



॥ सा विद्या या विमुक्तये ॥

# स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

'ज्ञानतीर्थ', विष्णुपुरी, नांदेड - ४३१ ६०६ (महाराष्ट्र राज्य) भारत

## SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

'Dnyanteerth', Vishnupuri, Nanded - 431 606 (Maharashtra State) INDIA

स्वामी रामानंद तीर्थ  
मराठवाडा विद्यापीठ, नांदेड

Established on 17th September, 1994, Recognized By the UGC U/s 2(f) and 12(B), NAAC Re-accredited with 'B++' grade

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विज्ञान व तंत्रज्ञान विद्याशाखेतील बी. व्होक. (व्होकेशनल कोर्सेसचे) पदवी द्वितीय वर्षाचे अभ्यासक्रम शैक्षणिक वर्ष २०२१-२२ पासून लागू करणे बाबत.

### प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, दिनांक २३ मे २०२२ रोजीच्या विज्ञान व तंत्रज्ञान विद्याशाखेच्या बैठकीतील शिफारशी नुसार व मा. विद्यापरिषदेच्या दिनांक २५ जून २०२२ रोजीच्या बैठकीतील विषय क्रमांक १६/५४-२०२२ च्या ठरावानुसार बी. व्होक. (व्होकेशनल) पदवीच्या खालील अभ्यासक्रमांस शैक्षणिक वर्ष २०२१-२२ पासून लागू करण्यास मान्यता देण्यात आली आहे.

1. B. Voc. Dairy Technology II year
2. B. Voc. Dairy Farming II year
3. B. Voc. Skill Based Zoology II year

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-  
२०२१-२२/४३०

दिनांक : १२.०७.२०२२

प्रत माहिती व पुढील कार्यवाहीस्तव :

- १) मा. मा अधिष्ठाता, विज्ञान व तंत्रज्ञान विद्याशाखा, प्रस्तुत विद्यापीठ.
- २) मा. संचालक, परीक्षा व मूल्यमापन मंडळ यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- ३) प्राचार्य, सर्व संबंधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
- ४) अधीक्षक, परीक्षा विभाग विज्ञान विद्याशाखा, प्रस्तुत विद्यापीठ.
- ५) सिस्टम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ याना देवून कळविण्यात येते की, सदरील परिपत्रक व अभ्यासक्रम विद्यापीठ संकेतस्थळावर प्रसिध्द करण्यात यावे.

स्वाक्षरित

सहा.कुलसचिव

शैक्षणिक (१-अभ्यासमंडळ) विभाग

**SWAMI RAMANAND TEERTH MARATHWADA  
UNIVERSITY, NANDED**



UGC Sanctioned Vocational Course Syllabus for

**B. Voc. Degree in Dairy Farming (CBCS Pattern)**

**Second Year**

**Semester III & IV**

**Faculty: Science and Technology**

**(w.e.f. 2022-23)**

## SYLLABUS OUTLINE

Paper No.	Course Number	Course Title	Hr/Week	Type of Course	Credit	Marks		Total
						ESA	CIA	
<b>General Education Component</b>								
Paper-XIX	BAAGE -237	ICT-Skill	4	GE	4	75	25	100
Paper-XX	BAAGE -238	Entrepreneurship Development	4	GE	4	75	25	100
Paper-XXI	BAAGE -239	*Activity based on Paper-XIX & XX	1	GE	1	-	25	25
<b>Skill Courses</b>								
Paper-XXII	DFTH-237	Animal Reproduction	4	CC	4	75	25	100
Paper-XXIII	DFTH -238	Traditional Dairy Products	4	CC	4	75	25	100
Paper-XXIV	DFTH -239	Dairy Chemistry	4	CC	4	75	25	100
<b>Practical Skill Courses</b>								
Paper-XXV	Practical Based on DFTH -237		2	PR	2	50	-	50
Paper-XXVI	Practical Based on DFTH -238		2	PR	2	50	-	50
Paper-XXVII	Practical Based on DFTH -239		2	PR	2	50	-	50
Paper-XXVIII	Report on Summer Activity		-	PR	3	75	-	75
<b>General Education Component</b>								
Paper-XXIX	BAAGE -2410	Agriculture Extension	4	GE	4	75	25	100
Paper-XXX	BAAGE -2411	Agriculture Business Management	4	GE	4	75	25	100
Paper-XXXI	BAAGE -2412	*Activity based on Paper-XXIX &XXX	1	GE	1	-	25	25
<b>Skill Courses</b>								
Paper-XXXII	DFTH -2410	Ice-Cream and Fat Rich Dairy Products	4	CC	4	75	25	100
Paper-XXXIII	DFTH -2411	Fermented Dairy Products	4	CC	4	75	25	100
Paper-XXXIV	DFTH -2412	Dairy Microbiology	4	CC	4	75	25	100
<b>Practical Skill Courses</b>								
Paper-XXXV	Practical Based on DFTH -2410		3	PR	3	50	25	75
Paper-XXXVI	Practical Based on DFTH -2411		3	PR	3	50	25	75

