

**B.Sc., POULTRY PRODUCTION AND
BUSINESS MANAGEMENT**

Curriculum & Scheme of Examination

Academic Year 2016-2017 onwards

BHARATHIAR UNIVERSITY
COIMBATORE-641 046

B.Sc. Poultry Production and Business Management

Curriculum & Scheme of Examination under CBCS

(For the CCII candidates admitted from the Academic Year 2016-2017 onwards)

Part	Title of the Paper	Inst. hrs./ week	Exam. Marks			Dur. of Exam (Hours)	Credits
			CIA	ESE	Total		
Semester I							
I	Language – I	6	25	75	100	3	4
II	English – I	6	25	75	100	3	4
III	Core 1–Prospects of Poultry Industry	3	20	55	75	3	3
	Core 2–Applied Avian Anatomy and Physiology	4	20	55	75	3	3
	Core Pr.1–Prospects of Poultry Industry	3	20	30	50	3	2
	Core Pr.2–Applied Avian Anatomy and Physiology	3	20	30	50	3	2
	Allied Paper 1: Computer Applications	3	25	75	100	3	4
IV	Environmental Studies**	2	-	50	50	3	2
Semester II							
I	Language – II	6	25	75	100	3	4
II	English – II	6	25	75	100	3	4
III	Core 3 – Principles of Poultry Breeding	4	20	55	75	3	3
	Core 4 – Poultry Production Systems, Housing, Automation and Equipments	4	20	55	75	3	3
	Core Pr. 3- Principles of Poultry Breeding	3	20	30	50	3	2
	Core Pr.4- Poultry Production Systems, Housing, Automation and Equipments	3	20	30	50	3	2
	Allied Paper 2: Entrepreneurship Development	2	25	75	100	3	4
IV	Value Education – Human Rights**	2	-	50	50	3	2
Semester III							
III	Core 5 – Feeds and Feeding of Poultry	5	20	55	75	3	3
	Core 6 – Incubation and Hatchery Management	4	20	55	75	3	3
	Core 7 – Climate and Poultry Production	4	20	55	75	3	3
	Core Pr.5 – Feeds and Feeding of Poultry	3	20	30	50	3	2
	Core Pr.6 – Incubation and Hatchery Management	3	20	30	50	3	2
	Core Pr.7 – Climate and Poultry Production	3	20	30	50	3	2
	Allied Paper 3: Poultry Business and Supply Chain Management	2	25	75	100	3	4
IV	Skill Based Subject: 1 – Quantitative Method for Business Management	3	20	55	75	3	3
	Non-Major Elective – I: Yoga for Human Excellence**	2	-	50	50	3	2
Semester IV							
III	Core 8 – Feed Production and Feed Milling technology	3	20	55	75	3	3
	Core 9 – Breeder Management Practices	3	20	55	75	3	3
	Core 10 – Broiler Production	3	20	55	75	3	3

	Core 11 – Poultry Diseases	3	20	55	75	3	3
	Core Pr.8 – Feed Production and Feed Milling technology	3	20	30	50	3	2
	Core Pr.9 – Breeder Management Practices	3	20	30	50	3	2
	Core Pr.10 – Broiler Production	3	20	30	50	3	2
	Core Pr.11 – Poultry Diseases	3	20	30	50	3	2
	Allied Paper 4: International Trade, Food Laws and Regulations	2	25	75	100	3	4
IV	Skill Based Subject: 2 – Financial and Management Accounting	2	20	55	75	3	3
	Non-Major Elective – II: General Awareness**	2	-	50	50	3	2
Semester V							
	Core 12 – Biosecurity and Flock Health	3	20	55	75	3	3
	Core 13 – Layer Production	2	20	55	75	3	3
	Core 14 – Poultry Economics and Marketing Strategies	4	25	75	100	3	4
	Core 15 – Poultry Waste Management	2	20	55	75	3	3
	Core 16 – Organizational Behaviour	2	20	55	75	3	3
III	Core Pr.12 – Biosecurity and Flock Health	3	20	30	50	3	2
	Core Pr.13 – Layer Production	3	20	30	50	3	2
	Core Pr.14 – Poultry Waste Management	3	20	30	50	3	2
	Major Elective –I	3	20	55	75	3	3
IV	Skill Based Subject: 3 –Poultry Processing and Products Technology	2	20	55	75	3	3
	Skill Based Subject: 4 – Practical - Poultry Processing and Products Technology	3	30	45	75	3	3
Semester VI							
III	Project Work (150 marks) & Viva voce (50 marks)***	-	-	-	200	-	8
Total					3500		140

@ Tamil/ Hindi

**No Continuous Internal Assessment. Only University End of Semester Examinations (ESE)

*** Project Report – Individual candidate will be working in the farms such as breeder, broiler, layer, hatchery and feed mill for a near period of 2 to 3 months. The experience gained in his respective field will be presented and documented for the viva voce examination.

Major Elective Papers(1 Paper has to be chosen from the following 3 papers)

1. Financial Management and Insurance
2. Legal aspects of Poultry Business
3. Diversified Poultry and Ratites Management

Non - Major Elective Papers

1. Yoga for Human Excellence
2. General Awareness

Skill Based Subject(Theory and Practical)

1. Quantitative Method for Business Management
2. Poultry Processing and Products Technology
3. Practical – Poultry Processing and Products Technology
4. Financial and Management Accounting

Note: In core/allied subjects, number of papers both theory and practical are included wherever applicable. However, the total credits and marks for core/allied subjects remain the same as stated below.

Tally Table:

S.No.	Part	Subject	Marks	Credits
1.	I	Language – Tamil/Hindi	200	8
2.	II	English	200	8
3.	III	Core – Theory/Practical/Project	2125	85
		Allied	400	16
		Electives	75	3
4.	IV	Non-major elective	100	4
		Skill Based subject	300	12
		Environmental Studies	50	2
		Value Education	50	2
Total			3500	140

Note:

CBCS – Choice Based Credit system
CIA – Continuous Internal Assessment
ESE – End of Semester Examinations

1. Break up Marks for CIA of Theory

*CIA Exam	-	10	or	15
Assignment	-	5	or	5
Attendance	-	5	or	5
		<hr/>		<hr/>
Total		20		25
		<hr/>		<hr/>

2. Components of Practical:

Break up Marks for CIA of Practical

CIA Practical Exam	-	10
Observation Notebook	-	5
Attendance	-	5
		<hr/>
Total		20
		<hr/>

Break up Marks for ESE of Practical

Experiment	-	25
Record	-	5
		<hr/>
Total	-	30
		<hr/>

***CIA Theory examination:** There will be two continuous internal examination (CIA I & II) for 75 marks each and the consolidated marks of both the exams will be taken as 10 marks for those paper whose internal marks has to be 20 and 15 marks for those paper whose internal marks has to be 25 which will be added along with assignment (5 marks) and attendance marks (5 marks).

3. Component for Project:

ESE	Particulars	Project Out of 200 Marks (UG)
*ESE	Project Report Preparation	50
	Project Presentation	50
	Result Interpretation	50
	Viva Voce	50
Total Marks (ESE)		200

** Project report and Viva voce will be evaluated jointly by both the Project Supervisor (Faculty of the Department) and an External Examiner*

SEMESTER - I

CORE1– PROSPECTS OF POULTRY INDUSTRY

Total Credits: 3

Total Hours: 60

Objective:

*To understand the poultry industry based on the past, present and emphasis of future growth.
To study the statistical data and various functions involved in poultry industry.*

UNIT-I

(12 HRS)

Introduction – definition of poultry – broiler, layer and breeder – common terms related to poultry – development of poultry industry in India. Past and present scenario of poultry industry – domestication of poultry. Role of government/ private agencies in poultry development.

UNIT-II

(12 HRS)

Genetic classification of chicken and other species of poultry- layers, broiler, and other class of poultry – Hybrids available and its merit and demerits- American, English, Mediterranean, Asiatic, Indian breeds, dual purpose breeds and non-descript birds.

UNIT-III

(12 HRS)

Importance of broiler and layer production under Indian scenario – poultry population and other poultry related statistics, per capita meat and egg availability in India – different regions and states and in world.

UNIT-IV

(12 HRS)

System of rearing- range- semi intensive- intensive rearing, advantages and disadvantages. Introduction to rearing of Turkeys, Ducks, Japanese Quails, Guinea fowls and Geese for meat and egg production.

UNIT-V

(12 HRS)

Regional influences, Structure of poultry industry – breeder farm, hatcheries, commercial farms, feed mills and processing industry. Backyard to industrial farming of poultry, future perspective and constraints of Indian poultry industry.

Text Book

1. Ensminger. M. E., 2015. Poultry Science. 3rd Edition. International Book Distribution Co., Lucknow, India.
2. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.

References

1. Singh, R. A., 2011. Poultry Production. 3rd Edition. Kalyani Publishers, New Delhi.
2. Jull A. Morley, 2007. Successful Poultry Management. 2nd Edition. Biotech Books, New Delhi.
3. Hurd M. Louis, 2003. Modern Poultry Farming. 1st Edition. International Book Distributing Company, Lucknow.

SEMESTER - I

CORE2– APPLIED AVIAN ANATOMY AND PHYSIOLOGY

Total Credits: 3

Total Hours: 60

Objectives:

To study the internal and external body parts of chicken for understanding the various functions. To examine birds for handling, selection, culling, judging and diagnosis of disease.

