

PUNJABI UNIVERSITY PATIALA

Scheme of Studies and Syllabus for

Diploma in Agriculture (Two Year Course) Part-II, Semester III & IV

Session 2019-2020

SEMESTER-III

SCHEME OF STUDY

Code	Title of paper	Hours per week		Credits		Theory Marks		Marks For Practical	Total Marks
		T	P	T	P	External Examination	Internal Assessment		
HORT 301	Nursery Production of Fruit Crops	0	2	0	1	0	0	25	25
ENT 302	Agricultural Entomology	2	2	2	1	54	21	25	100
PPT 303	Diseases of field crops	1	2	1	1	54	21	25	100
FMN 304	Farm mechanization	2	2	2	1	54	21	25	100
Econ 305	Marketing of farm products	2	0	2	0	54	21	0	75
FIM 306	Farm irrigation and management	2	2	2	1	54	21	25	100
EAP 307	Elementary Agro processing	1	2	1	1	54	21	25	100
PBG 308	Plant Breeding and seed production	2	2	2	1	54	21	25	100
	Total	12	14	12	7	378	147	175	700

Total credits: 19

Internal assessment and its Components: This components for Internal Assessment shall be as follows :

S. No.	Component	Total Marks of the internal Assessment
(i)	Attendance*: *The students with 85%-100% attendance will be given full attendance marks, whereas students with 80%-84.9% attendance shall be given 80% marks of attendance and students with 75%-80% shall get 60% of attendance marks.	20%
(ii)	Written Assignment/Project	40%
(iii)	Two Mid-Semester Tests/Internal Examination (Average of both Mid-Semester Tests/Internal Examination)	40%

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SCHEME OF STUDY

Code	Title of paper	Hours per week		Credits		Theory Marks		Marks for Practical	Total Marks
		T	P	T	P	External examination	Internal assessment		
PPT-401	Diseases of Fruits and Vegetables	1	2	1	1	54	21	25	100
MCL-402	Mushroom Cultivation	1	2	1	1	54	21	25	100
PTC-403	Plant Tissue Culture	1	2	1	1	54	21	25	100
UIN-404	Useful Insects	2	2	2	1	54	21	25	100
EED-405	Extension Education	2	4	2	2	54	21	25	100
AED-406	Agri-bussiness and Entrepreneur Development	2	2	2	1	54	21	25	100
PCV-407	Protected Cultivation of Vegetable Crops	0	2	0	1	0	0	25	25
ZOO-408	Fish Production	2	0	2	0	54	21	0	75
	Total	11	16	11	8	378	147	175	700

Total credits: 19

Internal assessment and its Components:

S. No.	Component	Total Marks of the internal Assessment
(i)	Attendance*: *The students with 85%-100% attendance will be given full attendance marks. Whereas students with 80%-84.9% attendance shall be given 80% marks of attendance and students with 75%-80% shall get 60% of attendance marks.	20%
(ii)	Written Assignment/Project	40%
(iii)	Two Mid-Semester Tests/Internal Examination (Average of both Mid-Semester Tests/Internal Examination)	40%

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PAPER:HORT-301:NURSERY PRODUCTION OF FRUIT CROPS

Max Marks: 25

Duration of the Paper: 3 hrs

Credits: 1

PRACTICAL

1. Layout of a nursery.
2. Extraction and storage of healthy seeds.
3. Seed bed preparation. Raising of rootstock for different fruit plants.
4. Soil solorization and Preparation of potting mixture.
5. Selection of healthy scion wood.
6. Practices in different methods of plant propagation like cuttings. layering, budding and grafting in fruit plants.
7. Management practices i.e weed control, irrigation, nutrition. Removal of sprouts.
8. Diagnosis and control of important diseases and pests in the nursery.
- 10 Lifting and packing of nursery plants.