Paper- XXXVII	Practical Based on DFTH -2412	3	PR	3	50	25	75
<b>Compulsory Activity: 2 Months Industrial Training during Summer Vacation</b>							

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**B.VOC. DEGREE IN DAIRY FARMING (CBCS PATTERN)**

**SECOND YEAR- SEMESTER III**

**FACULTY OF SCIENCE & TECHNOLOGY**

**PAPER NO: -XXII**

**TITLE: ANIMAL REPRODUCTION (DFTH-237)**

Marks: 100

Total periods: 45

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**UNIT - I**

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Introduction to Animal Genetics

Gene, Its function

Anatomy of reproductive systems of cattle

Mendel's Laws

Phenotypic and Genotypic Traits

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**UNIT – II**

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Oestrus cycle and its phases

Breeding, Methods of In- Breeding

Methods of Cross Breeding

Species Hybridization

Review of breeding policy

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**UNIT – III**

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Sex limited Genes

Sex influenced Genes

Sex-linked Genes

Sterility and causes of sterility

Selection, methods for breeding

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**UNIT –IV**

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A.I.Time and techniques, advantages and disadvantages

Choosing Traits for Selection

Mutation, heritability

Super ovulation, superfoetation

Qualitative and Quantative Traits

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**SECOND YEAR- SEMESTER III**

**FACULTY OF SCIENCE & TECHNOLOGY**

**PAPER NO: Paper-XXIII**

**TITLE : TRADITIONAL DAIRY PRODUCTS (DFTH-238)**

Marks: 100

Total periods: 45

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**UNIT-I**

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Milk: Definition and composition of Milk

Consumption pattern of Milk

Traditional dairy products and entrepreneurial opportunities.

Classification of milk products.

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**UNIT-II**

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Cream: Definition, composition, types of cream and methods of cream separation.

Gulabjamun: Types, composition, method of manufacturing.

Kulfi: Definition, composition and manufacturing of Kulfi.

Malai ka baraf, sandesh

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**UNIT -III**

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Butter: Definition, composition and Manufacturing of Butter, table butter

Synthetic Milk: Definition, composition and Manufacturing

Paneer: Definition, composition and Manufacturing of Paneer

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**UNIT-IV**

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Khoa : Definition, composition, types and Manufacturing method.

Milk Powder: Definition, composition and Manufacturing of whole Milk powder

Channa: Definition, composition and Manufacturing method.

Evaporated Milk: Definition, composition and Manufacturing method.

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**SECOND YEAR- SEMESTER III**

**FACULTY OF SCIENCE & TECHNOLOGY**

**PAPER NO: -XXIV**

**TITLE : DAIRY CHEMISTRY (DFTH-239)**

Marks: 100

Total Periods: 45

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**UNIT NO- I**

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Market milk: Definition, Composition of Market Milk

Utilization pattern of Market Milk

Physico- chemical properties of Milk

Introduction and significance of milk Enzyme

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**UNIT -II**

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Milk protein, Classification of Milk Protein

Milk casein, Chemical structure of Milk casein

Milk lactose, Structure of lactose in Milk

Lipids in Milk, Classification of Milk Lipids

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**UNIT -III**

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Metals used in Dairy processing plant

Vitamins in Milk, Classification of Vitamins

Milk Fat, Fat Globule membrane in Cow and Buffalo Milk

Milk viscosity, Cow Milk and Buffalo Milk Viscosity

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**UNIT-IV**

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Surface tension of milk

Electrical conductivity of Milk

Densities of Milk components

Chemical quality control in dairy Industry

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**B.VOC. DEGREE IN DAIRY FARMING (CBCS PATTERN)**

**SECOND YEAR- SEMESTER III**

**FACULTY OF SCIENCE & TECHNOLOGY**

**PAPER NO: XXV (DFPR-237)**

**PRACTICAL BASED ON ANIMAL REPRODUCTION PAPER No- XXII (DFTH-237)**

1. Study of Reproductive system of Cow and Buffalo on Model
2. Study of anatomy of Ovary
3. Study of Spermatogenesis
4. Study of structure of Male and female Gametes
5. Study of Bacteriological Examination of semen
6. Study of Artificial Insemination
7. Preparation of Heat expectancy chart
8. Study of Assembling of Artificial vagina and collection of semen
9. Study of A.I. Equipment and Insemination Cow in Oestrus
10. Pregnancy diagnosis in cow and Buffalo
11. Visit to;
  1. Buffalo Breeding Farm
  2. Artificial Insemination center
  3. Animal Genetic Centre