UNIT-I

(12 HRS)

Introduction to Anatomy and Physiology. Integumentary parts of chicken - Feather patterns - feather tracts - feather sexing of day old chicks. Comb and its different types. Role of skin, scales, nails, plumage and beak.

UNIT-II

(12 HRS)

Respiratory system-anatomical structures-nasal cavity, larynx, syrinx, trachea, bronchi, lungs, air sacs- and its function, inhalation and exhalation process. Circulatory System-structure, functions of Heart, types of blood vessels and components of blood.

UNIT-III

(12 HRS)

Skeletal system-different types of bones-pneumatic, medullary, cervical, thoracic, fused, wing and limb bones. Excretory System-roles of Kidney, Ureter and Cloaca.

UNIT-IV

(12 HRS)

Digestive system-anatomical structure and its functions – mouth, oesophagus, crop, proventriculus, gizzard, small intestine, liver, pancreas, caeca, colon, cloaca. Reproductive system-male and female reproductive system, structure and its function. Egg structure, formation and its composition.

UNIT-V

(12 HRS)

Nervous system - Endocrine system-Protein and Steroid Hormones-Role of Hypophysis, Neurohypophysis, Adrenal Glands, Pancreas, Testis, Ovary and Pineal gland. Immune system-definition, different organ and its functions - Bone Marrow, Bursa of Fabricius, Thymus, Harderian gland, Spleen, Payers patches and Gut Associated Lymphoid Tissues (GALT).

Text Books

1. Colin G. Scanes., 2015. *Sturkie's Avian Physiology*. 6th Edition. Academic Press, Elsevier Inc., New York.
2. Sathapathy S., Singh M. K., and Joshi S. K., 2015. *A Handbook on Anatomy & Physiology of Domestic Animals and Birds*. Sathish Serial Publishing House, New Delhi, India.

References

1. Ensminger. M. E., 2015. *Poultry Science*. 3rd Edition. International Book Distribution Co., Lucknow, India.
2. Bell D. Donald and Weaver D. William Jr., 2007. *Commercial Chicken Meat and Egg Production*. 5th Edition. Springer India Pvt. Ltd., Noida.
3. Singh, R. A., 2011. *Poultry Production*. 3rd Edition. Kalyani Publishers, New Delhi.

SEMESTER - I

CORE PRACTICAL – 1: PROSPECTS OF POULTRY INDUSTRY

Total Credits: 2

Total Hours: 75

Objectives:

To understand and to study about the development and growth of poultry industry based on the usage of statistical tools.

1. Rural Chicken – types
2. Commercial hybrids with the respective poultry companies.
3. Dual purpose breeds – Asiatic, English, American and Mediterranean breeds
4. Other poultry species (Duck, Japanese quails, Turkey, Geese, Guinea Fowl and Pigeon)
5. Poultry population and other related statistics
6. Different types of graphical representation systems in poultry industry
7. Per capita meat and egg availability in India and other regions
8. Poultry business process – Hierarchy and management structure
9. Poultry integration and farming process – Commercial Broiler and Commercial Layer
10. Poultry integration and farming process – Breeder, Broiler and Layer

SEMESTER – I

CORE PRACTICAL – 2: APPLIED AVIAN ANATOMY AND PHYSIOLOGY

Total Credits: 2

Total Hours: 75

Objectives:

To understand and to have a hands on experience in various external and internal parts of avian species.

1. Different types of feather and its function
2. Different types of comb and its function (Demo)
3. Skeletal system
4. Respiratory and Circulatory system
5. Digestive system
6. Excretory system
7. Male and Female Reproductive System
8. Egg Structure and its function
9. Nervous and Endocrine system (Demo)
10. Immune system

SEMESTER I

ALLIED PAPER 1–COMPUTER APPLICATION

Total Credits: 4

Total Hours: 75

Objective:

To make the students to understand the concepts of Computers, basic knowledge and for application in poultry field and industry.

UNIT-I (15 HRS)

Office automation – objectives- office automation technology – office equipment – document generation, computer network – LAN, WAN, Virtual Private Networks, ISDN, email, message system, information retrieval systems – Desktop publishing.

UNIT-II (15 HRS)

Microsoft office – Word processing – MS Word. MS applications – MS Excel for spread sheet applications Financial Functions – Statistical Functions – graphics in Excel – creating, formatting and printing graphs.

UNIT-III (15 HRS)

Microsoft power point – creating presentation in power point – slide transition –running slide show. Database system-characteristics of database management system components – relational database system – popular relational database packages and their features.

UNIT-IV (15 HRS)

Database administrator – functions of database administrator – database security – access rights and access control – login and passwords – physical security measures – backing up database for security – Microsoft access – creation of database in MS access – Formatting and printing of report.

UNIT-V (15 HRS)

The internet – internet protocol suite – domain name system – internet and its possibilities for business communication – internet tools –Email, FTP, WWW, bulletin boards, Telnet, Portals – search engines – website – internet and extranet – Electronic data interchange – objectives and advantages of EDI-EDI formats – business application of EDI-Computerized accounting – Tally. Oracle – ERP software.

Textbook

1. Ahilya Rani, 2016. Computer. 8th Edition. Lucent Publications
2. Thareja Reema, 2014. Fundamentals of Computers. 1st Edition. Oxford Publications.
3. Sinha P. K., 2004. Computer Fundamentals. 1st Edition. BPB Publications

References

1. Singh Umesh Kumar and Jain Sumit, 2013. Fundamentals of Computer Science and Information Technology. 1st Edition. Raj Publication.
2. Jain Anupam and Mehra Navneet. Computer Fundamentals MS Office. 1st Edition. Vitasta Publishing

SEMESTER-II

CORE3–PRINCIPLES OF POULTRY BREEDING

Total Credits: 3

Total Hours: 60

Objectives:

To emphasis on the importance of genetic selection, various principles of genetics and production of new variety by various breeding practices involved in poultry industry.

UNIT-I

(12 HRS)

Genetic classification of poultry – origin and breed characteristics of poultry. Basic genetics – common terms – chromosome number in different species – qualitative traits – auto sexing – economic traits.

UNIT-II

(12 HRS)

Inheritance of characters: dominance and recessiveness, homozygous and heterozygous individuals. Mendelian inheritance: the law of segregation and recombination, the law of independent assortment. Sex-linked inheritance-distinguishing sex at hatching time.

UNIT-III

(12 HRS)

Genes with various effects, principles in controlling inheritance: genetic basis of variability, heredity and environment. Basis of selection-individual, family, pedigree selection, progeny testing, random mating, outbreeding, crossbreeding, inbreeding

UNIT-IV

(12 HRS)

Methods of selection on phenotypic values: tandem method, independent culling levels, selection index, ideal breeding programme, selection of birds for breeding-selection of egg type lines, selection of meat type lines.

UNIT-V

(12 HRS)

Objectives of poultry breeding for meat and egg production. Methods of mating – flock, pen, pair and artificial insemination. Breeding – common breeding programs practiced in industry. Breeding for high hatchability- Influence of Sire and Dam, influence of rate of laying, effects of inbreeding and crossbreeding.

Text book

1. Jull A. Morley, 2008. Poultry Husbandry. 2nd Edition. J. V. Publishing House, Jodhpur, Rajasthan.
2. Jadhav N. V., and Siddique M. F., 2007. Handbook of Poultry Production and Management. 2nd Edition. Jaypee Brothers Medical Publishers Pvt. Ltd., New Delhi.
3. Hutt F. B, 2003. Genetics of the Fowl: The classic guide to poultry breeding and chicken genetics. 1st Edition. Norton Creek Press, New York.

References

1. Sreenivasaiyah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Jull A. Morley, 2007. Successful Poultry Management. 2nd Edition. Biotech Books, New Delhi.
3. Hurd M. Louis, 2003. Modern Poultry Farming. 1st Edition. International Book Distributing Company, Lucknow.

SEMESTER - II

CORE4 – POULTRY PRODUCTION SYSTEMS, HOUSING, AUTOMATION AND EQUIPMENTS

Total Credits: 3

Total Hours: 75

Objective:

To make the students aware about the basic concepts of poultry houses, their construction, materials for construction, equipments required for rearing and various automation techniques used in industry.

UNIT-I

(15 HRS)

System of rearing – backyard system, semi-intensive system, intensive system – cage, deep litter and slat system, floor space, watering and feeding space requirements for different age groups and rearing conditions.

UNIT-II

(15 HRS)

Selection of site and location of poultry farm – importance of poultry housing and equipment. Principles of housing – location of poultry houses – basic principles of construction.

UNIT-III

(15 HRS)

Types of houses – open sided – deep litter, slat system, wire floor, cage houses and raised platform cage houses. Cages – types of cages – flat deck, Californian cages, “A” type cages, tier cages and furnished cages. Environmentally controlled houses.

UNIT-IV

(15 HRS)

Fundamentals of ventilation-ventilation system – tunnel, duct and windowless house. Types of roof and materials used. Insulating materials for poultry houses-R-Value. Poultry farm equipments – brooding, feeding and watering equipments, nest boxes filler flats, vaccinators, dubbing, debeaking, and other equipments.

