

Botany 1501

October/ November 2015

Question 01

- 1.1. Mycorrhizae 1.2. Stolons 1.3. Sterms 1.4. Rhizomes 1.5. Tendrils 1.6. Granium / Grana 1.7. Calyx Corolla 1.8. Chloroplast 1.9. Endosperm 1.10. Endoderms

Primary growth- is the production of new primary tissues of root and shoot tips by primary meristem. This type of growth increases the height or length of shoots or roots.

Secondary growth- is the production of new plant tissues by secondary meristems (vascular and cork cambium). This type of growth influences the growth by increasing the girth of woody plants.

Autotrophic organisms- are capable of producing their own organic food from inorganic materials.

Heterotrophic organisms- are not autotrophic and thus they must obtain organic food from their environment.

Heartwood- is the inner older non-conducting rings of a xylem that are no longer involved in the transportation of water and minerals.

Sapwood- is the newer outer rings of the xylem that are involved in transportation. Sapwood conducts water and minerals, but the heartwood does not.

Phonetic approach- emphasises the number of characteristics and does not distinguish between analogous and homologous.

Cladistic approach-which focuses only on homologous characters with regard to homologous, a distinction is also made between a shared primitive character and a shared derived character.

Bottle effect- is the genetic drift resulting from the reduction of a population, typically by a natural disaster to such an extent that the surviving population is no longer genetically representative of the original population.

Genetic drift- is inheritable changes, chiefly mutations produced by the absorption of ionizing radiations. The result of exposure of substances e.g. radiation that cause damage of the genes of germinal cells e.g. sperm or egg.

Simple fruits	Multiple fruits
Arise from the ovary (onecarpel or fused carpels) of one flower, e.g. in prunus species (peach)	Develop from more than one flower in an inflorescence e.g ficus species

Aggregate fruits

Develop from the non-fused (free) carpels of a single flower. Each carpel gives rise to a 'little fruit' e.g. Are morus species (mulberry).

Pericle- encircles the stole and consists of meristomatic cells which give rise to lateral roots.

Endodermic- encircles the Pericles or it regulate the flow of substances between cortex and vascular tissues. The endodermic consist of the inner most layer of ground meristem and thus form part of cortex.

Light and electron microscopic

A light microscope allows the formation of an enlarged image of a specimen. Light is refracted as it moves through series of lenses while an electron microscope uses an electron beam instead of visible light than the wavelengths of visible light.

Angiosperms bear flowers in which the seed is enclosed, reproductive apical meristems give rise to flowers (modified side stems)

Gymnosperms have naked seeds and the seeds are therefore exposed, the reproductive meristems develop into cones.

Apical meristems give rise to the protoderm and ground meristem. The protoderm produces the primary dermal tissue called the epidermis. The procambium produces primary vascular tissues and ground meristem produces the ground tissue: pith and cortex.

Lateral meristems, the two types of lateral meristems are **vascular cambium** and **cork cambiums**. The vascular cambium produces vascular tissues which are called secondary xylem and secondary phloem. Cork cambium produces new dermal tissue which eventually replaces the epidermis.

Name of a cell	Position	Function
Parenchyma	Throughout the plant	Photosynthesis and storage
Collenchyma	Under stem epidermis	It offers flexible support to plant organs they can bend without breaking.
Sclerenchyma	Throughout the plant	It offers firm support to plants part that is no longer growing.

Modified stems page 56 Study guide

1. **Stolons-** reproduction
2. **Rhizomes-** development of new leaves and shoots
3. **Tubers-**storage of starch
4. **Bulbs-** attachment of fleshy leaves

5. **Corms- food storage**

May/June 2013

1. D 2. D 3. A 4. A 5. E 6. E 7. A 8. A 9. A 10. D

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1. A 2. D 3. A 4. A 5. D 6. D 7. A 8. A 9. E 10. E

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May/June 2013

2.1. Mycorrhizae 2.2. Stolons 2.3. Stems 2.4. Rhizomes 2.5. Latex 2.7. Corola 2.9. Endosperm 2.10. Endodermis

Question 04

4.1. i) Photosynthesis sustain all life on earth

ii) Plants are our fundamental source of food

iii) Many medicines come from plants

iv) Wood from plants provides construction material for shelter

v) Wood is the main source of fuel for cooking and healing

4.2. Mycorrhizae are mutualistic associations between vascular plant roots and soil fungi. In endomycorrhiza the fungi penetrates plant root and produce branching structures called arbuscules. In ectomycorrhizae, the fungi do not penetrate plants roots but surround the roots to produce a sheath called a mantle. The plant gains increased absorption of minerals, such as phosphorus and consequently do not need to produce as many root hairs. The fungus may also help and protect plant against attack by some disease- causing fungi and nematodes. The fungus on other hand, gains sugar and other organic molecules from produced by the plant.

Classification- the systematic arrangement of organisms in groups or categories according to established criteria

Evolution- the directional process of change of organisms by which descendants become distinct in form and or function from their ancestors

Systematic- a system of taxonomy, the range of theoretical and practical studies involved in the classification of organisms

Zygote- a single diploid cell formed from two haploid parental cells during fertilization

Natural selection- refers to the ability of plants or animal species to adapt to new environmental conditions.

Five different methods of seed dispersal

***Seed dispersal by wind**

***Seed dispersal by water**

***Animal dispersal of seeds**