The winding movement of the tendril of a plant around a nearby object gives support to the plant having a weak stem.

Q1. (1) TRUE

Q2. (1) TRUE

Q3. (2) Thigmotropism

Q4. (1) TRUE

Q5. (2) Positively

# Answer Key 7.2

**Marks - 25**

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## Passage - 3

**5 Marks**

We have just studied that in tropism, a plant part either moves towards the stimulus or away from the stimulus. However, in some plants, the movement of the plant part is neither towards the stimulus nor away from the stimulus. That is, the movement of plant part in some plants is not in a particular direction with respect to stimulus.

Q1. (1) Nastic

Q2. (1) TRUE

Q3. (2) Not determined

Q4. (1) TRUE

Q5. (2) Slow

## Passage - 4

**5 Marks**

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# Answer Key 7.2

## Marks - 25


The non-directional movement of a plant part in response to the touch of an object is called thigmonasty. In other words, thigmonasty is the nastic movement of a plant part in response to touch. Thus, the stimulus in thigmonasty is the 'touch'. An example of the nastic movement in plants caused by touch (or thigmonasty) is provided by the sensitive plant (Mimosa pudica) which is also known as touch-me-not plant. It is called chhui-mui in Hindi. If we touch the leaves (or rather leaflets) of the sensitive plant with our fingers, then its leaves fold up and droop almost immediately. The folding up of the leaves of sensitive plant on touching, is an example of nastic movements in plants (in which the stimulus is the 'touch' of our fingers).

Q1. (1) Thigmonasty

Q2. (1) TRUE

Q3. (1) TRUE

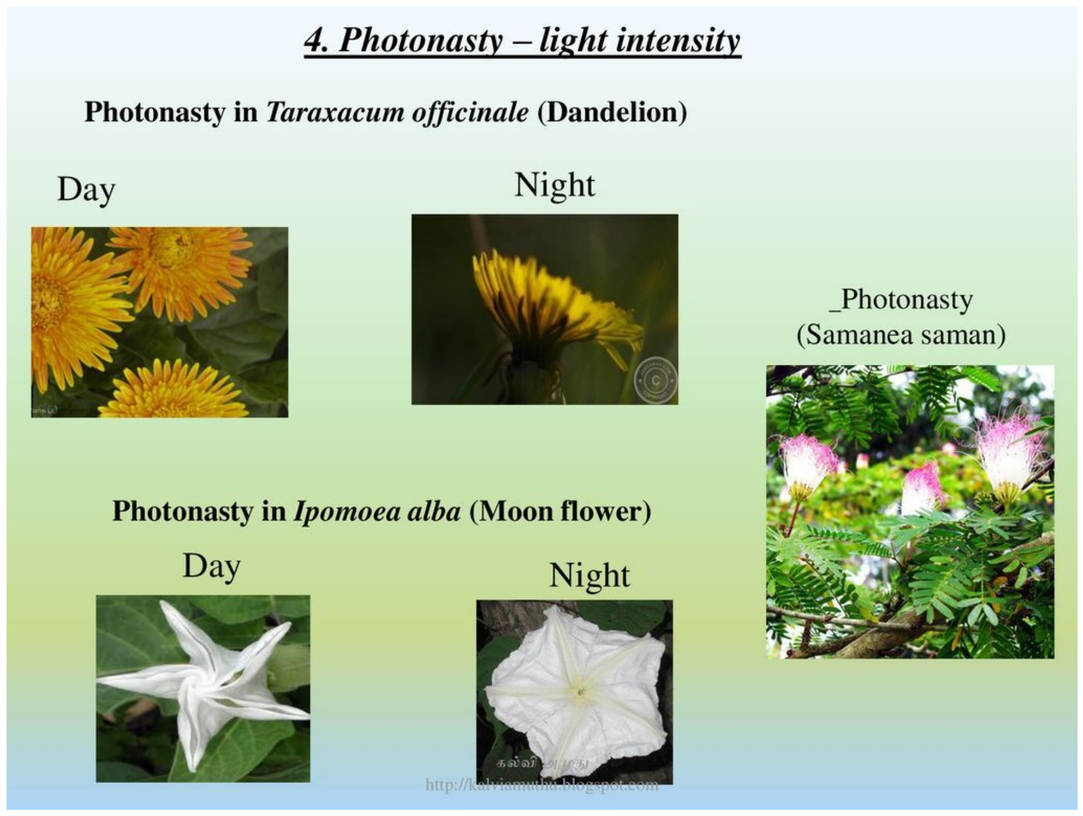
Q4. (1) TRUE

Q5. (2) Large

**Passage - 5** **5 Marks**

# Answer Key 7.2

## Marks - 25




The non-directional movement of a plant part (usually petals of flowers) in response to light is called photonasty. In other words, photonasty is the nastic movement of a plant part (like petals of flowers) in response to light. Thus, the stimulus in photonasty is light. A dandelion flower opens up in the morning in bright light but closes in the evening when the light fades and it gets dark . The opening and closing of petals of dandelion flowers in response to the intensity of light is an example of nastic movement in which the stimulus is light. In other words, it is an example of photonasty. The moonflower behaves exactly opposite to that of dandelion flowers in respect of response to light. The petals of moonflower close during the day when there is bright light but open up at night when it is dark and there is no light . This is also an example of photonasty.

Q1. (2) Photonasty

Q2. (1) TRUE

Q3. (1) Closes

Q4. (2) Opens

# Answer Key 7.2

**Marks - 25**

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Q5. (1) Closes

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