UNIT-V

(15 HRS)

Introduction – concept and applications of automation in poultry industry. Automatic climate control system – feeders and drinkers, egg and manure collection system. Automation in feed mill units, hatchery and in egg and meat processing plant.

Textbook

1. Mountney J. George and Parkhurst R. Carmen, 2001. Poultry Products Technology. 1st Edition. The Harwoth Press Inc., USA.
2. Narahari D., and Kumararaj R., 2008. Handbook of Applied Broiler Production. 1st Edition. Poultry Punch Publication (I) Pvt. Ltd., New Delhi, India.
3. Hurd M. Louis, 2003. Modern Poultry Farming. 1st Edition. International Book Distributing Company, Lucknow

References

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Jull A. Morley, 2007. Successful Poultry Management. 2nd Edition. Biotech Books, New Delhi.
3. Jadhav N. V., and Siddique M. F., 2007. Handbook of Poultry Production and Management. 2nd Edition. Jaypee Brothers Medical Publishers Pvt. Ltd., New Delhi.

SEMESTER – II

CORE PRACTICAL – 3: PRINCIPLES OF POULTRY BREEDING

Total Credits: 3

Total Hours: 75

Objectives:

To understand and emphasis on the importance of genetics and production by various means in poultry industry.

1. Genetic classification of poultry
2. Origin and breed characteristics of poultry
3. Chromosome number in different species
4. Sex linked inheritance – auto sexing
5. Basis of selection
6. Selection index
7. Procedures involved in artificial insemination
8. Ideal breeding programme – selection of egg type lines
9. Ideal breeding programme – selection of meat type lines
10. Common breeding programs practiced in industry

SEMESTER - II

**CORE PRACTICALS - 4: POULTRY PRODUCTION SYSTEMS, HOUSING,
AUTOMATION AND EQUIPMENTS**

Total Credits: 3

Total Hours: 75

Objectives:

To have a practical and hands on experience in poultry house construction, materials used and their function, equipments and automation techniques at various fields of poultry industry.

1. Shed dimension measurement and area calculation
2. Different shed designs and layout (Demo)
3. Poultry shed roofing materials
4. Feeder and drinker alignment – layout
5. Feeder and drinker – dismantling and assembling
6. Brooding equipments – dismantling and assembling
7. Pipeline, automatic drinker and nipple drinker, line arrangement – connectivity and operations
8. Curtain arrangements – types and setup cost.
9. Water sample collection-pH and hardness measurement
10. Different kinds of automation system in poultry – visit to feed mill, Hatchery, Processing Plant, Breeder, Broiler and Layer farms (Demo).

SEMESTER - II

ALLIED PAPER. 2: ENTREPRENEURSHIP DEVELOPMENT

Total Credits: 4

Total Hours: 60

Objectives:

To make the student understand the basic concepts and measures involved in developing the entrepreneurship qualities to set up their own poultry farm and related enterprise.

UNIT-I

(12 HRS)

Entrepreneurship – meaning, need, definition and importance of entrepreneurship, dynamics of entrepreneurship, factors affecting entrepreneurship.

UNIT-II

(12 HRS)

Entrepreneurs' characteristics, competencies, types of entrepreneurs - entrepreneurial motivation, characteristics of persons with high need for achievement.

UNIT-III

(12 HRS)

Agribusiness: requisites, scope – agribusiness opportunities in India – sources of business ideas – business plan and elements – managing and running a successful enterprise – managing competition for a new enterprise.

UNIT-IV

(12 HRS)

Role of government and non-governmental agencies in promoting entrepreneurship in India – objectives of KVIC, PIPDIC, SIPCOT – functions of NIESBUD, SISI, SIDCs, TCOs – MSME: classification of enterprise, objectives and functions – NABARD: objectives and milestones – role of commercial banks.

UNIT-V

(12 HRS)

Forms of business organizations – sole proprietor, partnership, Joint Stock Company – sources of finance (short and long term) – Bank finances.

Textbook

1. Singh A. K., 2009. Entrepreneurship Development and Management. 1st Edition. Laxmi Publications, New Delhi.
2. Kumar Anil S., Poornima S. C., and Abraham M. K., 2009. Entrepreneurship Development. 1st Edition. New Age Publishers

SEMESTER III

CORE5 – FEEDS AND FEEDING OF POULTRY

Total Credits: 3

Total Hours: 75

Objectives:

To make the student understand about the basic principles of nutrition and different kinds of feeds, their formulation for providing nutritive value and feeding methods in poultry for increased performance.

UNIT-I

(15 HRS)

Digestive system– factors influencing the feed consumption in birds – Macro and micro nutrients – nutrient requirements and feeding for various species of poultry. Classification of Feed Ingredients – Conventional feeds and Non-Conventional Poultry Feeds – Energy sources, Vegetable protein sources, Animal Protein sources.

UNIT-II

(15 HRS)

Feed ingredients, processing of feed –forms of feed– mash, pellet & crumble feed preparation and feeding methods. Feeding chicks, growers, layers, broiler and breeders –feeding in different seasons– nutritional and metabolic disorders in poultry.

UNIT-III

(15 HRS)

System of feeding – restricted and controlled– use of additives and non-additives – enzymes, probiotics, prebiotics and antibiotics, herbs, performance enhancers – Utilization of non – conventional feedstuff – feeding of ducks, turkeys, Japanese quails and Guinea fowls.

UNIT-IV

(15 HRS)

Organic, functional, designer & Specific Pathogen Free (SPF) feed production – production of drug, pesticide & toxin free feeds – regulation for import and export of feed and feed supplements.

UNIT-V

(15 HRS)

Physical and sensory evaluation of feed ingredients – sampling techniques–proximate analysis –poultry feed formulae. Commonly occurring anti nutrients and toxicants in poultry feed ingredients – Mycotoxins and their prevention.

Textbook

1. Leeson S., & Summers J. D., 2001. Scott's Nutrition of the Chicken. 4th Edition. University Books, Canada
2. Reddy Ramasubba V., and Bhosale T. Dinesh, 2004. Handbook of Poultry Nutrition. 1st Edition. International Book Distribution Co., Lucknow, India.
3. Mahajan Naresh, 2015. Poultry Nutrition and Management. 1st Edition. Anmol Publications Pvt. Ltd., New Delhi.

References

1. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.
2. Wiseman. J, and Garnsworthy. P. C., 1999. Recent Development in Poultry Nutrition.
3. Titus Harry. W, and Fritz James. C, 1971. The Scientific Feeding of Chickens. 5th Edition.

SEMESTER III

CORE 6–INCUBATION AND HATCHERY MANAGEMENT

Total Credits: 3

Total Hours: 60

Objectives:

To make the student study about the various types of incubation methods, conditions and equipments required at the breeder farm and hatcheries and develop skills for working as well as managing at different levels of hatchery for providing good hatchability.

UNIT-I

(12 HRS)

Layout, design and location of hatchery; Methods of incubation; Physical requirements of incubation – collection, selection, cleaning and sanitation of eggs. Storage of hatching eggs – incubation methods – single and multistage incubators.

UNIT-II

(12 HRS)

Hatchery operations – setting, candling, transfer, hatching, pedigree hatching, chicks pull out, grading, packing and chick dispatch – In-ovo and in-hatch vaccinations and medications.

UNIT-III

(12 HRS)

Incubation periods and physical factors for incubating eggs– temperature, humidity, gaseous environment, position and turning of eggs.

UNIT-IV

(12 HRS)

Role of computer in modern hatchery operations – quality control. Major cause of eggs failing to hatch – Post hatch break open study.

UNIT-V

(12 HRS)

Analysis of poor hatchability – diagnosis of hatchability problem – Biosecurity measures – hatchery sanitation – fumigation – Waste management.

Textbook

1. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.
2. Taylor W. Lewts, 2003. Fertility and Hatchability of Chicken & Turkey Eggs. 1st Edition. International book Distributing Co., Lucknow, India.

References

1. Sreenivasaiyah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Rajini Asha R., 2011. Simply....Poultry Science. 1st Edition. Alfa Publications, New Delhi.
3. Suguna Management System: Standard Operating Manual – Feed Lab, 2012. Suguna Foods Pvt. Ltd.
4. Sreenivasaiyah., P. V., 2006. Scientific Poultry Production-A unique encyclopedia. International Book Distributing Co., Lucknow, India.

SEMESTER III

CORE7 - CLIMATE AND POULTRY PRODUCTION

Total Credits: 3

Total Hours: 60

Objective:

To study about various seasons and climatic factors involved in the rearing of birds at the farm level and also understand about alleviating the poultry production in different and adverse climatic conditions in our country.

UNIT-I

(12 HRS)

Definition of climate – classification of climate in different regions. Climatic factors: assessment of climate. Study of climatic factors in region to poultry production.

UNIT-II

(12HRS)

Climatic differentiation for avian production: micro & macro climate – temperature, temperature zones, air – composition, speed and movement, relative humidity and light. Climatic factors affecting poultry production in housed conditions.

UNIT-III

(12 HRS)

Poultry production and management: summer, winter and monsoon. Physical and chemical heat regulations, measuring and assessing temperature

UNIT-IV

(12 HRS)

Introduction of natural heat resistant breeds/ varieties/ strains to suit different climate regions of India – agro meteorology and weather forecasting for poultry husbandry activities.

UNIT-V

(12 HRS)

Alleviating measure during extreme climatic conditions – housing, feeding, water, medication, climatic adaptation measures and disaster management.

