Seed Technology

The courses of seed technology will be finitiated for three Years degree programmed in B.Sc. with specialization of seed technology. There shall be 10 courses in B.Sc. part I, II and III. During each year the final examination of theory and practical will be conducted based on courses outlines given in each paper. The examination will be conducted with three papers in B.Sc. part I, three papers in B.Sc. part II, and four papers in B.Sc. part III, the grading of marks will be done asper distribution of marks in both theory and practical examination during each year.

B.Sc. Part III 2004-2005

Theory Papers ;

Paper I	Seed quality control	50 marks
Paper II	Seed testing	50 marks
Paper III	Principles of seed protection methods	50 marks
Paper IV	Seed processing, stofage and marketing	50 marks
	Theory	200 marks.

Practical Paper :

Paper I

Practical examination will be conducted with above four conbined courses. 100 marks

Total 300 marks

Paper : I Seed quality control

Theory : Seed quality its concept and parameters, physical purity, germeability and viability, physical appearance and health, genetic purity varietal variability, heritable and non heritable characters seed ligislation, Indian seed act. Seed rules, New seed policy (1988) duties and responsibilities, seed certification its concept and history seed certification agency its organistion, seed certification standard, Inspection at field level, harvesting, threshing and processing stage, sampling for seed quality evaluation, issue of certificates and tags. Sealing, function of central seed committee, central sub-committee central seed certification board, state seed committee, notification and release, future trends in seed certification, plant variety protective plant breeders rights.

Practical :

(i) Filling of application forms for seed certification.

(ii) Monitoring field for seed production and isolation.

(iii) Identification and inspectin of weed plants and other crops plant - roughing.

(iv) Filling of inspection reports of field observations for both hybrid and varietal seed production.

(v) Study of sampling procedure for fields crops.

(vi) Study of varietal purity, through observations of seeds seedling and plants.

(vii) Recording of field data and filling of forms.

Paper : II : Seed Testing

Theory : Introduction, history and development, national and International organisation and seed testing linkage, seed sampling procedure and seed testing hetrogenity test, handling and testing of the samples, physical purity analysis, moisture, testing, germination testing, rapid test for seed quality determination, seed vigour testing, cultivar purity testing of pelleted seeds embryo testing, seed testing in relation to seed act & marketing.

Practical ;

(i) Sample registration and determination of the reactive afficacy of various mixing and dividing techniques.

(ii) Identification of purity components and reporting results.

(iii) Testing of seed germination, substrate and determination of mossture holding capacity of seed.

(iv) Pre-treatments, Pre-drying, Pre-chilling, scarilication, startification, chemical treatments, hot water treatment.

(v) Tetrazolium test for seed viability.

(vi) Moisture testing by oven drying method.

Paper : Ili ; Principles of seed protection methods

Section A - Seed pathology

Theory : Economic significance of seed borne disease, seed borne fungi bacteria, viruses and namatodes mechanisms of seed transmission, influence of environmental factors, seed borne diseases, seed treatment procedures and equipment, quarantive for seed ecological relationship of seed borne micro-organisms. national and international cooperation in seed pathology.

Section - B Seed entomology

Role of insects in seed production, classification of insects of

economic importance, stages of insect development ecological factors governing insect development and population buildup, important insect-pests of seed crops, their nature of damageand management in Rice, Wheat, chickpea, pigeonpea, peas mung, mustard and important vegetable crops, insect pollinators and their role in cross-pollination, control of insects by cultural mechanical, physical, quarantive, chemical preharvests sanitation, insect pests of storage and their nature of damage and losses, and methods of fumigation.

Practical :

(i) Identification and symptoms of important seed borne, pathogens.

(ii) Detection of important seed form of fungi, bacteria viruses.

(iii) Formulation of fungicides and methods of spray.

(iv) Identification of important storage insects, stage extent of damage.

(v) Methods of funigation and principles.

(vi) Formulations of pesticides and their application.

(vii) Plant protection equipments and machines theres uses and handling.

(viii) Visit of ware houses and godowns.

