

Thematic of the botany

Lectures

1. Subject and disciplines of the botany. The specificities of the veterinar botany. Comparison of the plants and animals.
2. Denomination of the plants, the essence of the binominal nomenclature. The species. The most important taxonomical categories.
3. Characterization of plant cells. Summary of the universal cell organelles (membranes, ER, Golgi, mitochondrium) and of the specific only in the plants occuring organelles (plasmalemma, tonoplast, plastids, cell wall, vacuoles)
4. Plant tissues (meristematic tissues, epidermis-system, vascular system, ground tissue-system)
5. Plant morphology (root, root system, modified roots, root histology; shoot, stem, types of stem, stem histology; leaf, leaf types, histology of leaves; morphology of the reproductive organs: flower, inflorescences, pollination, fertilization (double fertilization of the Angyospermatophyta), seeds and fruits, fruit types.
6. Short summary of the plant systematic: Algas, lichens, mosses, Pteridophyta, Gymnospermatophyta, Angyospermatophyta)
7. Ground processes of the plant life:
 - 7.1. Water metabolism of plants, physiology of water uptake and downtake (osmotic-, turgor pressures, drowing force, water potential, transpiration, evapotranspiration)
 - 7.2. Uptake of different materials (passive and active transports, the double uptake of ions)
 - 7.3. Mineral nutrition of plants, the roles of the mineral elements (macro and micro elements, symptoms of deficiencies, laws of Liebig and Mitscherlich)
 - 7.4. Photosynthesis (importance, types, general equations). Parts: the light and the dark phases. The C₃ and the C₄ photosynthesis. The effect of ecological factors on photosynthesis.
 - 7.5. The main parts of the respiration (glycolysis, citrate-cycle, mitochondrial electron transport chain). The specific characteristics of the plant respiration: endoxidases, respiration of germination, climacteric respiration, parasitogen respiration, cyanidresistant respiration).
 - 7.6. Nitrogen cycle of plants, the main processes of plant nitrogen metabolism (nitrogen fixation, nitrification, reduction of nitrate, denitrification)
 - 7.7. Physiology of plant growth and development (definitions, the characterization of growth, grwoth's curves). The endogen regulators: plant hormones (auxins, gibberellins, cytokinins, abscizic acid, ethylen, synthetic regulators and their role in the agriculture)
 - 7.8. Excitement and movements of plants. Main groups of plant movements: taxis, tropism and nastia.
8. The basics of the plant ecology (subject, ground laws; the abiotic and the biotic factors, the soil /subject, formation, composition and livings in soil, summary of the soil types/.
9. Plant biotechnology: subject, history, main areas, methods and results, perspectives and risks. Main practical utilizations.

QUESTIONS OF BOTANICAL EXAM (2006)

1. Subject and disciplines of botany. The comparison of plants and animals.
2. Denomination of the plants. The taxonomical categories.
3. The plant cell: membranes, ER, mitochondrion, nucleus.
4. The plant cell: cell wall, plastids, vacuoles.

5. The plant tissues and their groups.
6. Meristems, epidermis system.
7. Vascular system.
8. Ground tissue system.
9. Root, root system, modified roots. Histology of root.
10. Stem, types of stem. Histology of stem.
11. Leaf (types, morphology, histology).
12. Sexual organs of plants (flower, inflorescences, seed, fruit).
13. Taxonomy of plants: algae, lichens, mosses.
14. Taxonomy of plants: Pteridophyta, Gymnospermatophyta.
15. General characterisation of Angyospermatophyta.
16. The class Dicotyledonopsida.
17. The class Monocotyledonopsida.
18. Water metabolism of plants: the role of water.
19. Physiology of water uptake of plants.
20. Transpiration and evapotranspiration of plants.
21. Uptake mechanisms of plants.
22. The macroelements of plants (physiological roles).
23. The microelements of plants (physiological roles).
24. The laws of Liebig and Mitscherlich and the practical importance.
25. Photosynthesis (importance, types, general equation).
26. Light-phase of photosynthesis.
27. Dark-phase of photosynthesis.
28. The effect of different ecological factors on the photosynthesis.
29. The main processes of the respiration, the characteristic, specific properties of plant respiration.
30. Nitrogen cycle. The main processes of nitrogen cycle at the plants.
31. Growth and development of the plants. Plant hormones. (Groups, chemistry, effects).
32. Main processes of the development.
33. Movements of plants.
34. The basics of plant ecology (ground laws). Indicatorplants.
35. Abiotic environmental factors.
36. Biotic environmental factors.
37. The soil (notion, origin, structure). The living organisms in the soil.
38. The types of soil.
39. Biotechnological methods, possibilities and perspectives
40. The manure (the types of manure).
41. Cereals (wheat, rye, Triticale: biology and utilisation)
42. Cereals (Barley, oat, rice: biology and utilisation)
43. Cereals (maize, millets: biology and utilisation)
44. Pulse crops (Forage legumes: biology, utilisation)
45. Oil crops (biology, utilisation)
46. Forage legumes (biology, utilisation).
47. Green forages, tuber crops, leaf forages, cucumbers.
48. Grassland (basics, types of grasses, possibilities of utilisation).
49. The most important species of grasses.
50. Legume species of grassland.
51. Plant groups in grassland of unfavourable effects.

REQUIREMENTS OF BOTANICAL EXAM

A. Practical part

1. The seed of poisonous and forage plants
 2. Recognition and characterisation of herbars of poisonous and forage plants (Active principles, habitat and effects).
 3. Recognition and characterisation of cereals and grass species.
- B. Theoretical part** On the basis of questions 1-51.

Attention! It is a general and basic requirement: the precise knowledge of latin names of plants. One must absolve first the practical parts (points 1-3).

When this part of exam is unsuccessful, the student can not be a participant of the second part of exam!

Recommended literature:

1. Horváth, Zs. – Vetter, J.: Applied botany for Veterinary Students. SZIE AOTK, Budapest, 2003.
2. Frohne, D. – Pfander, H.J.: Poisonous Plants. Manson Publishing Ltd London, UK 2005.

Note: Our students can all botanical preparates (seeds, herbar exemplars, grasses, cereals) in the practical (learning) room of the Department (**Rottenbiller street 50, floor 1, room 7**) permanently (**M-Th: 8-16, Fr: 8-13**) to observe, practice and learn!