Text Book

1. Narahari D., and Kumararaj R., 2008. Handbook of applied Broiler Production. 1st Edition. Poultry Punch Publication (I) Pvt. Ltd., New Delhi.
2. Prasab Sushil, 2012. Handbook of Poultry Production. 1st Edition. Enkay Publishing House, New Delhi.

References

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Jadhav N. V., and Siddique M. F., 2007. Handbook of Poultry Production and Management. 2nd Edition. Jaypee Brothers Medical Publishers Pvt. Ltd., New Delhi.

SEMESTER III

COREPRACTICAL 5 – FEEDS AND FEEDING OF POULTRY

Total Credits: 2

Total Hours: 75

Objectives:

To enable the students to have hands on experience regarding the various techniques in assessing feeds and feeding producers.

1. Different types of poultry feeds (Demo)
2. Feed ingredients – physical evaluation of quality
3. Feed storage and distribution methods in farm level
4. Feed gram/ bird calculation – Feed Conversion Ratio (FCR)
5. Feed proximate analysis – moisture
6. Feed proximate analysis – crude protein (Demo)
7. Feed proximate analysis – fat – ether extract (Demo)
8. Estimation of minerals – Calcium and Phosphorus
9. Estimation of Mycotoxin – Aflatoxin (Demo)
10. Estimation of acid insoluble ash

SEMESTER III

CORE PRACTICAL 6 – INCUBATION AND HATCHERY MANAGEMENT

Total Credits: 2

Total Hours: 75

Objectives:

To enable the students to understand and have hands on experience in basic techniques followed during incubation and in hatchery management.

1. Hatchery design, layout and equipments (Demo)
2. Grading of hatching eggs – egg setting
3. Candling of incubated eggs and transfer to hatcher
4. Physical requirements – temperature, humidity, turning
5. Pull out – chick grading, vaccination, sexing methods
6. Break open study of unhatched eggs – infertile, dead germ, dead in shell, malformation, malposition (Demo)
7. Fertile and total hatchability% calculation
8. Chick transportation methods (Demo)
9. Hatchery waste disposal methods (Demo)
10. Hatchery sanitation methods

SEMESTER – III

CORE PRACTICAL 7: CLIMATE AND POULTRY PRODUCTION

Total Credits: 2

Total hours: 75

Objectives:

To study various instruments used for analysis of climatic factors at micro and macro level involved in poultry production.

1. Measurement of temperature – minimum and maximum thermometer, Thermograph
2. Measurement of relative humidity – wet and dry bulb thermometer, hygrometer, digital hygro – thermometer, Thermo-Hygro graph
3. Measurement of light intensity – lux meter
4. Measurement of air velocity – anemometer
5. Measurement of air composition
6. Measurement of rain fall
7. Recording of climatic conditions (Demo)
8. Climatic factors affecting poultry production
9. Farm visit – Meteorological centers
10. Farm visit – Meteorological centers

SEMESTER III

ALLIED PAPER 3–POULTRY BUSINESS AND SUPPLY CHAIN MANAGEMENT

Total Credits: 3

Total Hours: 75

Objectives:

To enable the students to understand and learn various business management skills involved in poultry industry based on the marketing skills, various organization involved for providing funds and about the import and export principles.

UNIT-I

(15 HRS)

Poultry Business: definition, nature, scope and prospect: Changing dimensions of Poultry-business in India - Types of poultry business. Characteristics of poultry products: Marketable surplus – Definition, Factors affecting and causes of low marketable surplus in India.

UNIT-II

(15 HRS)

Problems in measuring marketable surplus. Buffer stock Procurement and working of public distribution system.

UNIT-III(15 HRS)

Poultry organization working and functioning of organization such as National Bank for Agriculture and Rural Development(NABARD),etc. Role of NECC and BCC in pricing and marketing.

UNIT-IV

(15 HRS)

Problems in processing and suggestion for improving efficiency delivery system and channels in marketing. Role of cooperative, public and private sectors in marketing. Poultry inputs and their types – farmand non-farm.IT application in input marketing. Recent development of poultry sector in stock market. Export / Imports in poultry sector.

UNIT-V

(15 HRS)

Supply chain management –definition, strategic advantages, need, and phases in SCM. Modes of transportation, factors to consider in transport decisions.

Textbook

1. Eiri Board of Consultants & Engineers. Handbook of Poultry Farming and Feed Formulations. Engineers India Research Institute, New Delhi
2. Charles Burr, T., and Stuart O. Homer, 2011. Commercial Poultry Farming. 1st Edition. Biotech Books, New Delhi

References

1. Rao K. Suresh and Rawat Sanjana, 2013. Economic Importance of Poultry Farming. 1st Edition. Campus Book International, New Delhi
2. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
3. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida

SEMESTER III

Skill Based Subject: 1–QUANTITATIVE METHOD FOR BUSINESS MANAGEMENT

Total Credits: 3

Total Hours: 60

Objectives:

To understand the basic methods involved in analyzing quantitatively about business management in poultry using collection of data, graphical representation and statistical tools.

UNIT I (12 HRS)

Introduction: Origin, meaning, scope and limitations of statistics. Relationship with business industry. Collection of data: collection, classification and tabulation of statistical data, diagrammatic and graphical representation.

UNIT II (12 HRS)

Measures of central tendency: Mean, median and mode. Measures of dispersion: standard deviation, coefficient of variation. Probability concepts – mutually exclusive – exhaustive – independent – dependent event.

UNIT III (12 HRS)

Addition and multiplication theorems in probability. Probability distributions – binomial, Poisson, normal.

UNIT IV (12 HRS)

Simple correlation and regression: meaning, Karl Pearson's correlation, rank correlation, computations. Uses, regression equations – prediction.

UNIT V (12 HRS)

Testing of Hypothesis: one sample and two sample tests for means and proportions of large samples (z-test), small sample (t-test), F- test for two sample standard deviations. ANOVA one and two way, Chi – square test for single sample standard deviation.

Textbook

1. Swift Louise, 2005. Quantitative methods for Business, Management and Finance. 2nd Edition. Palgrave Macmillan Publications, U. K
2. Camm Jeffrey D., Martin Kipp R., Thomas A. Williams, David R. Anderson and Dennis J. Sweeney. Quantitative Methods for Buiness. 12th Edition. Cengage Learning India Pvt Ltd, New Delhi

References

1. Christou and Loannis T. Quantitative Methods in Supply Chain Management. 1st Edition. Springer London Ltd.
2. Vohra N. D. Quantitative Techniques in Management. 4th Edition. Tata McGraw-Hill Education, New Delhi
3. Buglear John, 2011. Quantitative Methods for Business & Management. 1st Edition. Pearson Education

SEMESTER IV

CORES – FEED PRODUCTION AND FEED MILLING TECHNOLOGY

Total Credits: 3

Total Hours: 75

Objectives:

To make the student study the various principles involved in feed mill, handling of various instruments and equipments at large scale production and about the basic aspects of feed production and feed milling technology.

UNIT I

(15 HRS)

Feed Mill Layout and design – principles of raw material selection, purchase, handling and storage methods, testing, least cost formulation, systematic processing of feed with standard specifications. Systematic quality control at various stages of production.

UNIT II

(15 HRS)

System of Milling – batch system – equipment used: feed grinder, hammer mill, feed mixing, vertical mixers, feed mixing time in a mixer, determination of feed mixing efficiency of a mixer.

UNIT III

(15 HRS)

Volumetric system: advantages and disadvantages, building and layout, site of mill, staff requirement, cleaning equipment, mixing fats and molasses in rations, objectives of pelleting/agglomeration. Batch weighing, grinding, mixing, pelleting and other processing operation.

UNIT IV

(15 HRS)

Crumbling, Flaking, Popping, and Extrusion – Processing of oil seeds – pelleting technology – Particle size reduction technology. Packaging, labelling and description of processed feed.

UNIT V

(15 HRS)

Feed milling equipment-elevators, conveyors, bin, boiler, accessories – role of computer in modern feed mill operations. Quality control – National and international regulation pertaining to feed manufactures – GMP and HACCP protocols. Biosecurity in feed mills.

Text Book

1. Leeson S., & Summers J. D., 2001. Scott's Nutrition of the Chicken. 4th Edition. University Books, Canada
2. Reddy Ramasubba V., and Bhosale T. Dinesh, 2004. Handbook of Poultry Nutrition. 1st Edition. International Book Distribution. Co., Lucknow.
3. Banday M. T., and Mondal S. S., 1999. Poultry Feeding & Nutrition. 1st Edition. Pixie Publication India (P) Ltd., Karnal.

References

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi.
2. Suguna Management System: Standard Operating Manual – Feed Lab, 2012. Suguna Foods Pvt. Ltd.
3. Eiri Board of Consultants & Engineers. Handbook of Poultry Farming and Feed Formulations. Engineers India Research Institute, New Delhi.

SEMESTER IV

CORE9 – BREEDER MANAGEMENT PRACTICES

Total Credits: 3

Total Hours: 75

Objectives:

To make the student understand about the basic housing design, equipment and techniques, seasonal management and technical skills involved in rearing breeder birds.

UNIT I

(15 HRS)

Size and structure of breeding industry – Commercial strains of broiler and layer, breeder – production standards.