Paper : IV Seed processing Storage and marketing

Theory : Concept and objectives of seed processing, principles and operation of seed processing plants, preparing seed for processing, scalper, debearder, scarifier, sheller, seed drying importance and methods of moisture measurement. methods of seed drying, wet and dry seeds, advantages of mechanical drying, wet and dry seeds, advantages of mechanical drying over sundrying, air screen cleaner cum grader and operations, separator types, and operations, separator types, and their operations, seed treatment equipment, storage of treated seeds, principles of seed storage and conditions, gene bank storage.

Basic concepts of marketing, seed transportation storage cost, cost of processing and packaging, marketing organization for seed, seed market in India. Seed pricing breeder, foundation/certified seeds.

Practical ;

(i) Visit of seed processing and storage complex.

(ii) Study of principles of operations of different machines.

(iii) Measurement of seed moisture content by direct and indirect methods.

(iv) Study of seed cleaner, sheller, dehusker, grader, seperator seed treatment and seed packaging machines/equipments.

(v) Cost analysis of seed processing.

(vi) Survey of marketing seed production agencies, and merchants and Govt. seed production agencies.

(vii) Records keeping.

B.Sc. Part III

Practical Paper : I **M.M. 100**

The practical examination will be conducted comprising of four papers of B.Sc. Part III and marks will be distributed as per detail below:

1. Prepare a field data sheet for certification of seeds. 10
2. Study of moisture per centage and viability of seeds. 10
3. Study of purity of varieties with sampled seeds and seedlings. 10
4. Identification of important seed borne diseases and insect-pests (spotting - 20 specimens). 20
5. Preparation of slides of disease causing pathogen in pulses, cereals, vegetable crops. 20
6. Methods of formulation of different concentration of fungicides/ pesticides. 10

OR

Describe the precautions suring spraying of fungicides and pesticides.

7. Estimates the cost of seed processing of 5 quintal seeds of cereals/ pulses/oil seed. 05
8. Practical records and disease - platorium 10
9. Viva-Voce 05

Total = 100

List of Text - Book

1. The embryology of angiosperms — By Bhojwani, S.S. and Bhatanagar, S.P.
2. Physiology of seeds — By Croker, W and Barton L. V.
3. Principles of seed Science & Technology. — By O. Copeland
4. Viability of seeds — By E.H. Roberts.
5. Germination of seeds — By Mayer and Mayber

6.	Principles of plant Breeding	By Allard R. W.
7.	Elementary principles of plant Breeding.	By Chaudhary, H.K.
8.	Introduction of plant Breeding	By Chaudhary, R.C.
9.	Plant Breeding - theory and practices	By Chopra, V.L.
10.	Plant breeding - principles and	By B.D. Singh
11.	Genetics	By Strickberger
12.	Seed Technology	By Agrawal, R.L.
13.	Pollination mechanism, Reproduction and plant breeding	By Frankes, R.
14.	Techniques in seed science and Technology	By Agrawal, P.K. And Dadlant. M.
15.	Cytogenetics and plant breeding	By Chandra shekharan and Parthasarthy.
16.	Male sterility in higher plants	By Kaul, M.L.H.
17.	Heterosis reapraisal theory and Practices.	By Frankes R.
18.	Insect pollination of crops	By Frec, J.B.
19.	Seed production mannual	NSC and Rockefella Foundation Pub.
20.	A hand book of seed inspections	Central seed Committee Ministry of Agriculture.
21.	Principles of seed certification	By N.P. Nemg.
22.	An Introduction to seed Technology	By Johnson, T.R.
23.	Breeding procedures for crosspollinated crops vegetable crops.	By Swarup V.
24.	Vegetable breeding	By Kalloo RPG Pub.
25.	Seed pathology - Vol I & II	By Naeer gaard p.
26.	Priniciples of seed pathology Vol I & II	By Agrawal V.K. and Sinclair J.B.
27.	Fungicides in plant diseases control	By Y.L. Nene and P. Thapliyal
28.	Agricultural Entomology	By A.S. Atwal
29.	Seed processing	By Billy, R, NSC Pub
30.	Agricultural Marketing in India	By Acharya S.S. IBH