RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS FOR COMPETITIVE EXAMINATION FOR THE POST OF ASSISTANT PROFESSOR IN AGRICULTURE PLANT PATHOLOGY FOR COLLEGE EDUCATION DEPARTMENT

PAPER – I

Unit-1: Fundamentals of Plant Pathology –

History of Plant Pathology, importance of plant diseases, factors affecting plant diseases, classification of plant diseases, causes of plant diseases, general characters of fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, Spiro plasmas, viruses, viroids, algae, protozoa, rickettsia, phanerogamic parasites and nematodes. Disease triangle and tetrahedron, pathogenesis, symptoms & signs of plant diseases.

Unit-2: Diseases of Field and Horticultural Crops and their Management –

Symptoms, etiology, disease cycle and management of major diseases of rice, maize, bajra, groundnut, soyabean, pigeonpea, finger millet, green gram, castor, wheat, gram, mustard, sugarcane, sunflower, cucurbits, onion, garlic, chillies, turmeric, coriander, cabbage, cauliflower, brinjal, tomato, okra, beans, ginger, aonla, ber, guava, banana, papaya, pomegranate, marigold, rose, tea and coffee.

Types of phanerogamic parasites, Important plant diseases caused by stem and root parasites of phanerogams, Environmental factors and nutritional deficiency, primary and secondary air pollutants, methods of management.

Unit-3: Mycology -

Introduction, terminology and history of mycology, general characters of fungi, types of fungal thalli, reproduction in fungi (Sexual and asexual), classification of fungi, comparative morphology and characters of different groups of fungi upto generic level, lichens and its importance.

Unit-4: Plant Bacteriology -

Introduction, terminology and history of plant bacteriology, cell structure of bacterial cell, chemical composition of prokaryotes *viz:* MLOs/phytoplasmas, spiroplasmas and other fastidious prokaryotes. Importance of phytopathgenic bacteria, classification and nomenclature of phytopathogenic prokaryotes, important plant diseases caused by bacteria and MLOs, reproduction of bacteria, general biology of bacteriophage, L-form bacteria, plasmids and Bdellovibrio.

Unit-5: Plant Virology -

History of plant viruses, composition and structure of viruses, symptomatology of important plant viral diseases, chemical and physical properties of viruses, virus-vector relationship, classification, replication and movement of viruses. Isolation and purification of viruses, mycoviruses, arbo- and baculoviruses, satellite viruses, viroids and prions.

Unit-6: Laboratory and Analytical Techniques -

Preparation and sterilization of media, methods of isolation, methods of purification and preservation in pure culture, methods of inoculation, molecular detection of pathogens in seeds and other planting material. ELISA, ISEM and PCR. Laboratory equipments and their uses: Autoclave, Hot air oven, Laminar air flow, spectrophotometer, electrophoresis, light and electron microscopy.

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Note: - Pattern of Question Paper

1. Objective type paper
2. Maximum Marks: 75
3. Number of Questions: 150
4. Duration of Paper: Three Hours
5. All Questions carry equal marks.
6. Medium of Competitive Exam: Bilingual in English & Hindi
7. There will be Negative Marking.