UNIT II

(15 HRS)

Layout and location of breeder farm – housing and equipment – important economic traits of broiler and layer.

UNIT III

(15 HRS)

Selection of breeder flock –Pre-laying and laying management of breeder flocks - broiler and layers in cages, slat, slat cum deep litter and deep litter houses – breeder male and female management. Pre-peak, peak and post-peak laying period management.

UNIT IV

(15 HRS)

Special care of breeder flock – Semen collection-artificial insemination; collection, selection and care of hatching eggs – pedigree hatching. Seasonal management of breeder flocks – summer, winter and monsoon.

UNIT V

(15 HRS)

Grading and culling – lighting management – factors influencing fertility, hatchability and quality of chicks. Vaccination and medication schedule. Birds lifting and weighing.

Text Book

1. Youn Michael, 2013. Encyclopedia of Broiler Breeder Production: Production, Feeding and Management Techniques. Vol. 1, 2 & 3. Anmol Publications Pvt. Ltd., New Delhi.
2. Leeson. S., and Summers J. D., 2001. Broiler Breeder Production. 1st Edition. International Book Distributing Company, Lucknow.

References

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Suguna Management System: Standard Operating Manual – Breeder, 2012. Suguna Foods Pvt. Ltd.
3. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.
4. Rajini Asha R., 2011. Simply....Poultry Science. 1st Edition. Alfa Publications, New Delhi.

SEMESTER IV

CORE10 – BROILER PRODUCTION

Total Credits: 3

Total Hours: 75

Objectives:

To make the student understand about the various brooding and rearing methods, feeding, watering and litter management and technical skills involved in broiler production.

UNIT I

(15 HRS)

System of rearing broiler – location, layout and design of broiler house – broiler farm equipment. Brooding and rearing of broiler – all in - all out and multiple batch system.

UNIT II

(15 HRS)

Preparation of house to receive day old chicks – litter material and deep litter management – lighting for broiler. Reception of day old chicks. Brooding, growing and finisher management.

UNIT III

(15 HRS)

Water quality and watering of broiler and water sanitation – management during seasons. Mash, crumble and pellet feeding of broiler – weekly growth rate, feed conversion and livability in broilers.

UNIT IV (15 HRS)

Sex separate feeding – feeding broiler for optimum growth rate & feed efficiency – farm records. Broiler farm routine, medication and vaccination schedule – transport of broiler. Bio-security and health management and their control.

UNIT V (15 HRS)

System of integration in broiler production and marketing – different ways of marketing of broiler. Broiler performance indices – organic chicken and lean meat production technology.

Text Book

1. Charles Burr, T., and Stuart O. Homer, 2011. Commercial Poultry Farming. 1st Edition. Biotech Books, New Delhi.
2. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.

References

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Suguna Management System: Standard Operating Manual – Broiler, 2012. Suguna Foods Pvt. Ltd.
3. Narahari D., and Kumararaj R., 2008. Handbook of applied Broiler Production. 1st Edition. Poultry Punch Publication (I) Pvt. Ltd., New Delhi.
4. Jadhav N. V., and Siddique M. F., 2007. Handbook of Poultry Production and Management. 2nd Edition. Jaypee Brothers Medical Publishers Pvt. Ltd., New Delhi.

SEMESTER IV

CORE11 – POULTRY DISEASES

Total Credits: 3

Total Hours: 75

Objectives:

To make the student aware about the various pathogenic microorganisms affecting the poultry species, their route of entry, symptoms, diagnosis and various prevention and control measures

UNIT I (15 HRS)

Introduction – Definition of disease, Classification of poultry diseases – Viral, Bacterial, Fungal and Parasitic. Nutritional deficiency diseases.

UNIT II (15 HRS)

Viral Diseases – Etiology, host and transmission, signs, morbidity and mortality, gross and HP lesions, diagnosis, differential diagnosis, treatment, prevention and control –ND or RD, IBD, IB,ILT, MD,LL, AI, AE, EDS-76, Fowl Pox, IBH, Hydropericardial hepatitis.

UNIT III **(15 HRS)**

Bacterial Diseases – Etiology, host and transmission, signs, morbidity and mortality, gross and HP lesions, diagnosis, differential diagnosis, treatment, prevention and control – Colibacillosis, CRD, Mycoplasmosis, Salmonellosis – Fowl typhoid, Fowl cholera, Pullorum disease, Infectious coryza (IC) and omphalitis.

UNIT IV **(15 HRS)**

Parastic diseases – Ecto and Endo parasites, protozoan infection – Coccidiosis. Fungal disease – Aspergillosis, Mycotoxicosis – types – Aflatoxin.

UNIT V **(15 HRS)**

Nutritional deficiency disease and Metabolic diseases – Gout, Ascites, Fatty Liver Haemorrhagic Syndrome, Fatty Liver & Kidney Syndrome, cage layer fatigue and sudden death syndrome. Principles of Disease Prevention & Control – vaccination, medication, disinfection and sanitation.

Text Book

1. Susan E. Aiello and Michael a. Moses, 2014. Merck Veterinary Manual. 11th Edition. Merck Vet Manual.
2. Saif., Y. M., *et al.*, 2013. Diseases of Poultry. 12th Edition. Blackwell Publishing, USA.
3. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.
4. Vegad J. L., 2004. Poultry Diseases: a guide for farmers and poultry professionals. 2nd Edition. International Book Distributing Co., Lucknow, UP.

References

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Thyagarajan. D., 2011. Diseases of Poultry. 1st Edition. Satish Serial Publishing House, New Delhi, India.
3. Narahari D., and Kumararaj R., 2008. Handbook of applied Broiler Production. 1st Edition. Poultry Punch Publication (I) Pvt. Ltd., New Delhi.

SEMESTER IV

COREPRACTICAL 5 – FEED PRODUCTION AND FEED MILLING TECHNOLOGY

Total Credits: 2

Total Hours: 75

Objectives:

To enable the students to understand and have hands on experience in basic techniques followed during feed production and feed milling technology.

1. Feed mill design and layout (Demo)
2. Feed mill visit – Feedmill equipments – disintegrators, grinder and pulverisers, extruders
3. Feed mill visit – Feed mixer, bucket elevator, various conveyor systems and pelleting machines
4. Feed mill visit – Volumetric or Continuous System
5. Raw material sample collection and quality assessment procedure – spot test for minerals, quick chemical test for minerals and adulterants in feed stuff (Demo)
6. Raw material storage
7. Feed formulation and mixing (Demo)
8. Manufacturing of feed – Mash, Crumble and Pellet
9. Packing and Labeling in large scale
10. Feed storage in large scale (demo)

SEMESTER IV

CORE PRACTICAL 6– BREEDER MANAGEMENT PRACTICES

Total Credits: 2

Total Hours: 75

Objective:

To have hands on experience and learn the management principles and practices involved in Breeder Farms.

1. Brooding arrangements
2. Day old chicks weighment, CV% calculation and Debeaking
3. Weekly body weight monitoring, Male Management
4. Grading and weak bird management
5. Feeder and drinker management in age wise, Water sanitation
6. Feeding and watering management
7. Semen collection and artificial insemination
8. Types of Litter material – moisture content – cost, merits and demerits and litter management
9. Stocking density – floor, feeder and drinker space requirements for different age groups
10. Nest box management, egg collection, disinfection, grading and storage at Farm level

SEMESTER –IV

CORE PRACTICALS – 7: BROILER PRODUCTION

Total Credits: 2

Total Hours: 75

Objectives:

To have hands on experience and learn the production skills and practices involved in Broiler Farms.

1. Brooding arrangements, Day old chick weight and CV% Calculation
2. Crop score assessment, Weekly body weight monitoring and weak bird management
3. Feeder and drinker management in age wise, Water sanitation
4. Types of litter materials – moisture content, cost, merits and demerits and litter management.
5. Stocking density – floor, feeder and drinker space requirements for different age groups
6. Seasonal management and arrangements – summer, winter and monsoon
7. Fly and rodent control measures
8. Feed consumption Vs. weekly body weight management, Lifting and labour planning
9. Weighment – Farm and Weighbridge
10. Register preparation and bird lifting

SEMESTER –IV

CORE PRACTICALS – 8: POULTRY DISEASES

Total Credits: 2

Total Hours: 75

Objectives:

To have hands on experience and learn the about different types of diseases caused by pathogenic microorganisms in poultry.

1. Sample collection – blood and organs, culture and isolation of common bacteria- *Staphylococcus*, *E. coli*, *Clostridium*, *Salmonella* and *Pasteurella* species.
2. Post mortem procedure
3. Post mortem – Identification of bacterial disease
4. Post mortem – Identification of fungal disease
5. Post mortem – Identification of viral disease
6. Post mortem – Identification of parasitic disease
7. Diagnostic Identification – HA – HI test
8. Vaccination and medication – route and dosage calculation
9. Disinfectant, fumigation and flame gun operations procedure (Demo)
10. Microbiological test – Gram Staining, Leishmen- Giemsa Stain, Lactophenol Cotton Blue Staining, Acid Fast Staining

SEMESTER – IV

Allied Paper 4: INTERNATIONAL TRADE, FOOD LAWS AND REGULATIONS

Total Credits: 4

Total Hours: 60

Objective:

To make the students aware about the various trade laws, rules and regulations involved for carrying international trade in the field of poultry along with the laws involved in food industry.

