

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

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

PAPER – II

Unit-1: Principles of Plant Pathology -

Plant disease complex, Survival and dispersal of plant pathogens, Role of environment and host nutrition on disease development, Host-parasite interaction, Infection process, Disease development: role of enzymes, toxins, growth regulators, Defense mechanisms. Effect of plant pathogens on host metabolism, Genetics of resistance, 'R' genes, Variation and variability of plant pathogens.

Unit-2: Principles of Integrated Disease Management (IDM) -

Introduction, history, importance, concepts and principles of Integrated Disease Management (IDM). Methods of control: host plant resistance, cultural, mechanical, physical, legislative, biological and chemical control methods, constraints and strategies of IDM implementation.

Unit-3: Epidemiology and Forecasting of Plant Diseases -

Basic concepts of plant disease epidemiology, factors affecting epidemic development (influence of pathogen, host and environment on disease development), crop loss assessment, disease forecasting, Epidemic analysis and prediction models, Survey and surveillance (including through remote sensing), disease severity and disease intensity.

Unit-4: Physiological and Molecular Plant Pathology -

Molecular mechanisms of pathogenesis, mechanism of resistance, PR proteins, Phytoalexins, Antiviral proteins, SAR, HR and active oxygen radicals, Tissue culture, Elementary genetic engineering, Management of pathogens through satellite, Antisense-RNA. Ribozymes, coat protein, hypovirulence cross protection/useful genes and promoter technology, Biosafety and bioethics.

Unit-5: Post -Harvest Plant Pathology -

Concept of post-harvest diseases, principles of plant disease management as pre-harvest and post-harvest, Types of post-harvest diseases, Factors governing post-harvest diseases, Role of bio-control agents and chemicals in controlling post-harvest diseases, Role of different storage structures, control of aflatoxigenic and mycotoxigenic fungi.

Unit-6: Mushroom Production Technology -

History and importance of mushroom, Edible and poisonous mushroom, cultivation technology of *Pleurotus*, *Agaricus* and *Volvariella* species, Maintenance of pure culture of mushroom fungi. Equipment's required for establishment of Mushroom unit, Nutritive value and uses of mushroom, economic aspects of mushroom cultivation and diseases of cultivable mushroom.

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.