MSc in Crop Production Engineering

Final exam question list

1. The life of plants in cropping systems (The life cycle, morphology, root system, organs of vegetation and reproduction, annual, biennial and perennial plants, plant physiology, water and nutrient transport, metabolism, photosynthesis.)

2. The environment (Ecology, crop management and soil conservation, air, water and soil pollution, erosion and deflation and their control, crop rotation, environmentally sound plant production techniques, organic farming.)

3. Agronomic aspects of the soil (The origin and formation of soils, description of profile layers, organic and mineral soil components, textural classes, particles /gravel, coarse and fine sand, silt, clay/, living organisms, elements for plant food, acidity and alkalinity).

3. Land use and soil tillage (Principles of land use systems, tillage operations and implements, sustainable soil tillage, conventional and no till systems. Water retain in soil by appropriate techniques. Soil compaction, and alleviation).

5. Plant nutrition (Biochemical composition of plants, nutrient demand, fenophases of plant growth and development, deficiencies, nutrient uptake, water imbibition, irrigation, use of manures and fertilizers, the nitrogen cycle, top dressing and foliar fertilization).

6. Plant protection (Epidemics of diseases, weeds and pests and their control, complex means of plant protection, effects of chemical impact, variety specific susceptibility, biological control, spraying techniques, ULV pesticides, pesticide residues).

7. Grain crops (A short description of the main crops (wheat, maize, barley, rye etc.), soil and climatic requirements, elements of production techniques from sowing to harvest, transport and storage, economic importance, market, export).

8. Cash crops (A short description of the main crops (sugar beet, potato, sunflower etc), soil and climatic requirements, elements of production techniques from sowing to harvest, transport and storage, the food industries involved, by-products).

9. Specific crops (Targets in crops science. Alimentation, Non-food crops – oil seed crops, fibre crops, energy crops, pharmaceuticals and medicinal crops, environmental and erosion control applications, sport-, park-, ornamental plants).

10. Seed production (A definition of seed, legal framework of variety testing, registration, inspection of seed production, propagation of self and open pollinated plants and hybrids, seed quality standards, purity, identity, germination and vigour, seed treatment).

11. Milling and baking quality (The grain structure (protective layers, endosperm, germ), milling process, types of flour, bran, quality parametres - hectolitre weight, purity, farinographic value, gluten content, sedimentation, loaf volume etc.).

12. Research and experiments (Assessments of plant science, biology, genetics, physiology, breeding, agronomy research, genetic engineering, tissue cultures, phytotron, greenhouse trials, small plot field trials, research techniques, biometrics).