Veterinary - medicine Botany Course

Summer semester - 2017

First exam (Test I) – Topics

1. Intoduction in Botany. Origin and development of botany. Branches of botany. Present state of botanical knowledge.

2. **Plant cytology (I).** Structure and function of the plant cell. Principles of the Cell Theory. Cell Diversity. Characteristics of prokaryotic and eukaryotic cell.

3. Cell Structure: Cell wall - primary and secondary cell wall, structure. Cell membrane - structure and function.

4. Cell diversity - unspecialized cells : meristematic cells; and specialized cells - parenchyma, colenchyma, sclerenchyma.

5. Cells organelles: single membraned - EPR, GA, vacuoles, double membraned - nucleus, plastids, mitochondria; unmembraned - ribosome.

6. **Introduction in Phitochemistry:** Primary metabolites - proteins, carbohydrates- types, functions.

7. Primary metabolites - lipids, organic acids - types, functions.

8. Secondary metabolites - glycosides, tannins, alkaloids - types, function.

Second exam (Test II) - Topics

1. **Plant histology (II)** - Plant tissues: Meristematic tissues - features, types; Permanent Tissues (Mature Tissues) - characteristic, types. Simple permanent tissues - types, structure, function;

2. Complex Permanent Tissues - types, structure, function; Ground tissue system and Vascular tissue system - function and structure; vascular bundles - types.

3. Secretory tissues or secretory structures - types and function.

4. **Plant morphology (III)** - Plant organs: vegetative organs: Root - function, types, modification; root system - types, structure of the root apex. Primary and secondary structure of the root.

5. Stem - function, parts of the plant stem - nodes, internodes; buds - floral and vegetative; buds scales; bundle scars; lenticels; pith; corky ridges. Stem anatomy, growth form, duration, divergence, modifications. Primary and secondary structure of the stem.

6. Leaf - function, structure, parts; types of leaves - with respect to the number of leaf blades, apices and bases, leaf texture; diversity of simple and compound leaves, leaf arrangement, leaf shapes, lobing, leaf venation; modifications.

7. Reproductive organs: Flower - function, parts: floral envelope and essential floral parts - perfect and imperfect flower types; floral arrangement; type of perianths; flower types; simple, complete, incomplete flowers; synoecious, monoecious, dioecious plants; distinct and connate flower parts, adnate and free; flower symmetry; hypanthium; gynoecium types - monocarpous, apocarpous, syncarpous; types of placentation; ovary position; types of insertion. Floral formula. Inflorescens - main types.

8. Fruit - function, formation, fruit parts. Functions of Fruits in Plant Propagation. Fruit Types According to Origin of Development - simple, aggregate, multiple, accessory; types of fruit by the texture - Dehiscent vs. Indehiscent Fruits; Dry vs. Fleshy.

9. Plant Seed. The Parts of a Seed (embryo, storage tissues, seed covering), their Functions and Plant Development.

Plant Taxonomy and Systematics

Questionary - 2017

1. Plant Taxonomy and Systematics - main periods, aims, history and principles of plant classification (Identification, Nomenclature and Classification); taxonomic keys, main taxonomic categories, scientific and common name, binomial system of classification.

2. KINGDOM PLANTAE. Nonvascular Plants: Division Bryophyta (Mosses) - specific features, life cycle, types of reproduction, uses, main groups. Division Hepatophyta (Liverworts), Division Anthocerophyta (Hornworts) - specific features, species.

3. Seedless Vascular Plants - common features. Division Psilotophyta (Whisk Ferns), Division Lycopodiophyta (Club Mosses) - main species, characteristic , uses.

4. Division Equisetophyta (Horsetails), Division Pterophyta (Ferns) - specific features, examples, life cycle, uses.

5. Vascular (seed - bearing) plants - structure features, consequences of the Terrestrial Adaptations, reproductive features. Classification: Gymnosperms & Angiosperms - specific features ; Plant life cycle; Gymnosperms - Division Cycadophyta (Cycads), Division Gingkophyta (The Ginkgo), Division Gnetophyta (Gnetophytes) - main species, uses .

6. Division Coniferophyta (Conifers) - characteristics, main species, bio active substances.

7. Division Anthophyta (Angiosperms, Flowering plants) - specific features; Types of Classification - ancient and modern; controversial moments; APG system; Flowering plant diversity - Monocotyledons (Monocots) & Dicotyledons (Dicots) - comparative characteristics. Cronquist Hierarchical system of Angiosperms.

8. DICOTS: SUBCLASS MAGNOLIIDAE (1): Magnoliaceae Family, Lauraceae Family, Piperaceae family - characteristic, main species, bio-active substances, uses.

9. Other families - Ranunculaceae Family, Papaveraceae Family , Aristolochiaceae Family , Berberidaceae Family - main species, bio active substances.

10. SUBCLASS HAMAMELIDAE (2) - Betulaceae Family, Fagaceae Family, Juglandaceae Family - specific features, main species, uses.

11. Other families: Moraceae Family, Cannabaceae Family, Urticaceae Family, - main species, relevance to veterinary practice.

12. SUBCLASS CARYOPHYLLIDAE (3): Cactaceae Family, Caryophyllaceae Family, Chenopodiaceae Family, Polygonaceae Family - main species, bio active substances.

