

PRE- PG TEST 2015

SYLLABUS FOR PRE-PG TEST



उत्तमा वृत्तिस्तु कृषिकर्मेव

SWAMI KESHWANAND

RAJASTHAN AGRICULTURAL UNIVERSITY

BIKANER (RAJASTHAN)

A – Agriculture/Horticulture

1. Agronomy:

Agro-climatic zones of India and Rajasthan, adaptation and distribution of crops. Modern concepts of tillage. Management of crop residue, soil organic matter, bio fertilizers, green manuring, oil cakes, fertilizers. Consumption of straight and complex fertilizers, foliar application. Plant nutrients: function, occurrence, cycling in soils and their availability. INM concept and vermin-compositing. Cropping and farming systems. Precision and organic farming. Irrigation in India and Rajasthan. Quality of water, requirement, management, drainage. Dryland agriculture in India and Rajasthan. Agronomical study of important crops of Kharif and Rabi of Rajasthan. Problem weeds of Rajasthan and their physical, cultural, biological and chemical control.

2. Soil Science and Agricultural Chemistry:

Soil erosion, conservation, essential nutrients, their functions, deficiency symptoms, soil fertility evaluation, nutrient recommendation. Manures and fertilizers. Management of saline, saline sodic, sodic and acid soils. Micro-organisms in soils and their role. Soil as a medium for plant growth, soil composition, formation, profile, survey and classification. Remote sensing. Physical properties of soil, soil moisture, soil air and temperature in relation to plant growth. Clay minerals, organic colloids, cation exchange phenomenon, soil reaction and buffering capacity.

3. Biochemistry/ Biotechnology:

Chemistry of carbohydrates, lipids, proteins, vitamins and plant (phyto) hormones. Chemistry of Nucleic acids and their functions. Outlines of metabolism of carbohydrate, lipid and protein. General account of enzymes, coenzymes and secondary metabolites. Brief out lines of plant tissue culture and plant biotechnology.

4. Entomology:

Animal kingdom- Classification and nomenclature. Economic importance of invertebrates and vertebrates. Management of insect-pest and mites in agriculture. Ecosystem and wild life preservation. Insect dominance. Anatomy and morphology of grasshopper. Insect reproduction and development; identification. Lac culture, sericulture and apiculture.

Physical, mechanical, cultural, chemical, biological, legal and other modern approaches to control insect-pests.

5. Plant Pathology:

Importance of microbes in agriculture. Micro-organisms and their classification, nutrition, growth and reproduction. Host-microbe relationship. Morphology, reproduction, nutrition and nomenclature of fungi. Classification of plant pathogenic fungi. Importance of plant pathology. Symptomatology. Disease development and methods of plant disease control of important crops (cereals, pulses, oil seeds and cash crops) and IDM.

6. Nematology:

Introduction and brief history of plant parasitic nematodes, their morphological structure, biology, ecology and various physiological process. Symptomatology and nematode diseases with special reference to root-knot, reniform, citrus, ear cockle, tundu and molya and their management. Interaction of plant parasitic nematodes with other micro-organisms like fungi, bacteria and viruses, etc.

7. Plant Breeding and Genetics:

Variation – its causes and importance. Pollination and fertilization. Cell structure and division. Mendal and his work. Monohybrid and dihybrid crosses. Gene interactions. Multiple alleles and blood groups. Linkage, crossing over and mapping of chromosomes. Sex determination. Multiple genes. Gene mutations, chromosomal aberrations and polyploidy. Cytoplasmic, chromosomal inheritance. Breeding methods of self, cross and vegetatively propagated crops. Sterility and incompatibility and application in plant breeding. Heterosis. Seed production and certification of important crops. Breeding for diseases and pest resistance. Mutation and polyploidy breeding. Application of genetic engineering and biotechnology in crop improvement.

8. Horticulture:

Floriculture- ornamental gardening styles, features. Winter, Summer and Rainy season annuals. Flower arrangement. Vegetables- type of farming and classification. Raising of seedling in nursery. Cultivation of important vegetables. Pomology- Selection of site,

preparation and layout of orchard, planting system. Principles of fruit production, propagation, cultivation of important fruits of Rajasthan. Methods of preparation of juices, squashes, jams, jellies and marmalades, preserves, squashes and pickles, canning and dehydration of fruits and vegetables.

9. Plant Physiology:

Cell physiology, plant water relations, photosynthesis and photo- respiration. Respiration. Inorganic plant nutrition, physiology of flowering, Photoperiodism. Physiology of growth, PGR and regulation. Seed germination and dormancy. Crop production in relation to stress.

10. Animal Husbandry:

Importance of Livestock and poultry in national economy. Cattle management and housing of cattle, buffalo, sheep, goat, poultry and camel. Prevention and control of common livestock diseases. Classification of feeding stuff and computation of balanced ration. Important breeds of farm animals and poultry. Methods and systems of breeding. Principles and methods of selection. Purchase of dairy animals. Infertility, sterility, their causes and prevention. Hatching, brooding and feeding management in poultry.