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**B.VOC. DEGREE IN DAIRY FARMING (CBCS PATTERN)**

**SECOND YEAR- SEMESTER III**

**FACULTY OF SCIENCE & TECHNOLOGY**

**PAPER NO: XXVI (DFPR-238)**

**PRACTICAL BASED ON TRADITIONAL DAIRY PRODUCTS PAPER No - XXIII (DFtH-238)**

1. Preparation of Khoa, pedha
2. Preparation of Basundi
3. Preparation of Rabri
4. Preparation of Kheer.
5. Preparation of Channa
6. Preparation of Rasogolla
7. Preparation of Kalakand
8. Preparation of Paneer
9. Preparation of Burfi
10. Cream separation
11. Visit to: 1. Milk Processing plant  
2. Milk Products Manufacturing Unit

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**B.VOC. DEGREE IN DAIRY FARMING (CBCS PATTERN)**

**SECOND YEAR- SEMESTER III**

**FACULTY OF SCIENCE & TECHNOLOGY**

**PAPER NO: XXVII (DFPR-239)**

**PRACTICAL BASED ON DAIRY CHEMISTRY PAPER No. XXIV (DFTH-239)**

1. Determination of Milk Fat
2. Determination of platform tests
3. Determination of freezing point
4. Determination of Specific gravity of milk
5. Adulteration and its Detection in Milk
6. Methods of Milk Preservation
7. Sanitary measures in Dairy Processing plant
8. Study of Detergents used in Dairy Processing plant
9. Determination of acidity of milk
10. Study of Chemical used in Dairy Laboratory
11. Visit to:
  1. Milk Collection Center
  2. Chemical Laboratory

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B.VOC. DEGREE IN DAIRY FARMING (CBCS PATTERN)

SECOND YEAR- SEMESTER IV

FACULTY OF SCIENCE & TECHNOLOGY

PAPER NO: XXXII (DFTH-2410)

Title: ICE-CREAM AND FAT RICH DAIRY PRODUCTS.

Marks-100

Periods-45

Unit-I

- **Ice-cream** – History, development and status of ice-cream industry.  
Definition, composition, methods of manufacturing and nutritive value.  
Type of Ice-cream.  
Role of milk constituent in manufacturing of Ice-cream.  
Study and role of dairy and non-dairy ingredient in Ice- cream.  
Packaging, Hardening storage and defects.

UNIT –II

- **Cream** – definition , composition, method of cream separation, type of cream, factor affecting cream skimming efficiency and defect in cream

UNIT-III

- **Butter** –History, definition, composition, type, churning theories, method of manufacturing, over run, defect and storage.

UNIT – IV

**Ghee**- History, definition, composition, method of manufacturing, grading, renovation, quality parameter of ghee, like (P.value, R.M. value, B.R reading, Iodine value), defect and storage.

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B.VOC. DEGREE IN DAIRY FARMING (CBCS PATTERN)

SECOND YEAR- SEMESTER IV

FACULTY OF SCIENCE & TECHNOLOGY

PAPER NO:XXXIII

TITLE : FERMENTED DAIRY PRODUCTS (DFTH -2411)

Marks-100

Periods-45

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**Dahi:** Definition,classification,food & nutritive value,composition, Method of production,sour dahi,sweetned dahi,misthi dahi,packaging and storage.

**Shrikhand:** Definition, composition, Method of preparation, Chakka, uses.

**Mattha :** Definition, composition, nutritive value, Method of production, packaging and storage,uses.

**Lassi :** Definition, composition, food & nutritive value,yeild,uses.

**Yoghurt :** Introduction,mother starter,bulk starters,method of manufacturing, flavoured yoghurt,factors affecting on the quality of yoghurt,packaging and storage.

**Cheese :** Definition, composition, nutritive value, Method of manufacturing,types.

**Butter milk :** Definition, composition, nutritive value, Method of manufacturing,uses.

**Whey :** Definition, composition, nutritive value, Method of manufacturing,uses of whey beverages.

**Kefir :** Definition, composition, nutritive value, Method of manufacturing

**Kumiss :** Definition, composition, nutritive value, Method of manufacturing

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**B.VOC. DEGREE IN DAIRY FARMING (CBCS PATTERN)**

**SECOND YEAR- SEMESTER IV**

**FACULTY OF SCIENCE & TECHNOLOGY**

**PAPER NO: XXXIV (DFTH-2412)**

**TITLE: DAIRY MICROBIOLOGY.**

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Marks-100

Periods-45

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**Unit – I**

Introduction to Dairy microbiology..

Historical Background of microbiology.

