

॥ सा विद्या या विमुक्तये ॥



# स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

“ज्ञानतीर्थ” परिसर, विष्णुपुरी, नांदेड - ४३१६०६ (महाराष्ट्र)

**SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY NANDED**

“Dnyanteerth”, Vishnupuri, Nanded - 431606 Maharashtra State (INDIA)

Established on 17th September 1994 – Recognized by the UGC U/s 2(f) and 12(B), NAAC Re-accredited with 'A' Grade

## ACADEMIC (1-BOARD OF STUDIES) SECTION

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विद्यापीठ अनुदान आयोगाने शैक्षणिक वर्ष २०२०-२१ पासून मान्यता दिलेल्या व्होकेशनल कोर्सेसचे (बी.व्होक पदवी, अॅडव्हॉस डिप्लोमा, डिप्लोमा व सर्टिफिकेट ) अभ्यासक्रम शैक्षणिक वर्ष २०२०-२१ पासून लागू करणे बाबत.

### परिपत्रक

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, विद्यापीठ अनुदान आयोगाने शैक्षणिक वर्ष २०२०-२१ पासून मान्यता दिलेल्या व्होकेशनल कोर्सेसच्या (बी. व्होक पदवी, अॅडव्हॉस डिप्लोमा, डिप्लोमा व सर्टिफिकेट्स) अभ्यासक्रमांना मा विज्ञान व तंत्रज्ञान विद्याशाखेने दिनांक ३१ मे २०२१ रोजीच्या बैठकीतील केलेल्या शिफारशीप्रमाणे व मा. विद्यापरिषदेच्या दिनांक १२ जून २०२१ रोजीच्या बैठकीतील विषय क्रमांक २६/५१-२०२१ च्या ठरावानुसार खालील अभ्यासक्रमांस मान्यता देण्यात आली आहे.

1. B. Voc. IT/Hardware and Networking.
2. B. Voc Software Development.
3. B. Voc. Medical Laboratory Technology.
4. B. Voc. Horticulture and Post-Harvest Technology.
5. B. Voc. Herbal Medicine.
6. B. Voc. Commercial Aquaculture.
7. B. Voc. Food Processing Technology.
8. B. Voc. Skill Based Zoology.
9. B. Voc. Vocational Biotechnology.
10. B. Voc. Plant Tissue Culture Secretary.
11. Advance Diploma Radiological Physics.
12. Diploma – Computer Hardware.
13. Diploma – Computer Network Assistant.
14. Diploma – PGDMLT.
15. Diploma – Embedded System Design.
16. Diploma- Biofertilizer.
17. Diploma- Fisheries and Farm Management.
18. Diploma - Bee Keeping.

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या [www.srtmun.ac.in](http://www.srtmun.ac.in) या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी. ही विनंती.

जा.क्र.:शैक्षणिक-१/परिपत्रक/व्होकेशनल अभ्यासक्रम/N-  
२०२०-२१/६८

दिनांक : ०५.०७.२०२१

प्रत माहिती व पुढील कार्यवाहीस्तव :

- १) मा. कुलसचिव यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- २) मा. संचालक, परीक्षा व मूल्यमापन मंडळ यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- ३) प्राचार्य, सर्व संबंधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
- ४) साहाय्यक कुलसचिव, पदव्युत्तर विभाग, प्रस्तुत विद्यापीठ.
- ५) उपकुलसचिव, पात्रता विभाग, प्रस्तुत विद्यापीठ.
- ६) सिस्टम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ.

स्वाक्षरित

सहा कुलसचिव

शैक्षणिक (१-अभ्यासमंडळ) विभाग

**SWAMI RAMANAND TEERTH MARATHWADA  
UNIVERSITY, NANDED (MS)**



स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड.

**UGC Sanctioned Vocational Course**

**Syllabus**

**Certificate, Diploma, Advanced Diploma and B.Voc. Degree**

**in**

**Skill Based Zoology**

**(CBCS Pattern)**

**Semester I & II**

**Faculty: Science and Technology**

**(w.e.f. 2020-21 )**

<b>Exit Points /Awards</b>	<b>Eligibility</b>	<b>Normal Duration</b>	<b>Skill Component Credits</b>	<b>General Education Credits</b>	<b>Total Credits for Award</b>	<b>NSQF Level</b>	<b>Medium of instruction</b>
Certificate	12 <sup>th</sup> pass or Diploma in relevant field after 10 <sup>th</sup>	One semester	18	12	30	4	English
Diploma		Two semester	36	24	60	5	
Advanced Diploma		Four semester	72	48	120	6	
B. Voc Degree		Six semester	108	72	180	7	

**Table: Indicating Eligibility, Duration, Total Credits.**

### **About the Course:**

Government of India, taking note of the requirement for skill development among students launched National Vocational Education Qualification Framework (NVEQF) which was later on assimilated into National Skills Qualifications Framework (NSQF). Various Sector Skill Councils (SSCs) are developing Qualification Packs (QPs), National Occupational Standards (NOSs) and assessment mechanisms in their respective domains, in alignment with the needs of the industry.

In view of this, the UGC implemented the scheme of Community Colleges from 2013-14 in pilot mode on the initiative of the MHRD. Thereafter, realizing the importance and the necessity for developing skills among students, and creating work ready manpower on large scale, the Commission decided to implement the scheme of Community Colleges as one of its independent schemes from the year 2014-15. The Commission also launched another scheme of B.Voc. Degree programme to expand the scope of vocational education and also to provide vertical mobility to the students admitted into Community Colleges for Diploma programmes to a degree programme in the Universities and Colleges. While these two schemes were being implemented, it was also realized that there is a need to give further push to vocational education on a even larger scale. Accordingly, 'DeenDayalUpadhyayCentres for Knowledge Acquisition and Upgradation of Skilled Human Abilities and Livelihood (KAUSHAL)' was also incorporated. Since all these three provisions serve a common purpose, all these schemes are merged into a single scheme for providing skill based education under National Qualification Framework.