UNIT – I (12 HRS)

International trade – meaning, scope – international trade vs. domestic trade – motivation to export, difficulties in international trade – globalization pros and cons.

UNIT – II (12 HRS)

Market selection and entry decision – competitive intelligence – international trade policies, tariffs, subsidies and quotas.

UNIT – III (12 HRS)

International economic environment: IMF, GATT, WTO – Exim Bank – Export Finance – ECGC – Exim policies.

UNIT-IV (12 HRS)

Procedure for execution of export order – export of goods by air and sea – export documents.

UNIT-V (12 HRS)

Food Laws and Regulations– Regulations in Poultry Foods – Recommended International Code of Hygiene – Patency, Intellectual Property Rights (IPR) – Trade Exhibitions.

Textbook

1. Rastogi Sachin, 2014. Insurance Laws and Principles. 1st Edition. LexisNexis Publications
2. Eiri Board of Consultants & Engineers. Handbook of Poultry Farming and Feed Formulations. Engineers India Research Institute, New Delhi
3. Charles Burr, T., and Stuart O. Homer, 2011. Commercial Poultry Farming. 1st Edition. Biotech Books, New Delhi

References

1. Rao K. Suresh and Rawat Sanjana, 2013. Economic Importance of Poultry Farming. 1st Edition. Campus Book International, New Delhi
2. Sreenivasaiyah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
3. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida

SEMESTER IV

Skill Based Subject2: FINANCIAL AND MANAGEMENT ACCOUNTING

Total Credits: 3

Total Hours: 75

Objective:

To make the students understand about the principles and methods in financial accounting and management accounting.

UNIT-I

(15 HRS)

Financial accounting – preparation of trading account, profit and loss account and balance sheet – limitations of financial statements. Management accounting – meaning and purpose.

UNIT-II

(15 HRS)

Budgetary control – nature and objectives of budgetary control – limitations; types of budget – sales budget, production budget, cash budget, fixed and flexible budgets; zero base budgeting.

UNIT-III

(15 HRS)

Marginal costing – cost volume profit analysis – breakeven point, direct costing vs. absorption costing.

UNIT-IV

(15HRS)

Fund flow statement – meaning – flow of fund – schedule of changes in working capital – computation of fund from operation – preparation of fund flow statement.

UNIT-V

(15 HRS)

Capital budgeting decisions, methods of evaluating long term investments – payback period, accounting rate of return, NPV, IRR and profitability index.

Textbooks

1. Khan M. Y., and Jain P. K., 2014. Financial Management. 7th Edition. Tata McGraw Hill Education, New Delhi
2. Khan M. Y., and Jain P. K., 2006. Management Accounting. 5th Edition. Tata McGraw Hill Education, New Delhi.

References

1. Maheswari S. N., 2007. Management accounting. 5th Edition. Sultan Chand & Sons.
2. Pandey I. M., 2009. Management Accounting. 3rd Edition. Vikas Publication.
3. Reddy T. S., and Hari Prasad Reddy, 2003. Financial and Management Accounting. 3rd Edition. Margham Publications.

SEMESTER V

CORE12 – BIOSECURITY AND FLOCK HEALTH

Total Credits: 3

Total Hours: 60

Objectives:

To make the student aware about the process and principles involved in the biosecurity aspects of poultry to have ethical rules and regulations and methods to maintain flock health.

UNIT I

(12 HRS)

Common poultry diseases, nutritional deficiencies, breeder vaccination schedule for commercial layer and broiler – vaccination principles – type, methods, pre and post vaccination care.

UNIT II

(12 HRS)

Medication – types of administration – general principles and precautions with emphasis on administering medication through water and feed. Immunity.

UNIT III

(12 HRS)

Signs of disease – Measures to prevent disease outbreak – Fly and rodent control – General farm hygiene – Sanitation procedures – quarantine, isolation, shed cleaning and disinfection procedures.

UNIT IV

(12 HRS)

Litter, carcass and hatchery waste disposal. Water sanitation – Sanitizers, Disinfection - Types of disinfectants, mode of action, recommended procedure, precaution and handling.

UNIT V

(12 HRS)

Biosecurity – Proactive measures to minimize entry of infection vs. agents, farm premises – farm fencing – disinfectant, pits, personnel management and restriction of movement – Conceptual (Isolation), Structural and Operational (Sanitation) Biosecurity in poultry farms.

Text Book

1. Rajini Asha R., 2011. Simply....Poultry Science. 1st Edition. Alfa Publications, New Delhi.
2. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.

References

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Thyagarajan. D., 2011. Diseases of Poultry. 1st Edition. Satish Serial Publishing House, New Delhi, India.
3. Narahari D., and Kumararaj R., 2008. Handbook of applied Broiler Production. 1st Edition. Poultry Punch Publication (I) Pvt. Ltd., New Delhi.

SEMESTER V

CORE13 – LAYER PRODUCTION

Total Credits: 3

Total Hours: 60

Objectives:

To make the student understand about the fundamental principles involved in the construction and design of house, different management skills involved during layer production, and knowledge about various types of commercial egg production

UNIT I

(12 HRS)

Size and structure of Layer industry – Commercial strains of layer, layer production standards. System of layer farming – layout of the farm – system of housing – important economic traits of layer.

UNIT II

(12 HRS)

Layer farm equipments. Brooder, grower and layer management – Pre-laying and laying management – feeding types, layers in cages, Slat, Slat cum deep litter and deep litter houses – male and female management. Pre-peak, Peak and Post-peak laying period management, watering – lighting programme.

UNIT III

(12 HRS)

Culling of unproductive birds – moulting – forced moulting – monitoring egg production curve, record keeping – flock uniformity.

UNIT IV

(12 HRS)

Seasonal management of Layer birds – summer, winter and monsoon. Environmentally controlled sheds – design, equipments and productivity.

UNIT V

(12 HRS)

Biosecurity and health management – table egg production for export marketing. Production of layer – management of nutraceutical/designer/enriched– functional eggs. Vaccination and medication schedule.

Text Book

1. Youn Michael, 2013. Encyclopedia of Broiler Breeder Production: Production, Feeding and Management Techniques. Vol. 1, 2 & 3. Anmol Publications Pvt. Ltd., New Delhi.
2. Leeson. S., and Summers J. D., 2001. Broiler Breeder Production. 1st Edition. International Book Distributing Company, Lucknow.

References

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.
3. Rajini Asha R., 2011. Simply....Poultry Science. 1st Edition. Alfa Publications, New Delhi.

SEMESTER V

CORE14 – POULTRY ECONOMICS AND MARKETING STRATEGIES

Total Credits: 4

Total Hours: 75

Objectives:

To impart the knowledge of various economic principles involved in poultry and the marketing strategies followed along with mathematical and statistical tools used in poultry.

UNIT I

(15 HRS)

Economics of Poultry Production–Analysis of production cost, methods and criteria for cost calculation, broader economic framework for analysis. Marketing – definition and activities, objectives of poultry marketing.

UNIT II

(15 HRS)

Marketing of eggs, organizational structure of egg marketing – NECC, ACIL, NAFED, challenges and suggestions. Marketing of poultry meat, organizational structure of poultry meat marketing – BROMARK, BCC, NMPPB, marketing channels for poultry meat, challenges, suggestions and opportunities for marketing of poultry products.

UNIT III

(15 HRS)

Broiler live bird marketing methods – Bird shrinkages and transit loss problem – broiler farm expenditure and maintenance – electrical bill, labour, litter materials and other miscellaneous. Broiler farm records and registers maintenance. Broiler contract farming – business process. Farmer and Trader relationship management. Cost of Infrastructure development – deep litter shed.

UNIT IV

(15 HRS)

Breeder cull bird, hatching eggs and rejected eggs – marketing methods and cost, income generation to farmer – selling – poultry manure, used gunny bags. Breeder farm administration – farm expenditures and maintenance, farm records and register maintenance, Breeder contract farming – business process, cost of infrastructure development – deep litter – slat shed, cage, EC and Battery cage shed.

UNIT V

(15 HRS)

Broiler farm – calculating – FCR, EEF, CFCR, day gain, lifting efficiency, mean age, cost of production/ one kg body weight in broiler live birds. Broiler production parameters (Graph and Schedule display by VCS). Breeder farm – brooding and growing – cost of production/ bird, cost of production Vs. egg returns, mortality%, livability%, FCR for eggs, HD%, HE%, HHHE%, HHE%, Egg mass, CPP, and visual control system (VCS) and report preparations.

Text Book

1. Sapkota D., Narahari D., and Mahanta J. D., 2014. Avian (Poultry) Production – A text book. New India Publishing Agency, New Delhi.
2. Rao K. Suresh and Rawat Sanjana, 2013. Economic Importance of Poultry Farming. 1st Edition. Campus Book International, New Delhi.

References

1. Sreenivasaiiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.

SEMESTER V

CORE15 – POULTRY WASTE MANAGEMENT

Total Credits: 3

Total Hours: 60

Objectives:

To make the student aware about the various waste disposal methods followed at different sectors of poultry and their management methods for recycling the waste arising in poultry.