Classification of various group of microorganism associated with dairy industry.

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**Unit- II**

Fermentation:

Desirable and undesirable fermentation in milk.

Cause, prevention and biochemical changes associated with fermentation.

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**UNIT –II**

Starter Culture:

Importance of starter culture in dairy industry.

Propagation and preservation of dairy starters.

Recent development in dairy starter industry, like starter concentration, starter distillates and

Direct vat set (DVS) cultures.

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**Unit – IV**

Microbiology of milk

Source of milk contamination and their control.

Micro flora of raw milk.

Micro flora of market milk.

Microbiology of pasteurized and sterilized milk.

Diseases transmitted through milk and milk products.

Milk product and human health.

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**B.VOC. DEGREE IN DAIRY FARMING (CBCS PATTERN)**

**SECOND YEAR- SEMESTER IV**

**FACULTY OF SCIENCE & TECHNOLOGY**

**PAPER NO: XXXV (DFPR-2410)**

**TITLE : ICE-CREAM AND FAT RICH DAIRY PRODUCTS**

PRACTICAL BASED ON: ICE-CREAM AND FAT RICH DAIRY PRODUCTS PAPER No. XXXII (DFTH-2410)

1. Study of cream separator
2. Preparation of butter.
3. Packaging materials used in dairy industry.
4. Determination of fat from butter.
5. Preparation of ghee.
6. Utilization of ghee residue.
7. Preparation of ice-cream.
8. Detection of O.R. from ice-cream.
9. Utilization of buttermilk
10. Visit -Halwai shop.  
Ice-cream plant, Kulfi unit.

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**B.VOC. DEGREE IN DAIRY FARMING (CBCS PATTERN)**

**SECOND YEAR- SEMESTER IV**

**FACULTY OF SCIENCE & TECHNOLOGY**

**PAPER NO: XXXVI (DFPR-2411)**

PRACTICAL BASED ON FERMENTED DAIRY PRODUCTS PAPER No. XXXIII (DFTH-2411)

1. Preparation of dahi.
2. Preparation of mishti dahi.
3. Preparation of chakka.
4. Preparation of shrikhand.
5. Preparation of mattha.
6. Preparation of lassi
7. Preparation of Yoghurt.
8. Preparation of butter milk.
9. Preparation of whey.
10. Preparation of whey beverages.

Visit: Ice-cream plant

Ghee plant

**SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDEN.**

**B.VOC. DEGREE IN DAIRY FARMING (CBCS PATTERN)**

**SECOND YEAR- SEMESTER IV**

**FACULTY OF SCIENCE & TECHNOLOGY**

**PAPER NO: XXXVII (DFPR – 2412)**

PRACTICAL BASED ON DAIRYMICROBIOLOGY PAPER No. XXXIV (DFTH-2412)

1. Study of Microscope
2. Study of Autoclave
3. Study of Hot air Oven
4. Study of Incubator
5. Study of Refrigerator
6. Study of Colony counter
7. Staining of bacteria
8. Preparation of Nutrient Broth and Nutrient Agar
9. Preparation of Potato dextrose Agar
10. Isolation and identification of bacteria from milk.

Visits : Visit to quality control laboratory

Visit to Pathological laboratory



## Reference books:

Dairy Microbiology I & II – R.K.Robinson

Compressive Dairy Microbiology – Yadav, Batish and Grover.

Fundamental of dairy Microbiology: J.B. Prajapati.

Testing milk of milk Product: Artheton and Newlender.

Laboratory Manual in Microbiology :Dr.Balkrishna Sandikar And Mr. Shaileshkumar Mamdapure

Outlines of Dairy technology: Sukumar De.

Animal Husbandry and Dairy science :Jagdish Prasad

A text book of Technology of Milk and milk Products : D.S.Chavan,B.M.thombare,A.N. Kulkarni,N.V.Joglekar

Dairy Plant engineering and management : Tufail Ahmad

Animal genetic resources of India: Cattle and Buffalo : A.E. Nivasarkar,P.K. Vij,M.S.Tantia

A text book of Practical dairy chemistry : N/K/Roy,D.C.Sen

A text book of Animal Husbandry: G.C. Banerjee

Cows and Poultry in India Their care and management :E.B.J.

A text book of Animal Science Dr. A.U.Bhikane S.B.Kawaitkar

**SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED**

Choice Based Credit System (CBCS) (Semester Pattern)  
Theory Examination Question Paper Pattern

(B.Voc.)

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**Maximum Marks: 75**

**Time: 3.00 Hrs**

**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.)

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**Marks: 50**

**Time: 3.00 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 Field Visits  
and Excursions (5 Marks).

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**Dr.S.N.Landge**

Chairman

(B.Voc Animal Husbandry And Dairy Science)