11. Agricultural Economics:

Meaning of utility, factors of production and their characteristics. Classical production functions and law of diminishing returns. Factors affecting demand and supply. Price determination. Importance of agriculture in national economy. Peculiarities of agriculture. Agricultural finance. Credit and credit institution. Nature and problems of agricultural marketing and prices. Regulated market. Marketing channels and price spread. Economic principles of farm management, financial tools of farm management, farm planning and budgeting. Risk and uncertainty in agriculture. Importance of agri-business in Indian Economy. Discounted and un-discounted methods of project analysis.

12. Extension Education:

Extension education- definition, philosophy and principles. Rural sociology scope. Rural institutions- caste and family, rural leadership. Teaching-learning process. A.V. aids, teaching methods and their use in different situations. Programme planning and evaluation in

extension education. Communication process and its elements. Diffusion of agriculture innovation. History of early extension programmes in India, five year plans. Developmental programmes and institutions- IRDP, HYVP, RLEGP, T&V, NAIP, RKVY, TRYSEM, Lab to Land, PMRY, Swarn Jayanti Gram Swarajgar Yojna, KVK, ATIC, IVLP and ATMA.

13. Agri. Statistics:

Meaning and scope of statistics. Data summarization. Measures of central tendency and dispersion. Elementary idea of correlation and regression. Tests of significance. Field experimentation. Analysis of variance and its application in basic design of experiments.

B - Home Science

1. Family Resource Management:

System approach to management. Management concepts: value, goals, standards. Management process. Resources-classification and characteristics. Communication –process, classification, barriers, Decision making process. Time management and work simplification. Money management. Housing and its importance, selection of site, orientation and zoning, factors considered while planning a house, building materials, house wiring-Electrical fittings and fixtures. Housing problems in India. Housing finance. Elements of art and principles of design, colour, home lighting, flower arrangement. Human wants and demands. Family budget, savings and investment. Consumer problems, consumers' rights and responsibilities, standardization, grading, labeling and packaging, unfair trade practices, consumer protection and welfare, Right to information. Marketing mix and marketing environment, marketing research. Product planning. Sales management. Entrepreneurship-definition, classification, importance, Government support. Selection, use and care of household equipment.

2. Human Development and Family Studies:

Meaning, purpose, scope and principles. Stages of growth and development. Developmental pattern and task of children till adolescence. Physical and motor development, cognitive, mental development, emotional, social and personality development. Moral development and guidance. Family: meaning and definition, functions of traditional and modern family, stages of family, lifecycle, expectations and specific roles of family members of each stage. Importance of family and child welfare. Classification and various areas of family and child welfare services in India and role of National and International agencies. Theories of child development-Cognitive theory of Jean Piaget, Erikson's theory of psychological

development. Early childhood care and development. Children with developmental challenges.

3. Food & Nutrition:

Functions, Sources, deficiency and excess intake of energy, carbohydrates, proteins, fat, fat soluble and water soluble vitamins and minerals (Classification and chemistry of amino acids and carbohydrates). Interrelationship of nutrients. Cooking methods- merits and demerits. Methods, principles and advantages of food preservation. Meal planning: importance, factors to be considered, planning meals for family, modification of diet for various age, sex and income groups and physical and physiological conditions of body. Modification of normal diet to therapeutic diet. Diet during disease like fever, liver disease, cardiovascular diseases and metabolic disorders like overweight, under weight and diabetes. Assessment of nutritional status, nutritional problems arising from food habits. Role of National and International agencies for overcoming nutritional problems in India.

4. Home Science Extension and Communication Management:

Meaning, aims and functions in rural development, philosophy and principles of Home Science Extension Education. Problems of rural society. Concept and need of rural development. Audio-Visual Aids- Role and classification. Teaching methods- nature, principles, classification, advantages and limitations of each method, principles of extension teaching. Difference in teaching in formal and informal situation. Achievements and failures of community development programme. Panchayati Raj, Voluntary organization and their role in rural development, rural leadership. Concept, importance, elements and problems of communication, Meaning of adoption and diffusion. Meaning and characteristics of innovation. Stages and factors affecting adoption. Nature, role, meaning, principles and process of programme planning. Characteristics of good programme implementation, problems of extension work and ways to solve them. Concept, importance and methods of evaluation, use of evaluation result in programme planning. Rural development programmes- ICDS, IRDP, TRYSEM, Swarn Jayanti Gram Swarozgar Yojna and MGNREGA, India's five year plans with special reference to rural development.

5. Textile and Apparel Designing:

Classification, properties and basic concepts of production of textile fibre, yarn structure, complex and textured yarns, various fabric construction processes. Loom and its parts. Basic and fancy weaves. Printing and their methods. Dyes and their application, general and special finishes. Principles and process of laundering, laundry equipments, water, soaps and detergents, bleaches, blues, stiffening agents and their uses, laundering and stain removal of different fabrics. Dry-cleaning and storage of cloths. Social-psychological aspects and needs of clothing in the family. Changing needs of the family. Study of ready-made and tailor made garments in terms of finish, cost and quality. Clothing budget for the family of different income levels, size, habits and needs. Principles in selecting fabrics, colours and textures for different age groups. Traditional textiles of India and embroidery. Flat pattern methods, shifting of darts by slash and pivot method. Principles and elements of design applied to apparel designing. Introduction of CAD, CAM. Application of CAD in Textile and Apparel Designing. Fashion Terminology, Fashion cycle, theories of fashion adoption, factors affecting fashion.