UNIT I

(12 HRS)

Various types of by-products and wastes generated by poultry industry and their utility. Design and layout of rendering plant – composition, rendering – hatchery waste – manure

UNIT II

(12 HRS)

Various components of slaughter house waste/ by-product – poultry by-product meal, feather meal, egg shell meal, spent hen meat meal. Potential for poultry litter used as fertilizers, recycling of poultry manure for live-stock feeding.

UNIT III

(12 HRS)

Solid waste management – rendering of poultry waste/ poultry by-products – carcass disposal – economic utilization of poultry – manure and organic fertilizers.

UNIT IV (12 HRS)

Composition of poultry manure – poultry manure – deep litter and cage layer manure processing methods, hatchery waste meal, by-products – liquid waste management and effluent treatment plant.

UNIT V (12 HRS)

Biogas generation – biogas plant – composting, Power generation, rendering – hatchery waste – slaughter house waste – dead bird disposal – disposal in diseases of zoonotic importance. Bio-hazards of Poultry waste.

Text Book

1. Ensmiger. M. E., 2015. Poultry Science. 3rd Edition. International Book Distribution Co., Lucknow, India.
2. Jull A. Morley, 2008. Poultry Husbandry. 2nd Edition. J. V. Publishing House, Jodhpur, Rajasthan.
3. Jadhav N. V., and Siddique M. F., 2007. Handbook of Poultry Production and Management. 2nd Edition. Jaypee Brothers Medical Publishers Pvt. Ltd., New Delhi.

References

1. Sreenivasaiiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Jull A. Morley, 2007. Successful Poultry Management. 2nd Edition. Biotech Books, New Delhi.
3. Hurd M. Louis, 2003. Modern Poultry Farming. 1st Edition. International Book Distributing Company, Lucknow.

SEMESTER V

CORE16 – ORGANIZATIONAL BEHAVIOUR

Total Credits: 3

Total Hours: 60

Objectives:

The objectives of this subject are to enable the student to know the organizational behaviour, individual behaviour, interpersonal behaviour, group behaviour and studies on leaderships

UNIT I (12 HRS)

Introduction to organization, organization and managers, manager' roles and skills, behavior at work. Introduction to organizational behavior, major behavioural science disciplines contributing to OB, challenges and opportunities managers have in applying OB concepts.

UNIT II (12 HRS)

Introduction to individual behavior, values, attitudes, job satisfaction, personality, perception and individual decision making, learning, motivation at work.

UNIT III **(12 HRS)**

Interpersonal behavior, Johari window, Transactional analysis – ego states, types of transactions, life positions, applications of T. A., managerial interpersonal styles.

UNIT IV **(12 HRS)**

Introduction to group behavior, foundations of group behaviour, concept of group and group dynamics, types of groups, formal and informal groups, theories of group formations.

UNIT V **(12 HRS)**

Leadership theories and styles, power and politics, conflict and negotiations. Organization change.

Textbook

1. Robbins, S. P., Judge, T. A., and Sanghi. S. Organizational Behaviour. Pearson Publication.
2. Aswathappa. K. Organizational Behaviour – Text and Problem. Himalaya Publication.
3. Pardeshi, P. C. Organizational Behaviour & Principles & Practice of Management. Nirali Publication.

SEMESTER V

CORE PRACTICALS – 9: BIOSECURITY AND FLOCK HEALTH

Total Credits: 2

Total Hours: 75

Objectives:

To have hands on experience and learn the about the methods involved in maintaining poultry farms with healthy flocks and usage of biosecurity system.

1. Biosecurity and Personal Safety measures (Demo)
2. Foot dip, Vehicle and human spray (Demo)
3. Disinfectants and their usage in poultry farms
4. Shed cleaning procedure – Flame Gun Operation (Demo)
5. Water tank and pipeline cleaning procedure
6. Feeder and Drinker cleaning procedure
7. Fumigation procedures involved in various fields of poultry
8. Vaccination – Intramuscular and Subcutaneous
9. Vaccination – Eyedrops and through drinking water
10. Dead bird disposal methods

SEMESTER V

CORE PRACTICALS – 10: LAYER PRODUCTION

Total Credits: 2

Total Hours: 75

Objectives:

To have hands on experience and learn the about the methods involved in layer production.

1. Layer farm – chick, grower, and layer houses design
2. Feed and water management
3. Culling –Identification of laying and non-laying birds
4. Culling – Identification of good layer and poor layer
5. Nest box management
6. Hatching eggs – collection and selection process – calculation of hen day, hen housed production and other economic traits
7. Fumigation, storage and packaging of eggs
8. Sexing error identification (Demo)
9. Seasonal management – summer, winter and monsoon arrangements
10. Fly and rodent control measures.

SEMESTER V

CORE PRACTICALS – 11: POULTRY WASTE MANAGEMENT

Total Credits: 2

Total Hours: 75

Objectives:

To have hands on experience and learn the methods involved in poultry waste management.

1. Dead Bird disposal - pit method (Demo)
2. Composting of poultry manure
3. Utilization of poultry manure as soil fertilizer
4. Rendering plant visit – inedible products and utilization
5. Rendering plant visit – inedible products and utilization
6. Hatchery waste management – Hatchery visit
7. Hatchery waste management – Hatchery visit
8. Carcass disposal – Broiler and breeder farm visit
9. Liquid waste management – effluent treatment – Poultry processing plant visit (Demo)
10. Biogas plant – power generation (Demo).

SEMESTER V

MAJOR ELECTIVE– I: 1. FINANCIAL MANAGEMENT AND INSURANCE

Total Credits: 3

Total Hours: 60

Objective:

To understand the basic policies and measures for financial management and insurance in poultry industry.

UNIT I (12 HRS)

Financial management – meaning, objectives, scope and uses - finance functions – finance manager’s role – financial forecasting – sources of finance – financial information system – leverage and types of leverage.

UNIT II (12HRS)

Management of working capital: concepts, need and determinants of working capital, - operating cycle. Management of cash, inventory management – accounts receivable, bank finance for working capital.

UNIT III (12 HRS)

Cost of capital – concepts and significance – computation of cost of equity capital, cost of debt, cost of preference share capital – cost of retained capital, weighted average cost of capital.

UNIT – IV (12HRS)

Insurance –meaning and definition,basic terms used in insurance, nature and characteristics of insurance, importance and functions of insurance, principles of insurance.

UNIT – V (12 HRS)

Classification of insurance: Life insurance, marine insurance, social insurance, and miscellaneous insurance. Principles of fire insurance, types of fire policy, types of marine insurance policy, basic principles of life insurance, types of life insurance policy, claims and settlement, law relating to insurance.

Textbook

1. Prasana Chandra. Financial Management. Tata McGraw Hill Publications.
2. Maheswari S. N. Financial Management. Sultan Chand & Sons Publications.
3. Rastogi Sachin, 2014. Insurance Laws and Principles. 1st Edition. Lexis - Nexis Publications.
4. Gupta L. P., 2016. General Insurance Guide – Handbook of General Insurance, Policies and Claims. 1st Edition. Dr. L. P. Gupta Publishing.

SEMESTER V

MAROJ ELECTIVE– I: 2. LEGAL ASPECTS OF POULTRY BUSINESS

Total Credits: 3

Total Hours: 60

Objective:

To understand the legal issues, norms and conditions required in the poultry business.

UNIT-I (12 HRS)

Introduction to Indian legal system, the Indian contract Act-1872: Contract meaning, nature, significance, types of contract, essential of a valid contract offer and acceptance, capacity to contract free consent performance of contract.

UNIT – II (12 HRS)

Companies Act – 2013- types of companies, procedure of formation, promoters, distinction between company and partnership – meetings, provisions of company law relating to managerial personnel – remuneration, appointment and removal, winding up of company.

UNIT – III (12 HRS)

Indian partnership Act rights and duties of partnership Act, rights and duties of a partnership deed mutual and third parties relation of partners,Registration of partnership Dissolution of a partnership.

UNIT-IV (12 HRS)

Sales of Goods Act 1930 – contract of sale, difference between sale and agreement to sell, conditions and warranties. Transfer of property. Performance of the contract – rights of an unpaid seller.

UNIT-V (12 HRS)

Laws relate to poultry enterprises – legal formalities to start a new venture in poultry business – clearance from statutory bodies – compliance to mandatory and voluntary standards in poultry farms and poultry processing units – mandatory certificate, procedure – panchayat and Government of India acts and rules, validity – taxation to poultry enterprises farm, birds, hatcheries, at point of processing and sales.

Textbook

1. Akhileshwar Pathak, 2009. Legal aspects of Business. 4th Edition. Tata McGraw Hill Publications.
2. Kapoor. N. D., 2008. Elements of Mercantile Law. 29th Edition. Sultan Chand & Co.

References

1. Kuchal, 2009. Business Law. 3rd Edition. Vikas Publications.
2. Saravanavel, P. and Sumathi. Legal systems in business. 9th Edition. Himalaya Publishing House.

SEMESTER V

MAJOR ELECTIVE – I: 3. DIVERSIFIED POULTRY AND RATITES MANAGEMENT

Total Credits: 3

Total Hours: 60

Objectives:

To understand the various aspects of farming and managing diversified species of poultry and ratites with their utilization for commercial farming.

UNIT I

(12 HRS)

Domestication – Breeds / Varieties of ducks and goose housing & Equipments. Management and rearing under different system. Integrated farming system using ducks. Brooder, Grower and layer duck management. Feeding and watering of ducks – breeder duck management – Incubation periods & Incubation procedure.