Books Recommended

1. Plant propagation principles and practices by Hartman and Kesters
2. Plant propagation by Kaushal Kumar Mishra, Navneet Kumar Mishra and Satish Chand
3. Basic Horticulture by Jitender Singh
4. Text Book of Pomology- Vol-I,II,III and IV
5. Diseases of fruit crops by V K Gupta and Satish Kumar Sharma

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PAPER: ENT-302: AGRICULTURAL ENTOMOLOGY

Max. Marks : 100

Theory : 54 marks

Internal Assessment: 21marks

Practical: 25 marks

Pass Marks: 35% in
theory and practical
separately

THEORY

Duration of the Paper: 3 hrs

Credits: 2

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Insects, their distinguishing characteristics. Insects' dominance, Importance of insects in Agriculture. General body structure. Growth and development. Feeding stages and adaptations. Pests - definitions, Population build-up and causes of outbreak. Principles and methods of insect-pests management, Integrated Pest Management.

Section - B

Important insect-pests of crops - cereals_ cotton. sugarcane. oilseeds. pulses. fruit and vegetables. nature of damage and management. Stored grain insect-pests and safe storage of grains. Insecticides classification and formulations. Safe use of insecticides. Plant protection equipment.

PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credits: 1

1. Insect's body structure and anatomy, Modifications of appendages and development stages.
2. Identification of important insect-pests of crops - cereals. cotton, sugarcane. oilseeds, pulses, fruit and vegetables. and symptoms of attack.
3. Storage insect-pests and symptoms of damage.
4. Working of commonly used plant protection equipment. common troubles and remedies.
5. Insecticidal formulations. Preparation of spray fluid.
6. Grain storage structures. Seed treatment and fumigation.

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PAPER: ENT-302: AGRICULTURAL ENTOMOLOGY

Books Recommended

1. Atwal A S. Insect pest of South East Asia, 1986, Kalyani Publisher, New Delhi
2. Pruthi H S. A text book of agriculture entomology, 1969, ICAR Publication
3. Singh H S and Bindra D S. Pesticides applications equipments Oxford and IBH, New Delhi
4. Abrol P, Dhram and Shanker Uma. Integrated pest management (Principles and practices) Sher-e-Kashmir University of Agriculture and Science Technology J&K
5. Mishr R C. General and applied entomology, Tata McGrew Hill, New Delhi
6. Singh Surendra, Kandoria, Jiwan Lal. Selection, use and maintenance of pesticide application equipment ICAR, New Delhi
7. Gatoria, G S and Goyal Tarun, A practical manual on zoology and entomology.

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PAPER:PPT-303: DISEASES OF FIELD CROPS

Max. Marks : 100
Theory : 54 marks
Internal Assessment: 21marks
Practical: 25 marks

Pass Marks: 35% in
theory and practical
separately

THEORY

Duration of the Paper: 3 hrs

Credits: 1

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Importance and concept of plant diseases. Symptoms and causes of diseases
Study of important diseases of wheat, rice, maize and barley.

Section - B

Study of important diseases of cotton, sugarcane, sorghum, Gram, moong, mash, red gram, rapeseed mustard. and groundnut. Economic aspects of disease control

. PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credits:1

1. Diagnosis by studying symptoms of important diseases of field crops.
2. Demonstration of important methods of plant disease management.
3. Practical field training in the use and operation of plant protection equipment.

Books Recommended

1. Plant Pathology by N Agrios, Dr B P Pandey, R P Singh and R S Mehrotra

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PAPER: FPN-304: FARM MECHANIZATION

Max. Marks : 100
Theory : 54 marks
Internal Assessment: 21marks
Practical: 25 marks

Pass Marks: 35% in
theory and practical
separately

THEORY

Duration of the Paper: 3 hrs

Credits: 2

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Familiarization with sources of power used at the farm. Internal Combustion (IC) engines and terminology. Working principles of two stroke and four stroke engines. Different systems of tractors, types and selection. Maintenance of prime movers and agricultural machinery. Safety on the farm and on the road.

. Section - B

Duties of the tractor driver/ operator while on road. Mandatory and cautionary signs. Offences, penalties and procedure. Mensuration. Weights and measures. Cost of operation of tractor and agricultural machinery. Mechanics of machines. Introduction to agricultural machinery including precision farming. Log books.

. PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credit:1

1. Main parts of diesel engine (two stroke and four stroke) and their functions.
2. Daily maintenance of prime movers and their safety aspects.
3. Various systems of tractor.
4. Field measurements.
5. Study of various parts of agricultural machines along with their functions.
6. Tractor driving and operation of agricultural machines and hauling operation.
7. Repair and maintenance of various machines, their adjustment and performance parameters

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PAPER: FPN-304: FARM MECHANIZATION

Books Recommended

1. Principles of Agricultural Engineering Vol-I by T P Ojha and A M Michael
2. Farm Power and Machinery Management (Principles and Practices: Vol-I) by D N Sharma and S Mukesh
3. Elements of Agricultural Engineering by Dr. Jagdishwar Sahay

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PAPER:ECON-305: MARKETING OF FARM PRODUCTS

Max. Marks : 75

Theory : 54 marks

Internal Assessment: 21 marks

Pass Marks: 35%

Credits: 2

Duration of the paper: 3 hrs

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Marketing – Importance, concepts and definition. Market functions and services. Types of markets, Market functionaries. Methods of sale. Market channels, charges and price spreads. Market regulation. Market information. Role of various marketing agencies and State Government in grading of farm produce.

Section - B

Concept and importance of grading and standardization of various food grains, vegetables, fruits and commercial crops at farm and market level. Criteria for formulation of grades, Grade standards adopted by different agencies, Agmarking of honey, flour, ghee, spices, etc. Sampling, analysis and standard specifications.

Books Recommended

1. S S Acharya, Aggarwal Agricultural Marketing
2. Sonal Kumar Velayudhan and Guda Sridhar Marketing to Rural Consumers
3. Kotler, Keeler, Jha. Marketing Management
4. Dogra, Ghuman. Rural Marketing
5. Rajni Arora. Rural Marketing

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PAPER:FIM-306: FARM IRRIGATION AND DRAINAGE

Max. Marks : 100

Theory : 54 marks

Internal Assessment: 21marks

Practical: 25 marks

Pass Marks: 35% in
theory and practical
separately

THEORY

Duration of the Paper: 3 hrs

Credits: 2

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Sources of irrigation water. Methods of measurement of irrigation water, Irrigation channels and underground pipelines system.

Section - B

Methods of irrigation, selection and operation. Drainage methods. Components of drainage system, Types of wells and pumps.

. PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credit: 1

1. Layout for different methods of irrigation.
2. Measurement of irrigation water
3. Preparation of plans for drainage.
4. Working of pumps and their components

Recommended Books

1. Irrigation Agronomy by R R Reddy
2. Agriculture facts for competition by R S Meena and Sandeep Kumar

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PAPER:EAP-307: ELEMENTARY AGRO-PROCESSING

Max. Marks : 100

Theory : 54 marks

Internal Assessment: 21marks

Practical: 25 marks

Pass Marks: 35% in
theory and practical
separately

THEORY

Duration of the Paper: 3 hrs

Credits: 1

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Concept of agro processing and its importance in context of Punjab. Concept of Agro-processing complexes. Layout and planning. Components of agro-processing complex, unit operations in agro-processing industry.

Section - B

Milling of wheat and its machinery. Milling of paddy and its machinery, Milling of pulses and its machinery. Oil seed processing and machinery

. PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credit: 1

1. Milling quality of paddy,
2. Knowledge about rice, wheat, oilseed and pulses milling machinery.
3. Visit to agro processing complexes.

Recommended Books

1. Food Science by B Srilakshmi and Norman N
2. Food Science by Potter Juseph H and Hatchkim

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PAPER: PBG-308: ELEMENTARY PLANT BREEDING AND SEED PRODUCTION

Max. Marks : 100

Theory : 54 marks

Internal Assessment: 21marks

Practical: 25 marks

Pass Marks: 35% in theory and practical separately

THEORY

Duration of the Paper: 3 hrs

Credits: 2

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Classification of plants, botanical description and floral biology, Emasculation and pollination techniques in cereals. millets. pulses. oilseeds. cotton. sugarcane. Aims and objectives of plant breeding. Modes of reproduction. modes of pollination and their consequences. Mendel's laws of inheritance. qualitative and quantitative traits. genotype and phenotype. cytoplasmic inheritance. Methods of breeding, introduction, selection in self and cross pollinated crops. Hybridization and selection in self pollinated crops. Recurrent selection. Heterosis and inbreeding, hybrid breeding. Methods of breeding asexually propagated crops. Male sterility and its utilization.