### **Type of Courses and Awards:**

There will be full time credit-based modular programmes, wherein banking of credits for skill and general education components shall be permitted so as to enable multiple exit and entry. The multiple entry and exit enables the learner to seek employment after any level of Award and join back as and when feasible to upgrade qualifications / skill competencies either to move higher in the job profile or in the higher educational system. This will also provide the learner an opportunity for vertical mobility to second year of B.Voc degree programme after one year diploma and to third year of B.Voc degree programme after a two year advanced diploma. The students may further move to Masters and Research degree programmes mapped at NSQF Level 8 – 10.

### **Aims and Objectives:**

The aims and objectives of the Vocational programme under NSQF are;

- (i) To provide judicious mix of skills relating to a profession and appropriate content of general education.
- (ii) To ensure that the students have adequate knowledge and skills, so that they are work ready at each exit point of the programme.
- (iii) To provide flexibility to students by means of pre-defined entry and multiple exit points.
- (iv) To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirements.
- (v) Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.
- (vi) To provide vertical mobility to students coming out of 10+2 with vocational subjects and Community Colleges.

### **The Objectives of the B.Voc. in Skill based Zoology:**

- (i) To provide an updated education to the students in order to know the importance and scope of the discipline and to provide mobility to students from one university or state to other.
- (ii) To develop a scientific attitude to make students open minded, critical and curious.
- (iii) To develop an ability to work on their own and to make them fit for the society.
- (iv) To develop skill in field work, experiments, equipment and laboratory use along with collection and interpretation of materials and data.
- (v) To make aware of natural resources and environment and the importance of conserving the same.
- (vi) To develop ability for the application of the acquired knowledge in the relevant fields so as to make our country self-reliant and self-sufficient.

### **Outcome of the course:**

- (i) This Program in Skill based Zoology will produce manpower with good expertise, knowledge and skills in the field of applied Zoology and allied activities.
- (ii) The program will impart education and skills with respect to Zoology at different levels diploma, advance diploma, degree.
- (iii) The certificate level of B.Voc. in Skill based Zoology will impart expertise and

knowledge with respect to general Zoology information, identification of different animal species, principle activities of Diversity of animals and basics of Pearl culture, Apiculture and Sericulture.

- (iv) The diploma level of B.Voc. In Skill based Zoology will impart expertise and knowledge of Pearl Culture, Apiculture and Sericulture in addition to the certification level.
- (v) The advance diploma level of B.Voc. in Skill Based Zoology will impart expertise and knowledge with respect to Dairy farming, dairy production technology and Vermicomposting in addition to diploma level.
- (vi) The degree level of B.Voc. in Skill Based Zoology will impart expertise and knowledge with respect to Ecotourism, Goat and sheep farming, Azolla culture ornamental fisheries, Aquaculture and Biofertilizer in addition to advance diploma level.
- (vii) This program allows the students for different techniques, recent trends, innovation in Skill based zoology and hands on laboratory as well as on farm skills in order to serve as human resource for Skill based Zoology and allied sectors at different entry and exit level.
- (viii) This skill oriented programs will provide career opportunities and self-employment through entrepreneurship development of their own enterprises in Skill based Zoology and its allied sectors.

**Syllabus structure for,**

**Certificate, Diploma, Advanced Diploma and B.Voc Degree in  
Skill Based Zoology (Science and Technology)**

	Paper No.	Course Number	Course Title	Hr/Week	Type of Course	Credits	Marks		Total
							ESA	CIA	
<b>Sem. I</b>	<b>General Education Component</b>								
	Paper-I	BAAGE -111	Communication Skills	4	GE	4	75	25	100
	Paper-II	BAAGE -112	Basics of Computer	4	GE	4	75	25	100
	Paper-III	BAAGE -113	Seminar*	1	GE	1	-	25	25
	<b>Skill Courses</b>								
	Paper-IV	SBZOO-111	Basics of beekeeping	4	CC	4	75	25	100
	Paper-V	SBZOO-112	Biology of mulberry silkworms and Host Plant	4	CC	4	75	25	100
	Paper-VI	SBZOO-113	Study of Pearl producing aquatic organisms	4	CC	4	75	25	100
	<b>Practical Skill Courses</b>								
	Paper-VII	Practical Based on SBZOO-111		3	PR	3	50	25	75
Paper-VIII	Practical Based on SBZOO-112		3	PR	3	50	25	75	
Paper-IX	Practical Based on SBZOO-113		3	PR	3	50	25	75	
<b>Sem. II</b>	Paper No.	Course Number	Course Title	Hr/Week	Type of Course	Credits	Marks		Total
	<b>General Education Component</b>								
	Paper-X	BAAGE -124	Personality Development	4	GE	4	75	25	100
	Paper-XI	BAAGE -125	Environmental Study	4	GE	4	75	25	100
	Paper-XII	BAAGE -126	Field Visit*	1	GE	1	-	25	25
	<b>Skill Courses</b>								
	Paper-XIII	SBZOO-124	Bee keeping techniques	4	CC	4	75	25	100
	Paper-XIV	SBZOO-125	Sericulture Industry and Marketing	4	CC	4	75	25	100
	Paper-XV	SBZOO-126	Pearl Culture techniques	4	CC	4	75	25	100
	<b>Practical Skill Courses</b>								
	Paper-XVI	Practical Based on SBZOO-121		3	PR	3	50	25	75
	Paper-XVII	Practical Based on SBZOO-122		3	PR	3	50	25	75
	Paper-VIII	Practical Based on SBZOO-123		3	PR	3	50	25	75

\*Indicate that the activity should be related to general education components of that particular semester. The institute level coordinator shall decide about the execution.

**ESA:** End Semester Assessment,

**CIA:** Continues Internal Assessment,

**GE:** General Education Component,

**CC:** Core Skill Courses,

**PR:** Practical Skill Courses,

**CIA of 25 Marks (Theory):** 15 Marks for college level internal test & 10 Marks for Assignment,

**CIA of 25 Marks (Practical):** 15 Marks for college level internal practical test & 10 Marks for Record Book and Field Note Book submission.