13. SUBCLASS DILLENIIDAE (4) - specific features, family list: Tiliaceae Family, Malvaceae Family, Sterculiaceae Family, Ericaceae Family, Salicaceae Family - main species, bio active substances, uses.

14. Other families: Theaceae Family, Cucurbitaceae Family, Hypericaceae Family, Brassicaceae Family - main species, relevance to veterinary practice.

15. SUBCLASS ROSIDAE (5): Rosaceae Family, Fabaceae Family - main species, medicinal uses.

16. Others :Apiaceae Family, Araliaceae Family , Anacardiaceae Family , Rutaceae Family - main species, bio active substances.

17. Others : Cornaceae Family , Euphorbiaceae Family , Buxaceae Family, Linaceae Family - main species, relevance to veterinary practice.

18. Others : Erythroxylaceae Family, Myrtaceae Family, Rhamnaceae Family, Vitaceae Family - main species, bio active substances.

19. SUBCLASS ASTERIDAE (6) - Apocynaceae Family , Loganiaceae Family, Gentianaceae Family , Caprifoliaceae Family, Valerianaceae Family - main species, relevance to veterinary practice.

20. Others important families: Asteraceae Family, Lamiaceae Family, Boraginaceae Family – main species, medicinal uses.

21. Other families: Oleaceae Family, Scrophulariaceae Family, Plantaginaceae Family, Rubiaceae Family, Solanaceae Family - main species, medicinal uses.

22. MONOCOTS - SUBCLASS ARECIDAE (1): Acoraceae Family, Araceae Family - main species, bio active substances.

23. SUBCLASS COMMELINIDAE (2): Juncaceae Family, Cyperaceae Family, Poaceae Family - main species, bio active substances.

24. SUBCLASS LILIIDAE (3): Liliaceae Family, Iridaceae Family, Amaryllidaceae Family - main species, bio active substances.

Literature:

I. Latin names

http://www.sci.sdsu.edu/plants/plantsystematics/botnames.html - How to Pronounce Scientific Names (modified from Simpson 2010, Plant Systematics) – San Diego State University – College of Science

New - Latin and Greek Meanings and Derivations:

https://www.plantzafrica.com/plantnop/nephrothecailicifolia.htm

! http://www.calflora.net/botanicalnames/index2.html - North American Rock Garden Society's seed list

New - Dictionary of Botanical Epithets

http://www.winternet.com/~chuckg/dictionary.html

New - Glossary of Roots of Botanical Names

https://s10.lite.msu.edu/res/msu/botonl/b.../glossary/botrts.htm

II. Cell morphology

http://biology.tutorvista.com - Plant Cell | Structure, Parts of Plant Cell

!!! http://www.ivyroses.com/Biology/Cells/Plant-Cell-Structure.php

III. Products of plant metabolism - alkaloids, glucosides, saponins, etc.

!!! http:// illinoispoisoncenter.org/plant-lis - Plant List - Poison and Non-Poison | Illinois Poison Center

!! http:// vetmed.illinois.edu/poisonplants/ - Poison Plant Garden The University of Illinois College of Veterinary Medicine

!! http:// ucanr.edu/.../poisonous...plants/Plant_Toxicity - Plants Toxic to Animals - Safe and Poisonous Garden Plants

!! http:// wssa.net/weed/poisonous-plants/ - Poisonous Plants | Weed Science Society of America

!! http:// identifythatplant.com/...plants/poisonous-plants/ - Poisonous plants | Identify that Plant

http://research.vet.upenn.edu/poisonousplants/ - Poisonous Plants - Research at Penn Vet

http://valleylakesvet.com/poisonous-plants.pml -Valley Lakes Veterinary Clinic - Round Lake, Illinois, USA

IV. Plant tissues

http://Tutorvista.com

http://Sbs.utexas.edu – plant anatomy

http://Encyclopedia Britannica – britannica .com

http://Encyclopedia.com – Botany General & Plant organs

V. Plant Anatomy

http://Bio.miami.edu

http://ttktamop.elte.hu

http://Bioict . exteen.com – Botany

http://mhhe.com/biosci/pae/ botany – Integrative Biology

http://daviddarling.info – Encyclopedia of Science

http://memrise.com – separate plant organs & tissues

Plant Systematics

http://www.life.illinois.edu/ib/335/ – Integrative Bilogy 335

http://www.plantsystematics.org/reveal/

http://www.botany.wisc.edu/ -

http://Botany.csdl.tamu.edu – Vascular plants

http://Australia National Botany Gardens – anbg.gov.au – Description, illustration, interactive identification

http://Bobklips.com – ohioense – Bobs Brain on Botany

http://Sci.sdsu.edu/plants/plantsystematics/desc.html – Plant systematic resources

http://Libgiudes.rutgers.edu/botany - Rutgers Univ. Libraries

http://theplantlist.org – Missouri Botanical Garden – A working list of all plant species

http://Plants movements - plantsinmotion.bio.indiana.edu

!!http://sakshieducation.com/Inter/ - 1st Year Botany Study Material - Sakshieducation.com

!! http://Delta-intkey.com - Institute of Botany, Chinese Academy of Sciences - Australian National Parks and Wildlife Service, and the National Science Foundation of the United States of America

Bulgarian sources

http://Bgflora online

http://Flora bulgaria.. bg

PDF &PPT sources

slideplayer.com

slideshare.com