Section - B

Importance of seed production, Deterioration of crop varieties and its prevention, Different classes of seed. Production of *nucleus* and breeder seed. Foundation and *certified seed* production in self and cross pollinated crops, Seed certification. Seed act. Grow out test. Seed drying. Seed testing for quality assessment, Seed health. Seed treatment. Seed storage, Seed marketing.

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PAPER: PBG-308: ELEMENTARY PLANT BREEDING AND SEED PRODUCTION

. PRACTICAL

Max. Marks: 25

Duration of paper: 3 hr

Credits: 1

1. Botanical description and floral biology of major crops.
2. Hybridization kit. Hybridization techniques in different crops.
3. Study of male sterility and hybrid seed production.
4. Seed sampling. Tests for seed moisture. seed health. seed viability,
5. Test of germination percentage. Grow out test.
6. Varietal identification in seed production plots.
7. Visit to seed processing plant.

Recommended Books

1. Principles of Plant Breeding by R W Allard
2. Principles of Seed Technology by P K Agrwal
3. Principles of Seed Technology by Phurdan Singh
4. Seed Science and Technology by S V Sai Prasad, Sheela Verma Dharmendra Jat
5. Seed Technology by Rattan Lal Agrawal
6. Heterosis Breeding by B Rai
7. Plant Breeding Theory and Techniques by S K Gupta

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PAPER:PPT-401: DISEASES OF FRUIT AND VEGETABLE CROPS

Max. Marks : 100
Theory : 54 marks
Internal Assessment: 21marks
Practical: 25 marks

Pass Marks: 35% in
theory and practical
separately

THEORY

Duration of the Paper: 3 hrs

Credits: 1

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Symptomatology. etiology and management of diseases of citrus, guava, mango, peach. pear. plum, ber, papaya and grapes.

Section - B

Symptomatology. etiology and management of diseases of potato. tomato, brinjal, chillies. Okra, cabbage, cauliflower, carrot, radish, turnip, onion, garlic and cucurbitaceous vegetables.

PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credit:1

1. Diagnosis by studying symptoms of important diseases of fruit and vegetable crops.
2. Preparation of fungicidal formulations.

Books Recommended

1. Plant Pathology by George N Agrios

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PAPER:MCL-402: MUSHROOM CULTIVATION

Max. Marks : 100
Theory : 54 marks
Internal Assessment: 21marks
Practical: 25 marks

Pass Marks: 35% in
theory and practical
separately

THEORY

Duration of the Paper: 3 hrs

Credits: 1

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Status and scope of mushroom production. Important features of edible fungi. Cultivation technology of edible varieties of mushrooms including substrate pre-treatment, its preparation. composting methodologies. Spawn types and preparation of spawn.

Section - B

Growing methodologies or different varieties of mushrooms for small, medium and commercial scale and crop management practices. Diseases of mushrooms. Nutritional status of edible mushrooms. Economics of mushroom production. Post harvest care of mushrooms.

PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credit:1

1. Methodology of substrate pre-treatment, Preparation and composting of substrate.
2. Tissue culture, master culture and spawn preparation techniques.
3. Cultivation methodology for commonly cultivated varieties of mushrooms.
4. Post-harvest shelf life of mushrooms.

Books Recommended

1. Hand book of Mushroom by N. Bhal
2. Mushroom cultivation Technology by R Gogoi: Y. Rathaiah:T.R, Berah
3. Mushroom production and processing Technology by V.N. Pathak
4. Hand book of mushroom technology by R.K. Pandey and S.K. Gosh

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PAPER: PTC-403: PLANT TISSUE CULTURE

Max. Marks : 100
Theory : 54 marks
Internal Assessment: 21marks
Practical: 25 marks

Pass Marks: 35% in
theory and practical
separately

THEORY

Duration of the Paper: 3 hrs

Credits: 1

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

History and development of plant tissue culture. Introduction, scope and importance of plant tissue culture. Advantages and disadvantages of *in vitro* propagation, Nutritional requirements of *in vitro* cultures. Mother plant selection and collection, preparation, surface sterilization and inoculation of explants.