**Certificate, Diploma, Advanced Diploma and B.Voc Degree (Science and Technology)**

**First Year (Semester I) Semester Pattern**

**Paper-I: Communication Skills (BAAGE-111)**

**Maximum Marks:** 100

**Credits:**4

**Periods:**45

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**Unit I: Basic Grammar:**(13 Periods)

Introduction, Grammar Word Classes ( Open & Closed), Sentence – Kinds – Transformation, Phrase, Clause and its kinds, Simple, Complex & Compound sentences, (Only definitions & Structure), Tenses - Use of verbs in the Sentences

**Unit II: Vocabulary:**(10 Periods)

Morphology, Synonyms & Antonyms, One Word Substitution, Homophones & Homonyms

**Unit III: Communication Skills:** (10 Periods)

Definition & Types, Communication Cycle & Barriers, Principles for Effective Communication, Varieties in English (Indian, British & American).

**Unit IV: Writing Skills:** (12 Periods)

Letters (Formal & Informal), Report Writing (Scientific and Formal), Memorandum, Curriculum Vitae, Personal Employment Interview, Group Discussion. Phonetics: 44 sounds, consonants, vowels & Diphthongs, Transcription of words, Accent, Syllable cluster and Intonation.

**Reference Books:**

1. Developing of Communication Skills -Krishna Mohan &MeeraBanerji
2. A Practical English Grammar A.J. Thomson –Oxford
3. Mastering English Grammar – S.H.Burton
4. Technical Communication- Raman Sharma- Oxford
5. Written Communication in English – Sarah Freeman Orient Longman Pvt. Ltd.
6. A Course in Phonetics & Spoken English -J.Sethi&P.V.Dhamija
7. Radiance-Tense

**Swami RamanandTeerthMarathwada University, Nanded**  
**Certificate, Diploma, Advanced Diploma and B.Voc Degree (Science and Technology) First Year (Semester I) Semester Pattern**

**Paper-II Basics of Computer (BAAGE-112)**

**Maximum Marks:** 100

**Credits:**4

**Periods:**45

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**Unit I: Basics of Computer :( 10 Periods)**

Introduction to computer, Definition and Types. Basic Applications of Computer; Components of Computer System, Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output Devices, Computer Memory, Concepts of Hardware and Software; Connecting keyboard, mouse, monitor and printer to CPU and checking power supply.

**Unit II:Computer Operation:(13 Periods)**

Operating Computer using GUI Based Operating System: What is an Operating System; Basics of Popular Operating Systems; The User Interface, Using Mouse; Using right Button of the Mouse and Moving Icons on the screen, Use of Common Icons, Status Bar, Using Menu and Menu-selection, Running an Application, Viewing of File, Folders and Directories, Creating and Renaming of files and folders, Opening and closing of different Windows;

**Unit III:MS-Office:(10 Periods)**

Introduction to MS-Word: Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; Printing of word document. MS- Excel, Power Point. Internet concept & definition, WWW, URL, http, Browsers, Search engines etc.

**Unit IV:Computer Networking:(12 Periods)**

Basic of Computer networks; LAN, MAN, WAN; Concept of Internet; Applications of Internet. Communications and collaboration: Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration; Instant Messaging; Netiquettes.

**Reference Books:**

1. Introduction of Computer Science- P.ushman& R. Mata Toledo, McGraw Hill
2. Computer fundamentals – P.K. Sinha – BPB New Delhi.
3. Microsoft Office – 2000Complete – BPB Practicals

**Swami RamanandTeerthMarathwada University, Nanded**

**Certificate, Diploma, Advanced Diploma and B.Voc Degree (Science and Technology)**

**First Year (Semester I)**

**Paper-IV: Basics of beekeeping(SBZOO-111)**

**Maximum Marks: 100**

**Credits: 4**

**Periods: 45**

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**UNIT-I:**

**(Periods: 12)**

1. History of bee keeping: Definition, Bee keeping in worldwide, In India. Traditional bee keeping
2. Modern beekeeping, Urban or backyard beekeeping.
3. Honey bee species and identification: Introduction to honey bee; Origin, systematics and distribution; Types of honey bees, Species of honey bees. Bee identification.

**UNIT-II:**

**(Periods: 11)**

1. Social organization in honey bees: Colony life and social organization – Queen, drone, worker.
2. Annual biological cycle of the bee colony.
3. Communication in honey bees: Bee learning and communication
4. Adaption of honey bees: Structural, Behavioral, Ecological and Physiological Adaptations of Bees.

**UNIT-III:**

**(Periods: 12)**

1. Bee enemies and diseases: An introduction, Bee enemies – Wax Moth, Ants, Wasps,
2. Microorganisms, Pests. Diagnosis and Identification.
3. Honeybee diseases, insects, pests, and predators.  
Bacterial, viral, fungal & protozoan diseases:

**UNIT-IV:**

**(Periods: 10)**

1. Products of Apiculture industry and its uses (Honey, Bee wax, Propolis, Pollen etc.).
2. Study of Challenges and Opportunities of bee keeping in India special reference to Maharashtra.
3. Bee keeping schemes and Programmes in India

**Reference Books:**

1. Dewey M. Caron, 2013. Honey Bee Biology and Beekeeping, Revised Edition. WicwasPress, Kalamazoo.
2. Pradip V Jabde, 1993. Text Book of Applied Zoology: Vermiculture, Apiculture, Sericulture,
3. Lac Culture, Agricultural Pests and their Controls. Discovery Publishing House, New Delhi.
4. Eva Crane, 1999. The World History of Beekeeping and Honey Hunting. Routledge, India.
5. Ted Hooper, 2010. Guide to Bees & Honey: The World's Best Selling Guide to Beekeeping.
6. Northern Bee Books, Oxford.

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**Certificate, Diploma, Advanced Diploma and B.Voc Degree (Science and Technology)**

**First Year (Semester I)**

**Paper-V: Biology of mulberry silkworms and Host Plant(SBZOO-112)**

**Maximum Marks: 100**

**Credits: 4**

**Periods: 45**

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**Unit I Introduction**

1. Sericulture: History and present status and sericulture in India.
2. Silkworm Races: Types of races, parental, cross breed races in India.
3. Silk production: Mulberry silk production, status, export and income.
4. Recent trends in Sericulture: Modern cultural practices using high yielding hybrids of silkworm.

