Botany Questions for PG Entrance Exam with Answers (PDF)

Plant science questions in PG entrance exams delve into detailed aspects of botany, covering plant physiology, biochemistry, molecular biology, and genetics. These questions often test candidates on complex processes like photosynthesis pathways, hormonal regulation, secondary metabolite production, and plant-pathogen interactions. Understanding current research trends and recent discoveries in plant biology is crucial. Emphasis is also placed on ecological concepts, plant taxonomy, and applications in agriculture and biotechnology. Comprehensive study, including textbooks and scholarly articles, aids in mastering the breadth and depth required for such exams.

(1) The term "double fertilization" refers to:

(a) The fertilization of two eggs by two sperm cells
(b) The fusion of male and female gametes
(c) The fertilization process in which one sperm fuses with the egg and another sperm fuses with two polar nuclei
(d) Fertilization in gymnosperms

Answer: (c)

Double fertilization in angiosperms involves two fertilization events: one forms the zygote, and the other forms the triploid endosperm.

(2) The main function of the root cap is to:

(a) Absorb water
(b) Protect the growing tip of the root
(c) Store food

(d) Photosynthesize

Answer: (b)

The root cap protects the root's growing tip as it pushes through the soil.

(3) In which part of the plant does fertilization take place?

(a) Anther

(b) Ovary

(c) Stigma

(d) Style

Answer: (b)

Fertilization occurs in the ovary after the pollen reaches the stigma and travels down the style to the ovule.

(4) Which of the following is not a type of leaf modification?

(a) Tendrils

(b) Thorns

(c) Flowers

(d) Spines

Answer: (c)

Flowers are not considered leaf modifications, though they are produced by the plant's reproductive system.

(5) The cell wall of plant cells is primarily composed of:
(a) Chitin
(b) Cellulose
(c) Peptidoglycan
(d) Keratin
Answer: (b)
Cellulose is the primary component of the plant cell wall, providing structural support.

(6) Which of the following plants exhibits a unique method of nitrogen fixation using symbiotic bacteria?
(a) Tomato
(b) Pea
(c) Rice
(d) Cucumber
Answer: (b)
Leguminous plants like peas form symbiotic relationships with Rhizobium bacteria for nitrogen fixation.

(7) Which of the following is an example of a monocot plant?
(a) Sunflower
(b) Rose
(c) Rice
(d) Oak tree
Answer: (c)
Rice is a monocot, characterized by one cotyledon in its seeds.

(8) The meristematic tissue responsible for the secondary growth of plants is called:
(a) Apical meristem
(b) Lateral meristem
(c) Intercalary meristem
(d) Vascular meristem

Answer: (b)

Lateral meristems, like the cambium, are responsible for secondary growth, increasing the girth of the plant.

(9) The main component of the plant's phloem is:

(a) Xylem vessels

(b) Tracheids

(c) Sieve tubes

(d) Guard cells

Answer: (c)

Sieve tubes are the primary structures in phloem that transport food in the plant.

(10) The chemical reaction of photosynthesis involves the conversion of:

(a) Light energy into mechanical energy

(b) Water and carbon dioxide into glucose and oxygen

(c) Oxygen and glucose into water and carbon dioxide

(d) Light energy into thermal energy

Answer: (b)

Photosynthesis converts water and carbon dioxide into glucose and oxygen with the help of light energy.

(11) Which of the following best describes the role of gibberellins in plants?

(a) Promote root growth

(b) Regulate water balance

(c) Promote stem elongation and seed germination

(d) Inhibit flowering

Answer: (c)

Gibberellins are plant hormones that promote stem elongation and facilitate seed germination.

(12) The first plant hormone discovered was:

(a) Cytokinin

(b) Auxin

(c) Gibberellin

(d) Ethylene

Answer: (b)

Auxin was the first plant hormone to be discovered and studied for its role in plant growth.

(13) The process of water moving through plants from roots to leaves is called:

(a) Osmosis

(b) Capillary action

(c) Transpiration stream

(d) Active transport

Answer: (c)

The transpiration stream refers to the continuous movement of water through plants, driven by transpiration.

(14) Which of the following structures is responsible for the absorption of water in plants?

(a) Stomata

(b) Root hairs

(c) Leaf veins

(d) Phloem

Answer: (b)

Root hairs increase the surface area for water absorption from the soil.

(15) In which of the following types of plants does the process of "alternation of generations" occur?

(a) Mosses

(b) Conifers

(c) Flowering plants

(d) Fungi

Answer: (a)

Mosses exhibit alternation of generations, alternating between a gametophyte and sporophyte phase.

(16) What type of tissue is responsible for transporting water and minerals in a plant?

(a) Phloem

(b) Xylem

(c) Cambium

(d) Epidermis

Answer: (b)

Xylem is responsible for the upward transport of water and minerals in the plant.

(17) Which of the following is the main function of root nodules in legumes?

(a) Photosynthesis

(b) Storage of water

(c) Nitrogen fixation

(d) Absorption of water

Answer: (c)

Root nodules in legumes house nitrogen-fixing bacteria that convert atmospheric nitrogen into a usable form for the plant.

(18) Which of the following structures is responsible for the production of pollen?

(a) Ovule

(b) Stigma

(c) Anther

(d) Style

Answer: (c)

The anther is the part of the flower that produces pollen, the male gametophyte.

(19) The tissue that connects the leaf to the stem is called the:

(a) Node

(b) Internode

(c) Petiole

(d) Phloem

Answer: (c)

The petiole connects the leaf to the stem, allowing for flexibility and the transport of nutrients and water.

(20) Which of the following best defines the term "phototropism"?

(a) Growth in response to light

(b) Growth in response to gravity

(c) Growth in response to touch

(d) Growth in response to water

Answer: (a)

Phototropism refers to plant growth in response to light, typically causing the plant to bend towards the light source.

(21) Which of the following is a characteristic feature of a typical dicot leaf?

(a) Parallel venation

(b) One cotyledon

(c) Net-like venation

(d) Fibrous root system

Answer: (c)

Dicot leaves typically exhibit net-like venation, as opposed to the parallel venation found in monocots.

(22) The function of the endosperm in seeds is to:

(a) Provide nutrition to the growing embryo

(b) Protect the seed from predators

(c) Facilitate seed dispersal

(d) Promote root growth

Answer: (a)

The endosperm serves as a food reserve for the developing embryo within the seed.

(23) Which of the following plant structures is primarily involved in the regulation of gas exchange?

(a) Root hairs

(b) Stomata

(c) Phloem

(d) Xylem

Answer: (b)

Stomata are primarily responsible for regulating gas exchange, allowing CO2 to enter and O2 to exit.

(24) Which of the following is a feature of the monocot leaf?

(a) Parallel venation

(b) Reticulate venation

(c) Two cotyledons

(d) Branching roots

Answer: (a)

Monocot leaves typically have parallel venation, unlike dicot leaves which have reticulate venation.

(25) Which of the following plant hormones helps in delaying leaf senescence?

(a) Gibberellins

(b) Cytokinins

(c) Ethylene

(d) Auxins

Answer: (b)

Cytokinins are responsible for delaying leaf senescence by promoting cell division and growth.