Section - B

In-vitro propagation *via* enhanced release of axillary buds. Organogenesis and somatic embryogenesis. Economics and commercial potential of *in-vitro* propagation. Progress in the *in-vitro* propagation of field, forestry and horticultural plants.

PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credit:1

1. Layout of *in-vitro* propagation units. Working inside *in-vitro* propagation unit. Laboratory organization, equipment. tools and techniques,
2. Laboratory contaminants and its control measures.
3. Culture media preparation: major nutrients, minor nutrients, organics and other ingredients.
4. Plant growth regulators.
5. Solidifying agents.
6. Methods of sterilization, inoculation and incubation of cultures.
7. *Ex-vitro* establishment of plantlets their field testing,
8. Field planting and management of tissue culture plants.

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PAPER: PTC-403: PLANT TISSUE CULTURE

Books Recommended

1. Introduction to plant tissue culture by M.K. Razdan
2. Plant tissue culture and introductory text book by S.S. Bhojwani, Prem Kumar Dhanre
3. Plant Biotechnology by H.S.Chawla
4. Elementary of Biotechnology by P.K.Gupta
5. Practical book of biotechnology and plant tissue culture by S. Chand

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PAPER-UIN-404: USEFUL INSECTS

Max. Marks : 100
Theory : 54 marks
Internal Assessment: 21marks
Practical: 25 marks

Pass Marks: 35% in
theory and practical
separately

THEORY

Duration of the Paper: 3 hrs

Credits: 2

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Insects of commercial importance. Apiculture, sericulture and lac culture.

Section - B

Pollinators. Predators. parasitoids and scavengers. Insects as food; medicinal and aesthetic value of insects.

PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credit:1

1. Identification of honey bee species and castes. Colony examination.
2. Bee hive and equipment.
3. Bee flora.
4. Seasonal bee management.
5. Colony multiplication.
6. Bee enemies - identification, nature of damage and management.
7. Bee diseases - symptoms and management.
8. Bee products.
9. Identification of silk worm species.
10. Sericulture equipment.
11. Silk worms rearing.
12. Pests and diseases of silk worms.
13. Lac insect and lac culture.
14. Bee pollinators important parasitoids and predators - identification and rearing.
15. Insects collection and display.

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PAPER-UIN-404: USEFUL INSECTS

Books Recommended

1. Honeybees and their management by R.C.Mishra
2. Bee keeping in India by S. Singh
3. Economic zoology by Shukla and Upadhaya
4. Practical manual of agriculture zoology and entomology by G.S Gatoris and Goyal Tarun
5. A text book of applied entomology by K.P. Shrivastava

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PAPER:EED-405: ELEMENTARY EXTENSION EDUCATION

Max. Marks : 100
Theory : 54 marks
Internal Assessment: 21marks
Practical: 25 marks

Pass Marks: 35% in
theory and practical
separately

THEORY

Duration of the Paper: 3 hrs

Credits: 2

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Meaning and principles of Extension Education, Elements of communication process. Classification, selection and use of extension teaching methods, Audio visual aids.

Section - B

Principles and procedure of extension programme planning and evaluation. Qualities and abilities of good extension worker, Interpersonal perception and social behavior. Group - meaning, type and functioning,

PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credits:2

1. Conducting individual contact.
2. Method demonstration.
3. Group meeting and campaign.
4. Skill in preparation and use of graphic aids.
5. Speaking to group and mass.
6. Visits to agro-based industries and agricultural development organizations of Punjab.