**Unit II Mulberry Plant**

1. Mulberry Tree : Taxonomy, Characteristics, Mulberry varieties, sexual and asexual propagation.
2. Plantation: Soil, water, manuring, methods of plantation, cultivation and management, leaf production.
3. Mulberry diseases : Red rust, common mulberry dwarf, mulberry wilt, leaf spot, powdery mildew, root knot (Nematode disease), control methods.
4. Mulberry pests: Leaf eating caterpillars, jassids, thrips, mealy bugs (Scale insect), gall midges, stem girdle beetle, powder pest beetle, and control methods.

**Unit III Silkworm, Bombyx mori**

1. Life Stages: Egg- shape, size and external structure, incubation period. : Larva- Instars, morphological characters, individual life span, sexual dimorphism. : Pupa- Male and Female pupae, pupal development, sexual dimorphism. : Adult- Male and female, development, sexual dimorphism.
  2. Structure and function : Mouth parts of the larva, External genitalia of adults, Digestive system in larva, Circulatory system in larva, Reproductive system in larva and adults.
  3. Silk gland : Morphological structure, Histological Differentiation, Functional differentiation, Silk gland secretory cycle and silk synthesis, degeneration, silk proteins.
- 4 Neuroendocrines : Central nervous system, Neuroendocrine systems, Role of hormones in development, Pheromones.

**Unit IV Silkworm protection**

1. Diseases and their: Pebrine- Pathogen, Nosemabombycis, etiology,ymptoms management and mode of infection Grasserie- Pathogen, Nucoepolyherosis virus, Borrelina sp. etiology, symptoms and mode of infection Flacherie-Pathogen Bacillus species, etiology, symptoms and mode of infection Muscardine- Pathogen, Beuveriabassiana, etiology, symptoms and mode of infection Management of diseases-Preventive measures, Use of disinfectants Dusting, drug treatment
2. Silkworm Pests : Uzi fly- Tricholygabombycis, Classification, Life cycle, Habits and nature of damage and control measures. Ants - Formica fusca Classification, Life cycle, Habits and nature of damage and control measures. Lizards- Classification,

nature of damage and control measures. Birds- Classification, nature of damage and control measures.

3. Insect pests of Cocoon: Demisted beetle - Dermestescadverinus Classification, Life cycle, Habits and nature of damage and control
4. Vertebrate pests of Cocoon : Squirrel - Classification, life cycle, nature of damage and control measures. Rats- Classification, life cycle, nature of damage and control measures.

#### **Reference Books:**

1. Handbook of Practical Sericulture:Ullal, S.R. and Narasimhanna, M.N . (1987) Central Silk Board Publication, Bangalore.
- 2.Advanced Economic Theory : Ahuja, H.L., S. Chand & Co., Ltd., New Delhi.
3. Exports and Development : Koshy, T.D. (1990), Ashish Publication, New Delhi.
4. Statistical Biannual : CSB Publicatiion, Bangalore.
5. Statistical method : Snedecor, G.W. and Cochran, W.C. (19790, LowaSteto, Univ. Press, Himes, Lowa.
6. A Text Book of Economic Theory : Stonier and Hague.
7. Sericulture Society and Economy : Hanumappa, H.G. (1993), Himalaya Publishing House, New Delhi.
8. Development of Sericulture: Narasaiah, M.L. and Jaya Raju (1999), Discovery Publishing House, New Delhi.
- 9.Sericulture and Rural Development : G. Sandhya Rani (1998), Discovery Publishing House, New Delhi.

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**Certificate, Diploma, Advanced Diploma and B.Voc Degree (Science and Technology)**

**First Year (Semester I)**

**Paper-VI: Study of Pearl producing aquatic organisms(SBZOO-113)**

**Maximum Marks: 100**

**Credits: 4**

**Periods: 45**

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**UNIT-I:**

**(Periods: 10)**

1. Introduction
2. Taxonomy And Distribution
3. Morphology of Pearl producing organisam
  - a. Shell features
  - b. Shell structure

**UNIT-II:**

**(Periods: 12)**

**Anatomy of Pearl producing organism**

2. Mantle
3. Foot
4. Byssal gland
5. Muscular system
6. Digestive system
7. Respiratory system
8. Circulatory system
9. Excretory system
10. Nervous system
11. Reproductive system

**UNIT-III:**

**(Periods: 11)**

1. Biology of Pearl producing organism
  - a. Food and feeding habits
  - b. Age and growth
  - c. Reproduction

**UNIT-IV:**

**(Periods: 12)**

1. River ecology: a) Physico-chemical characters of river waters, b) Biotic factors- Producers, consumers and decomposers, c) Zonation of river-Rhithron and potamon zone, d) Flora and fauna of river
2. Ecology of Reservoir: a) Introduction to reservoirs, b) Classification of reservoirs, c) Eutrophication of reservoirs, d) Physico-chemical characters of reservoirs waters, e) Biotic Community: -Flora and fauna of reservoirs.
3. Pond ecology

### **Reference Books:**

1. A. C C. Victor (1995) Manual On Pearl Oyster Seed Production, Farming And Pearl Culture, Central Marine Fisheries Research Institute Indian Council Of Agricultural Research Post Box No. 1603, Cochin - 682014, India
2. Agarwal, K.C.2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Cunningham, W. P. Cooper, T. H. Gorhani, E & Hepworth, M.T.2001. Environmental Encyclopedia, Jaico Publ. House. Mumbai, 1196p
4. Odum, E. P., 1972. Fundamentals of Ecology by Eugene, W. B. Saunders Company, London.
5. Smith, R.L., 1986. Elements of Ecology. Harpet and Row Publishers, New York.
6. Trivedi, P.R. and K. Gurdeepraj, 1992. Environmental Biology, Akashdeep Publishing House, New Delhi.
7. Animal Ecology- R.K.Gupta and B.S. Malik, PragatiPrakashan, Meerut