UNIT II

(12 HRS)

Broiler duck production – Indigenous duck production practices in Kerala. Management of goose. Common disease affecting ducks and goose and their control. Processing of ducks and geese – Products from ducks and geese – eggs, Meat, Feathers – Mule duck production.

UNIT III

(12 HRS)

Japanese quail breeder – housing, cage & equipment – management and rearing under different system. Brooder grower and layer quail management. Feeding standards and feeding watering system – Breeder management.

UNIT IV

(12 HRS)

Incubation periods & incubation procedure, broiler quail management, common disease affecting Japanese quails and their control.

UNIT V

(12 HRS)

Breeds and variants of turkeys, guinea fowl and ratites – incubation procedures – management practices of turkeys, guinea fowl and ratites.

Textbooks

1. Ensmiger. M. E., 2015. Poultry Science. 3rd Edition. International Book Distribution Co., Lucknow, India.
2. Pathak N. N., 2013. Poultry and Ratite Nutrition. 1st Edition. Narendra Publishing House, New Delhi, India.

References

1. Sreenivasaiyah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Maini S. K., 2009. Emu – Farmer's Management Manual. 1st Edition. Hind Publications, Hyderabad, Telangana, India.

SEMESTER – V

Skill Based Subject3: POULTRY PROCESSING AND PRODUCTS TECHNOLOGY

Total Credits: 3

Total Hours: 75

Objectives:

To make the students aware about the commercial importance of egg and meat products, fundamentals of poultry processing and technologies involved in the products development.

UNIT-I

(15 HRS)

Egg – formation and structure – physical, chemical, nutritional and functional characteristics. Quality – internal and external characteristics, Egg size, Preservation and Grading.

UNIT-II

(15 HRS)

Measuring of egg quality, egg quality maintenance, microbiology of eggs, processing of egg – packaging – marketing – products – table egg production for export marketing.

UNIT-III

(15 HRS)

Poultry meat – chemical and nutritive value – composition, flavor, tenderness. Measuring carcass yield and characteristics – shrinkages, proportion of different parts of carcasses, moisture absorption during washing and chilling, cooking losses and cooked edible meat yield, measuring tenderness and flavour.

UNIT-IV

(15HRS)

Poultry meat processing – assembling – catching, loading and transportation of live birds, weighing – lairage and anti-mortem inspection – slaughterhouse operations – shackling, bleeding, scalding – types, defeathering, evisceration, sorting, washing and cleaning of Carcass, chilling, ice packing in boxes, processing of water fowl.

UNIT-V

(15 HRS)

Other Processed Products - Preparation of Ready-to-Cook, Ready-to-Eat chicken – deboning and cut up parts, Preservation – dehydrating, molding, curing, smoking andcanning. – grading. Trends in packaging – bulk containers, tray packing, packaging frozen poultry. Refrigerated storage –freezing poultry, marketing – product – HACCP – Codex regulations.

Textbooks

1. Mountney J. George and Parkhurst R. Carmen, 2001. Poultry Products Technology. 1st Edition. The Harworth Press Inc., USA.
2. Narahari D., and Kumararaj R., 2008. Handbook of Applied Broiler Production. 1st Edition. Poultry Punch Publication (I) Pvt. Ltd., New Delhi, India.
3. NIIR Board of Consultants & Engineers. Preservation of Meat and Poultry Products. 1st Edition. Asia Pacific Business Press Inc., New Delhi.

Reference Books

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.
3. Taneja. V. K. and Trivedi. T. P., 2011. Handbook of Animal Husbandary. 3rd Edition. Indian Council of Agricultural Research (ICAR), Chandu Press, New Delhi.

SEMESTER – IV

Skill Based Subject4: POULTRY PROCESSING AND PRODUCTS TECHNOLOGY

Total Credits: 3

Total Hours: 75

Objectives:

To impart the hands on experience in analyzing the poultry processed products and understanding the various technological implications in processing of poultry products.

1. Measuring of egg quality – Albumen and Yolk index
2. Measuring of egg quality – Shell Thickness and Shell Porosity
3. Measuring of yolk colour
4. Examination of Egg products.
5. Nutritive characteristics, Poultry meat flavour and tenderness
6. Anti-mortem inspection and Post mortem examination
7. Visit to Poultry processing plant – dressing of broiler
8. Visit to Poultry processing plant – dressing percentage
9. Visit to Poultry processing plant – Calculation of bone-meat ratio
10. Visit to Poultry processing plant – carcass, deboning and cut-up parts

SEMESTER VI

PROJECT WORK AND VIVA-VOCE *

Total Credits: 8

Max marks:200

DIRECTIONS

- Students are allocated a dissertation topic for a group under the supervision of faculty at the institution (Guide) as well as co-guide from industry.
- The dissertation must be similar to the thesis style and encompass:
 - (i) Introduction
 - (ii) Materials and Methods
 - (iii) Results
 - (iv) Discussion
 - (v) Bibliography
- The dissertation should be submitted in type-written, bound form to the department for record.
- External / end semester - 200 marks should include:
 - (i). Evaluation of project work (150 marks) based on:
 - (a) Project Report Preparation (50marks)
 - (b) Project Presentation (50 marks)
 - (c) Result Interpretation (50 marks)
 - (ii). Viva-voce by Examiners (50 marks)

** Group project*

*** Project report and viva voce will be evaluated by both the project supervisor (Faculty of the department) and an External Examiner.*

QUESTION PAPER PATTERN for CIA and ESE

PART-I, PART – II, CORE PAPERS AND ALLIED PAPERS

Maximum marks 75

Duration: 3 hours

Section - A

(10 x 1 = 10 marks)

Q.No. 1 to 10 : Multiple choice type alone with four distracters each.

Section - B

(5 x 5 = 25 marks)

Q.No. 11 to 15 : Either or / short notes type questions (one question 'a' or 'b' from each unit).

Section - C

(5 x 8 = 40 marks)

Q.No. 16 to 20 : Either or / essay type questions (one question 'a' or 'b' from each unit).

QUESTION PAPER PATTERN for CIA and ESE

CORE PAPERS AND MAJOR ELECTIVE PAPERS

Maximum marks 55

Duration: 3 hours

Section - A

(10 x 1 = 10 marks)

Q.No. 1 to 10 : Multiple choice type alone with four distracters each.

Section - B

(5 x 3 = 15 marks)

Q.No. 11 to 15 : Either or / short notes type questions (one question 'a' or 'b' from each unit).

Section - C

(5 x 6 = 30 marks)

Q.No. 16 to 20 : Either or / essay type questions (one question 'a' or 'b' from each unit).

Question Paper Pattern for
ENVIRONMENTAL STUDIES & VALUE EDUCATION – HUMAN RIGHTS
(End-of semester only)

Duration: 3 hours

Total Marks: 50

Answer all Questions (5 x 10 = 50 Marks)

1. a) or b)
2. a) or b)
3. a) or b)
4. a) or b)
5. a) or b)

Essay type, either or type questions from each unit.

QUESTION PAPER PATTERN FOR
NON-MAJOR ELECTIVES I & II
(2012 - 2013 onwards)

Duration : 3 Hours

Max. Marks: 50

Answer **ALL** Questions

SECTION A

(5 x 5 = 25 marks)

Short answers, either or type, one question from each unit.

SECTION B

(5 x 5 = 25 marks)

Essay type questions, either or type, one question from each unit.

CORE PAPER PRACTICALS– Question Pattern & Break-up of marks

END OF SEMESTER PRACTICAL EXAMINATION

Max. Marks: 30

Duration: 3hrs

I. Major	(1 x 10 = 10)
II. Minor	(1 x 5 = 5)
III. Spotters	(1 x 5 = 5)
Examine, identify and critically comment on the spotters A, B, C, D and E.	
IV. Viva	(05)
V. Record / Observation*	(05)

**Record for ESE; Observation for CIA exam.*

INTERNAL - PRACTICAL MARKS

From Model Practical Examination	-	10
Observation	-	5
Attendance	-	5
Total	-	20

ALLIED PAPER PRACTICALS– Question Pattern & Break-up of marks

END OF SEMESTER PRACTICAL EXAMINATION

Max. Marks: 60

Duration: 3hrs

II. Major	(1 x 20 = 20)
II. Minor	(1 x 10 = 10)
III. Spotters	(3 x 5 = 15)
Examine, identify and critically comment on the spotters A, B, C, D and E.	
IV. Viva	(05)
V. Record / Observation*	(10)

**Record for ESE; Observation for CIA exam.*

INTERNAL - PRACTICAL MARKS

From Model Practical Examination	-	25
Observation	-	10
Attendance	-	5
Total	-	40

SKILL BASED SUBJECT PRACTICAL – Question Pattern & Break-up of marks

END OF SEMESTER PRACTICAL EXAMINATION

Max. Marks: 45

Duration: 3hrs

III. Major	(1 x 20 = 20)
II. Minor	(1 x 10 = 10)
III. Spotters	(1 x 5 = 5)
Examine, identify and critically comment on the spotters A, B, C, D and E.	
IV. Viva	(05)
V. Record / Observation*	(05)

**Record for ESE; Observation for CIA exam.*

INTERNAL - PRACTICAL MARKS

From Model Practical Examination	-	15
Observation	-	10
Attendance	-	5
Total	-	30