Books Recommended

1. Extension education and rural development by Dr. J P Singh
2. Extension communication and management G L Ray

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PUNJABI UNIVERSITY PATIALA

Scheme of Studies and Syllabus for

Diploma in Agriculture (Two Year Course) Part-II, Semester III & IV

Session 2019-2020

**PAPER:AED-406: AGRIBUSINESS AND ENTREPRENEUR
DEVELOPMENT**

Max. Marks : 100

Theory : 54 marks

Internal Assessment: 21marks

Practical: 25 marks

Pass Marks: 35% in
theory and practical
separately

THEORY

Duration of the Paper: 3 hrs

Credits: 2

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Agribusiness: Definition, features and structure of agribusiness. Value chain concept in agribusiness. Stakeholders in agribusiness. Importance of agribusiness in Indian economy. Factors transforming Indian agribusiness. Role of government in agribusiness development. Challenges to Indian agribusiness.

Section - B

Entrepreneurship development: Basic concepts, need and scope of entrepreneurship. Types of entrepreneurs, Women entrepreneurs, rural entrepreneurship. Institutions in aid of entrepreneurs. Steps for starting a micro and small scale industry. Introduction to various functional areas in management viz. financial, marketing and human resource management. Problems of entrepreneurs.

. PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credit:1

1. Development of business plan incorporating all the functional areas of management.
2. Project report preparation and its presentation in the class.

Recommended Books

1. The agribusiness book by Mukesh Panday and Deepali Tewari
2. Fundamentals of entrepreneurship and small business by Renu arora and S. K. Sood
3. Agribusiness management by Arun Mishra and Debashish Biswas

Semester-IV

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PAPER:CPV-407: PROTECTED CULTIVATION OF VEGETABLE CROPS

PRACTICAL

Max. Marks: 25

Duration of paper: 3 hrs

Credit:1

1. Importance scope, future prospectus of protected cultivation.
2. Types of protected structures and their fabrication.
3. Media for protected cultivation.
4. Low tunnel technology.
5. Green house production of tomato, capsicum and cucumber.
6. Training and pruning.
7. Bulb set technique in onion.
8. Hybrid seed production of vegetables.
9. Drip irrigation.
10. Fertigation and mulching in vegetables.

Recommended Books

1. Handbook of horticulture by K.L Chada
2. Olericulture Fundamentals of vegetables production vol-I by K.P.Singh and Anant Bahdur
3. Protected cultivation of vegetable crops by Balraj Singh
4. A to Z solution of horticulture at glance by A.K Salaria

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Semester-IV

ZOO-408: FISH PRODUCTION

Max. Marks : 75

Theory : 54 marks

Internal Assessment: 21 marks

Pass Marks: 35%

Credits: 2

Duration of the Paper: 3 hrs

INSTRUCTIONS FOR PAPER SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and will carry 8 marks each. Section C will consist of 11 short answer type questions which will cover the entire syllabus uniformly and will carry 22 marks in all.

INSTRUCTIONS FOR CANDIDATES

Candidates are required to attempt two questions from each section A and B and the entire section C.

Section - A

Importance of fish and fisheries. Types of fisheries: capture and culture fishery. Fishing gears and crafts. Scope of inland fisheries in the agro-climatic regions of Punjab. Survey of fish fauna: indigenous and exotic/introduced species. Fishes of economic importance. Selection of fish for culture purposes.

Section - B

Management of a typical fish farm. Fish nutrition and feeding. Techniques of induced breeding and their importance. Production of fish seed. Fish hatcheries and their importance. Economic importance of fish. Fish diseases. Integrated fish farming. Introduction to fish post-harvest technology.

Recommended Books

1. Fishing gear and craft technology by Y Sreekrishna
2. Biotechnology and genetics in fisheries and aquaculture by Andy Beaumont, Pierre Bouolry, Kathry and Hoare
3. Khanna S S and Singh H R. 2005. A textbook of fish biology and fisheries
4. Partihar, R P. 2004. A text book of fish biology and Indian fisheries
5. Pandey, N and Malik, D S. 2008. Integrated fish farming
6. Finfish and Shellfish bacteriology by Kimberley A Whitman
7. Biotechnology and genetics in fisheries and aquaculture by A R Beaumont
8. Fish and Fisheries by Pandey and Shukla
9. An introduction to fish biology and fisheries by S S Khanna and Neerja Kapoor
10. Handbook of fisheries and aquaculture by ICAR New Delhi
11. A text book of fishery science and Indian fisheries by C B L Srivastara and Sushma Srivastara