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**Certificate, Diploma, Advanced Diploma and B.Voc Degree (Science and Technology) First Year (Semester I)**

**Paper-VII: Practical based on SBZOO-111 (Basics of Bee Keeping)**

**Maximum Marks: 75**

**Credits:3**

**Periods: 30**

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<b>List of practical's</b>	<b>Number of Hours</b>
1. Identification of different bee species and castes. 2. Hive inspection. 3. Dividing, uniting bee colonies, supering.	9
4. Supplementary feeding and honey extraction. 5. To study Social organization in honey bees. 6.To Study Annual biological cycle of the bee colony	9
7.Identification of pests, diseases, predators and enemies of honeybees 8. Management of bee diseases and enemies. 9. Methods of controlling pests and diseases	6
10.To Study Products of Apiculture industry and its uses. 11. Field visits to Apiculture centers to study the commercially importanceHoney bees.	6



Swami RamanandTeerthMarathwada University, Nanded

Certificate, Diploma, Advanced Diploma and B.Voc Degree (**Science and Technology**)First Year (Semester I)

Paper-VIII: Practical based on SBZOO-112 (Biology of mulberry silkworms and Host Plant)

Maximum Marks: 75

Credits: 3

Periods: 30

List of practical's	Number of Hours
1. Identification of mulberry varieties: External morphology and Anatomy of leaf, petiole, stem, root and stomatal frequency in leaf of different mulberry varieties. 2. Identification of different types of silkworms.	6
3.Preparation of land and mulberry sowing Ploughing, weeding, and leveling of land, manuring, methods of cutting (pruning), and transplantation of cutting into nursery and management, plantation methods, irrigation, doses of fertilizer, management of plantation. Practicing the identification of honey bee caster 4.Field collection a) Diseases: Leaf spot, Powdery mildew, root knot, red rust, mulberry wilt. b) Pests: Leaf eating caterpillar, Jassids, Thrips, Stem girdle beetle.	6
5.Preparation of life cycle of different races of silkworm 6.External morphology and Sexual dimorphism in Larva, pupa and adults 7.Identification of internal organs of silkworm Digestive system, Silk gland, Heart (Circulatory System), Central nervous system, Reproductive system of larva and adult, Mouth parts of larva	9
8.Sex differentiation of Larva, Pupa and Adult Silkworms 9. Identification of diseases and pests of silkworm and control strategy. Diseases: Protozoan disease-pebrine (Nosemabombycis),Viral disease-Grasserie (NPV and CPV), Bacterial disease-Flacherie (Cocoi and Bacillus),Fungal disease- Muscardine (Red, White and Green) (Beauvariabassiana). Insect Pests: Uzi fly (Tricholygabombycis), Dermestid beetle, Ants. Vertebrate Pests: Lizards, Rats, Squirrels and Birds, Mechanical and Chemical Control.	9

**Swami RamanandTeerthMarathwada University, Nanded**

**Certificate, Diploma, Advanced Diploma and B.Voc Degree (Science and Technology)First Year (Semester I)**

**Paper-IX: Practical based on SBZOO-113(Study of Pearl producing aquatic organisms)**

**Maximum Marks: 75**

**Credits: 3**

**Periods: 30**

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<b>List of practical's</b>	<b>Number of Hours</b>
1. Study of marine pearls species	6
2. Study of freshwater pearl species	
3. Shell morphometry of Pearly species	6
4. Study of river habitat and organisms	
<b>5. Demonstration of dissection of bivalves</b> Dissection for different systems (Digestive system, Respiratory system, Circulatory system, Excretory system, Nervous system, Reproductive system)	9
<b>6.</b>	9

**Swami RamanandTeerthMarathwada University, Nanded**

**Certificate, Diploma, Advanced Diploma and B.Voc Degree (Science and Technology) First Year (Semester II)**

**Paper-X: Personality Development (BAAGE-124)**

**Maximum Marks:** 100

**Credits:**4

**Periods:** 45

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**UNIT-I:Personality Development:** (Periods: 11)

Introduction to personality development: The concept personality- Dimensions of theories of Freud & Erickson- personality – significant of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success,What is failure - Causes of failure. SWOT analyses.

**UNIT-II:Attitude& motivation:**(Periods: 11)

Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude - Advantages –Negative attitude - Disadvantages - Ways to develop positive attitude - Difference between personalities having positive and negative attitude. Concept of motivation - Significance - Internal and external motives - Importance of self-motivation- Factors leading to de-motivation

**UNIT-III: InterpersonalRelationship :**(Periods: 11)

Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem – Low self-esteem - Symptoms - Personality having low self-esteem - Positive and negative self-esteem. Interpersonal Relationships – Defining the difference between aggressive, submissive and assertive behaviors - Lateral thinking.

**UNIT-IV: Overall personality development :**(Periods: 12)

Other aspects of personality development: Body language, Problem-solving, Conflict and Stress Management, Decision making skills, Leadership and qualities of a successful leader. Character building, Team-work, Time management, Work ethics, Good manners and etiquette. Employability quotient: Resume building,The art of participating in Group Discussion. Facing the Personal (HR & Technical) Interview.

**Refrence Books:**

1. “Personality Development and Soft Skills” by BarunMitra
2. The Only Skill That Matters by Jonathan A. Levi
3. “Personality Development” by Swami Vivekananda
4. “Personality Development for Students” by Dr Vijay Agrawal
5. Soft Skills Personality Development for Life Success- 2<sup>nd</sup> Edition by Prashant Sharma

**Swami RamanandTeerthMarathwada University, Nanded**  
**Certificate, Diploma, Advanced Diploma and B.Voc. Degree (Science and Technology) First Year (Semester II)**

**Paper-XI: Environmental Study (BAAGE-125)**

**Maximum Marks:** 100

**Credits:**4

**Periods:** 45

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**Unit-I:Ecosystems:** (Periods: 11)

Introduction, Concept of an ecosystem. Structure and function of an ecosystem. Energy flow in the ecosystem. Food chains, food webs. Ecological pyramids: Introduction, types, characteristic features, structure and function of the following ecosystem: a. Forest ecosystem b. Aquatic ecosystems (ponds)

**Unit-II: Biodiversity:**(Periods: 11)

Introduction, Definition: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. India as a mega diversity nation. Biodiversity Hot-spots of India. Threats to biodiversity: habitat loss, poaching of wildlife, man/wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

**Unit-III:Environmental Biology:**(Periods: 12)

Environmental Pollution; Introduction, Definition, Causes, effects and control measures of: a. Air pollution b. Water pollution c. Soil pollution d. Noise pollution f. Thermal pollution g. nuclear hazards. Disaster Management; Natural disaster- Earthquake, Tsunami, Cyclone, Tornado, Chemical Disaster- Bhopal Gas Tragedy, Nuclear Disaster- Chernobyl.

**Unit-IV: Natural Resources:**(Periods: 11)

Renewable and Nonrenewable Resources; Solar Energy, Wind Energy. Forest Resources, Metal Mines, Crude Oil Mines. Sustainable development, Urban problems related to energy, Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people. Environmental ethics. Population growth, Population explosion.

**REFERENCES:**

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
2. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd. Ahmedabad —

380 013, India, Email: mapin@icenet.net ( R)

3. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc.480p
4. Clark R.S., Marine Pollution, Clarendon Press Oxford (TB)
5. Cunningham, W. P. Cooper, T. H. Gorhani, E & Hepworth, M.T.2001. Environmental Encyclopedia, Jaico Publ. House. Mumbai, 1196p
6. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
7. Down to Earth, Centre for Science and Environment( R )
8. Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute. Oxford Univ. Press. 473p
9. Hawkins R.E, Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
10. Heywood, V.I & Watson, R.I. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p. .
11. Jadhav&Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
12. McKinney, M.L. & Schoch. R.M. 1996. Environmental Science systems & Solutions. Web enhanced edition. 630pp.

**Swami RamanandTeerthMarathwada University, Nanded**  
**Certificate, Diploma, Advanced Diploma and B.Voc. Degree (Science and Technology)First Year (Semester II)**

**Paper-XIII: Bee keeping techniques(SBZOO-124)**

**Maximum Marks: 100**

**Credits:4**

**Periods: 45**

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**UNIT-I:**

**(Periods: 10)**

1. Basic requirements for starting bee keeping: Getting Started in Beekeeping - Land and Buildings,(Beehives(Newton and Langstroth bee hives and their modifications).
2. Study and use of beekeeping equipment such as Bee Box, Nucleus Box, Bee Veil, Hive Tool, Honey Extractor, Hive Stand and other accessories.

**UNIT-II:**

**(Periods: 12)**

General management practices in bee keeping: Best management practice – definition, requirements to register, swarms and bee enquiries, hive densities, hive placement, water provisions, queens and robbing behavior, disease control, transportation of beehives.

Prerequisites/requirements of Installation of Beehives in new area

**UNIT-III:**

**(Periods: 12)**

1. Bee pasturage and pollination: Definition, types of bee pasturage – single year productive, multi year productive, permanent productive. Installing a bee pasture. Pollination by bees – pollinator.
2. Seasonal management of honey bees: Honey bees on Canola, Spring management of bees, Wintering bees, Apiary management for winter/early spring pollination. Summer management honey production.

**UNIT-IV:**

**(Periods: 11)**

1. Queen rearing and colony multiplication: Raising honey bee queens. Developmental stages of queen bee, Requirements for rearing good queens, Methods of rearing queens, Hopkins Method, Alley Method, Miller Method, Dequeening Method, Raising Queen on double and Whole Brood Comb
2. Preparing List of Beekeeping and Honey Processing equipments manufacturers /suppliers from India special reference to Maharashtra.

**Reference Books:**

1. Laidlaw, H.H., 1997. Contemporary queen rearing. Published by Dadant and Sons. R. A. Morse,Rearing queen honey bees. Wicwas press, NY.
2. Alison Benjamin, By (author) Brian McCallum, 2008. Keeping Bees and Making Honey. David & Charles, Newton Abbot.
3. Kim Pezza, 2013. Backyard Farming: Keeping Honey Bees: From Hive Management to Honey Harvesting and More. Hatherleigh Press, U.S.
4. Kim Flottum, 2014. The Backyard Beekeeper: An Absolute Beginner's Guide to Keeping Bees in Your Yard and Garden. Quarry Books.

**Swami RamanandTeerthMarathwada University, Nanded**  
**Certificate, Diploma, Advanced Diploma and B.Voc. Degree (Science and Technology) First Year (Semester II)**

**Paper-XIV: Sericulture Industry and Marketing(SBZOO-125)**

**Maximum Marks: 100**

**Credits:4**

**Periods: 45**

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**Unit I Seed Production (Grainage)**

1. Seed Cocoons : Selection, preservation, incubation : Grainage Equipment.
2. Moths : Emergence, mating, egg laying, infection examination.
3. Eggs : Disease free egg laying (DFLs) preparation, Loose egg preparation. Egg preservation
4. Egg hatching/Development : Embryonic development, Inhibition of embryonic development. Artificial hatching, (Hot and Cold acid treatment) Shipment of DFLs

**Unit II Silkworm rearing**

1. Rearing method/ requirements: Selection of silkworm race for rearing Collection of Seeds (DFLs), Rearing Equipment, Rearing house (Model and Thatched Roof)
2. Rearing requirements/ method: Disinfections of rearing house and appliances, brushing of newly hatched larvae, Bed cleaning, Spacing and Dusting of disinfectants. Maintenance of temperature, photoperiod and humidity for rearing.
3. Food and Feeding : Quality, harvesting and storage of mulberry leaves. Feeding and rearing of early and late stage larvae. Schedule of feeding, artificial diet
4. Cocoon formation and adult : Ripening of worms, spinning of cocoon, emergence Pre-pupal moulting, pupation and mounting of ripening worms. Types of mountages, harvesting of cocoons. Emergence of adult moths from cocoons, Inhibition of adult emergence for silk production.

**Unit III Reeling of cocoons**

1. Cocoon preparations : Selection and preservation of cocoons for reeling, Drying /Stifling, Boiling, Top Boiling System, One Pan Boiling System, Three Pan boiling system, Sunken system, Brushing
2. Reeling appliances : Country Charkha, Cottage basin/Domestic machine Filature/Multiend machine, Automatic reeling machine
3. Reeling methods : Charkha reeling, Cottage basin reeling, Filature
4. Reeling operations : Reeling, Re-reeling, Lacing, Winding, Single and double twisting, Steaming, Twist reeling, Book press, Storage of yarn, Skeining unit

**Unit IV Marketing**

1. Cocoon marketing : Gradation of seed and reeling cocoons. Marketing of multivoltine, bivoltine and hybrid cocoons
2. Yarn marketing : Gradation of yarn Twisted/untwisted yarn, Marketing of yarn
3. Silk marketing prospects : Indian Market, International market, Foreign exchange earning
4. Cost benefit ratio : Cost of land and soil preparation. Cost of mulberry plantation and Management, Cost of silkworm rearing, Reeling of yarn, selling of the cocoons / yarn. Net profit.

## Reference Books:

1. Comprehensive Sericulture Manual : Mohan Rao, M.M. (1999), B.S. Publications, Hyderabad.
2. Principles of Biostatistics : Marcello Pagano Kimberlee Gauvreau, Duxburg, USA.
3. Economics of Sericulture and Silk Industry in India : Ramana, D.V. (1987), Deep and Deep Publishers, New Delhi
4. Silkman's Companion : Anonymous (1992), CSB Publication, Bangalore.
5. The Development of Indian Silk—A Wealth of Opportunities : Sinha, S. (1960).
6. An Introduction to Extension Education : Supe, S.V.
7. Extension Education : Advi Reddy.
8. Agricultural Marketing in India Acharya, S.S. and Agrawal, N.L. (1999) Pub. By Oxford & IBH Pub. Co. Pvt. Ltd., New Delhi.
9. Education and Communication for Development : Dahama, O.P. and Bhatnagar, O.P. Pub. by Oxford & IBH Pub. Co. Pvt. Ltd., New Delhi.
10. Silk Production, processing and marketing : Nanavaty, M.N.
11. Biostatistics : Rama Krishna, P. 1996), Saras Publication, Kanyakumari.
12. Economics of Sericulture under Irrigated and Rainfed Conditions : (1982) M.S. Jolly, CSR & TI, Mysore.
13. An Analysis of Demand and Supply prospectus for High Quality Raw Silk : Naik, G and Babu, K.R. (1991), Centre for Management in Agriculture, Ahmedabad.
14. Bioinformatics—Methods and Protocols : Ed. By Stephen Misener and Stephen, A. Krawetz Humana Press Totowa, New Jersey.



**Swami RamanandTeerthMarathwada University, Nanded**

**Certificate, Diploma, Advanced Diploma and B.Voc. Degree (Science and Technology)First Year (Semester II)**

**Paper-XV: Pearl Culture techniques (SBZOO -126)**

**Maximum Marks: 100**

**Credits: 4**

**Periods: 45**

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**UNIT-I:**

**(Period 10)**

1. Introduction
2. Status Pearl fishery in India & world
3. Types of Pearls
4. Chemical Composition
5. Properties
6. Formation
7. Uses
8. water quality parameters

O<sub>2</sub>, CO<sub>2</sub>, Electric conductivity, pH, Temperature, Turbidity, nitrogen

**UNIT-II:**

**(Periods: 12)**

1. Suitable species
2. Sources and collection of seed
3. Hatchery Techniques
  - a. Broodstock maintenance
  - b. Spawning
  - c. Fertilization
  - d. Early development and larval rearing
4. Larvae and spat handling
  - a. Larval rearing conditions
  - b. Spat production
  - c. Feeding
  - d. Transplantation
  - e. Survival

**UNIT-III:**

**(Periods: 12)**

1. Pearl culture methods
2. Environmental conditions: Temperature, Salinity, Bottom, Depth, Silt load, Water current, primary productivity
3. Steps in pearl culture
  - a. Collection of pearl producing species
  - b. Conditioning
  - c. Surgery
  - d. Post-operative care
  - e. Culture: Stocking, food and feeding, health management, water quality management, growth studies
  - f. Harvesting

**UNIT-IV:****(Periods: 11)**

1. Biofouling And Predation
  - a. Biofouling organisms, Boring organisms, Predator organisms
  - b. Control measures for Fouling, Boring & Predation
2. Measures for enhancing pearl quality
  - a. Oyster selection
  - b. Narcotization of oyster
  - c. Graft tissue preparation
  - d. Implantation
  - e. Oyster convalescence
  - f. Tool maintenance
  - g. Colour of pearls

**Reference Books:**

1. A. C. C. Victor, A. Chellam, S. Dharmaraj, T. S. Velayudhan (1995): Manual on Pearl Oyster Seed Production, Farming and Pearl Culture. Special Publication, Central Marine Fisheries Research Institute. Indian Council of Agricultural Research. Cochin Pp. 60.
2. Neil H. Landman, Paula Mikkelsen, Harry N. Abrams (2001): Pearls: A Natural History. Nature - 232 pages
3. Melba G. Bondad-Reantaso (2007) Pearl oyster health management- A manual, Food And Agriculture Organization Of The United Nations.
4. Maria Haws (2002) The Basic Methods of Pearl Farming: A Layman's Manual, Center for Tropical and Subtropical Aquaculture, University of Hawaii at Hilo Hilo, HI 96720 USA
5. K. Alagarwami And S. Dharmaraj (1984) Manual On Pearl Culture Techniques, Central Marine Fisheries Research Institute Indian Council Of Agricultural Research Post Box No 1912, Cochin 682 018, India
6. John S. Lucas, Paul C. Southgate and Craig S. Tucker. 2019. Aquaculture: Farming Aquatic Animals and Plants, 3rd Edition, Wiley publication.
7. Lucas, J.S. 2012. Aquaculture: Farming Aquatic animals and plants, Wiley – Blackwell.
8. N. Romoanowski, 2006. Sustainable Freshwater Aquacultures: The complete guide from backyard to investor, University of New Southwales Press.
9. Pillai, TVR. and M. N. Kutty., 2005. Aquaculture: Principles and Practices, Wiley-Blackwell.

**Swami RamanandTeerthMarathwada University, Nanded**

**Certificate, Diploma, Advanced Diploma and B.Voc. Degree (Science and Technology) First Year (Semester II)**

**Paper-XVI: Practical based on SBZOO-124 (Bee Keeping Techniques)**

**Maximum Marks: 75**

**Credits: 3**

**Periods: 30**

<b>List of practical's</b>	<b>Number of Hours</b>
1. Practice of constructional details and use of beekeeping equipment such as Bee Box, Nucleus Box, Bee Veil, Hive Tool, Honey Extractor, Hive Stand and other accessories. 2. Identification of bee flora and their flowering calendar	6
3. Practicing division of bee colonies 4. Practicing the identification of honey bee caste 5. Installation of CF (Comb Foundation) Sheet	6
6. Searching techniques for floral colonies. 7. Practicing hiving of natural colonies and catching swarms 8. Practicing of the inspection of bee colonies	9
9. Practicing uniting of weak colonies 10. Extraction of pollen and propolis 11. Practice of packing and marketing of honey 12. Working out the economics of bee keeping	9

**Swami RamanandTeerthMarathwada University, Nanded**

**Certificate, Diploma, Advanced Diploma and B.Voc Degree (Science and Technology) First Year (Semester I)**

**Paper-XVII: Practical based on SBZOO-126 (Sericulture Industry and Marketing)**

**Maximum Marks: 75**

**Credits: 3**

**Periods: 30**

List of practical's	Number of Hours
1. Silkworm seed Selection and preservation of seed cocoons, sexing, regulation of mating, Mother moth examination, DFLs preparation, preparation of card and loose eggs and washing of eggs, hot and cold acid treatment.	6
2. Estimation of Hatching and Brushing Percentage of silkworm Eggs	
3. Rearing of silkworm and harvesting of cocoons Disinfections, young age rearing, late age rearing, feeding, cleaning, spacing, dusting, moulting, determination of leaf, cocoon ratio, mountage, spinning and harvesting of cocoons.	6
4. Practical demonstration of cooking, reeling and re-reeling of a sample cocoon.	
5. Identification of embryonic growth in egg. Stage of fertilization, blastoderm, germ band, spoon-shaped embryo, black head stage (4 – 10 days).	
6. Process of reeling Cocoon drying/stifling, cocoon boiling, brushing, reeling, re-reeling, finishing and testing, winding, twisting, doubling, double twisting, steaming and twist reeling.	9
7. Study of Reeling appliances : Country Charkha, Cottage basin/Domestic machine Filature/Multiend machine, Automatic reeling machine	
8. Study of Reeling methods : Charkha reeling, Cottage basin reeling, Filature	9
9. Market study with reference to silk cocoons, yarn and silk fibre	
10. Visit to Sericulture center.	

**Swami RamanandTeerthMarathwada University, Nanded**

**Certificate, Diploma, Advanced Diploma and B.Voc Degree (Science and Technology)First Year (Semester I)**

**Paper-XVIII: Practical based on SBZOO-126 (Pearl Culture techniques)**

**Maximum Marks: 75**

**Credits: 3**

**Periods: 30**

<b>List of practical's</b>	<b>Number of Hours</b>
1.Study of pearls: shape, types, chemical composition, properties 2.Identification and collection of spats	6
3.Estimation of water quality parameters Estimation of O <sub>2</sub> ,Estimation of CO <sub>2</sub> ,Electric conductivity,pH, Temperature,Turbidity, nitrogen	6
4.Surgery of mussels 5.Study of nucleus for pearl culture 6.Study of Biofouling organisms 7.Study of Boring organisms	9
8.Study of Predator organisms 9.Graft tissue preparation 10.Study Tour	9

**SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY,  
NANDED**

Choice Based Credit System (CBCS) (Semester Pattern)

**Theory Examination**

**Question Paper Pattern (B.Voc.)**

**Maximum Marks: 75**

**Time: 3.00 Hrs**

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**Q1.** Long Answer Type Question ..... (15 Marks).

**OR**

**a)** Short Answer Type Question .....(8 Marks).

**b)** Short Answer Type Question .....(7 Marks).

**Q2.** Long Answer Type Question ..... (15 Marks).

**OR**

**a)** Short Answer Type Question .....(8 Marks).

**b)** Short Answer Type Question .....(7 Marks).

**Q3.** Long Answer Type Question .....(15 Marks).

**OR**

**a)** Short Answer Type Question .....(8 Marks).

**b)** Short Answer Type Question .....(7 Marks).

**Q4.** Long Answer Type Question ..... (15 Marks).

**OR**

**a)** Short Answer Type Question .....(8 Marks).

**b)** Short Answer Type Question .....(7 Marks).

**Q5.** Write a short note on (**Any three** of following) ..... (15 Marks).

**a)** .....(5 Marks)

**b)** .....(5 Marks)

**c)** .....(5 Marks)

**d)** .....(5 Marks)

**e)** .....(5 Marks)

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**SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY,**

**NANDED**

Choice Based Credit System (CBCS) (Semester Pattern)

**Practical Examination**

**Question Paper Pattern (B.Voc.)**

**Maximum Marks: 50**

**Time: 4.00 Hrs**

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- Q1.** Perform the Major Experiment .....(20 Marks).
- Q2.** a) Perform the Minor Experiment .....(10 Marks).  
b) Describe procedure and working of the Minor Experiment .....(10 Marks).
- Q3.** a) Viva -voce .....(5 Marks).  
b) Submission of Field Collection and Samplings during .....(5 Marks).  
Field VisitsandExcursions
- .....



