Krantiguru Shyamji Krishna Verma

***Kachchh University***

Mundra Road

**BHUJ : 370 001**

 SYLLABUS (CBCS)

**B. Sc. Semester VI**

Botany

**Code : USCEBO-610, USCEBO-611, USCEBO-612**

With effect from June 2016

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany) Syllabus as CBCS System

**Semester VI** (w.e.f. June 2016)

Name of the Paper : **Ecology, Environment & Human Welfare**

Paper No. : USCEBO- 610

**Unit-1 Ecology [15 Marks]**

* 1. Definition
	2. Branches:
		1. Major subdivisions: Autecology & Synecology (Community Ecology)
	3. Population Ecology: Definition, Types, Characteristics
	4. Biotic Community:
		1. Definition, Types, Characteristics, Classification, Structure (Stratification)
		2. Character used in Community: Qualitative, Quantitative & Synthetic
		3. Methods of study: Physiogamic and Phytosociological methods

**Unit-2 Ecological Succession [15 Marks]**

2.1 Definition & Causes

 2.2 Basic types

2.3 General process

2.4 Examples (Hydrosere, Xerosere)

2.5 Concept and Theories of Climax.

**Unit-3 Environmental Biology & Waste Management [15 Marks]**

3.1 Pollution

 3.1.1 Definition, Pollutants, Classification and Causes (Origin) of Pollution

 3.1.2 Types of Pollution, General account of Water & Air Pollution

 3.1.3 Ecological effects of pollution

 3.1.4 RRR (R3) Concept: Reduce, Reuse & Recycle

3.2 Waste Management of Water and Soil

3.3 Climate change: Global warming

 3.3.1 Green House Effect

 3.3.2 Ozone Depletion

 3.3.4 Acid Rain

**Unit-4 Human Welfare [ 15 Marks]**

 4.1 Natural Resources: Definition, Classification

 4.2 Forest: Afforestation, Deforestation

 4.3 Wildlife Management:

4.3.1 Concept of Threatened Species

4.3.2 Reasons for Depletion

4.3.3 Necessity

4.3.4 Modes: Biosphere Reserve, National Park, Sanctuary

4.3.5 Herbaria

4.3.6 Agencies working for Protection\ Conservation

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany) Syllabus as CBCS System

**Semester VI** (w.e.f. June 2016)

Name of the Paper : **Ecology, Environment & Human Welfare (PRACTICAL)**

Code: USCEBO-610

1. To determine the minimum size of the quadrat by species area curve.
2. To prepare a list of common plants occurring in the grassland community
3. To determine the frequency and frequency classes of various species occurring in a given area by quadrate method
4. To determine the abundance/ relative abundance and density/ relative density of various species occurring in a given area by quadrate method
5. To determine the frequency, frequency classes and relative frequency of various species occurring in a given area by belt transect method.
6. To charting of different species in the grassland.(Chart method)
7. To determine frequency, density and abundance of various species shown on graph paper.
8. To study following ecological instruments:

8.1 Anemometer

8.2 Psychrometer

8.3.Hygrometer

8.4 Maximum and Minimum Thermometer

8.5 Dry and Wet Bulb Thermometer

8.6 Rain guage

1. Comparison of dissolved oxygen content of polluted and non-polluted water by idometric titration method.
2. Test for the presences of carbonate, nitrate, deficiency of replaceable bases.
3. Visit to National Parks and/ or Sanctuary and/or Nursery to study its management. Report to be submitted during practical exam.
4. Case study from literature

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany), CBCS System

**Semester VI** (w.e.f. June 2016) **Botany: USCEBO - 610**

**Internal Practical Exam**

Total Marks: 20 Time:- 6 Hours

**Session-I**

**Total Marks: 10 Time: 3 Hours**

Ex.1 Determine Frequency/ Frequency classes by quadrat method 3

Ex.2 Determine Abundance/ Relative Abundance/ Density by quadrat method 3

Ex.3 Determine Frequency/ Frequency classes/ Relative Frequency by Transect method 2

Ex.4 Determine Frequency/ Density/ Abundance on graph paper 2

**Session-II**

**Total Marks: 10 Time: 3 Hours**

Ex.5 Find out COD from given sample 2

Ex.6 Identify and Describe the specimens 4 Specimen-1

 Specimen-2

Ex.7 Viva voce/ Submission 2

Ex.8 Journal 2

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany), CBCS System

**Semester VI** (w.e.f. June 2016) **Botany: USCEBO - 610**

**External Practical Exam**

Total Marks: 30 Time:- 6 Hours

**Session-I**

**Total Marks: 15 Time: 3 Hours**

Ex.1 Determine Frequency/ Frequency classes by quadrat method 4

Ex.2 Determine Abundance/ Relative Abundance & Density by quadrat method 5

Ex.3 Determine Frequency/ Frequency classes/ Relative Frequency by Transect method 3

Ex.4 Determine Frequency/ Density/ Abundance on graph paper 3

**Session-II**

**Total Marks: 15 Time: 3 Hours**

Ex.5 Find out COD from given sample 4

Ex.6 Identify and Describe the specimens 6 Specimen-1

 Specimen-2

Ex.7 Viva voce/ Submission 3

Ex.8 Journal 2

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany) Syllabus as CBCS System

**Semester VI** (w.e.f. June 2016)

Name of the Paper : **Gymnosperms, Phytogeography & Applied Botany**

Paper No. : USCEBO- 611

**Unit-1 Gymnosperms**

* 1. Morphology, Reproduction and Life history (Excluding Development):
		1. Ginkgo
		2. Ephedra
	2. Palaeobotany
		1. Techniques for studing fossil
		2. Fossils of Pteridophytes
			1. Psilophytales: Rhynia
			2. Lepidodendrales: Lepidodendron
			3. Calamitales: Calamostachys
		3. Fossils of Gymnosperms
			1. Cycadofilicales: Lygenopteris
			2. Bennettitales: Spore bearing organ
			3. Corderitales: Cordaites
			4. Pentoxylales: Pentoxylon

**Unit-2 Phytogeography**

* 1. Definition, Geographic & Bathymetric Distribution, Types: (A) Descriptive (B) Interpretative
	2. Major Plant Communities of World, India & Gujarat
	3. Pattern of Distribution of Biota
	4. Endemism:
		1. Local, Pseudo, Progressive & Retrogressive endemism
		2. Palaeoendemics, Neoendemics

**Unit-3 Plant Breeding**

3.1Introduction, Aim, Objectives & Impacts

 3.2 Selection methods- Mass, Pure line and Progeny

 3.3 Hybridisation: Types & Methods

 3.4 Apomixis: Concept, Development, Potential for crop improvement

**Unit-4 Applied Botany**

4.1 Ethnobotany

 A) Ethnobotany in India

 B) Ethnobotany in Gujarat

 C) Plants used by Tribes of Gujarat

 D) Biofactories:- Industrial uses of different plant groups

 4.2 Gardening

 A) Principles and Methods of Gardening

 B) Plant Care: Manuring, Daily care and Repotting

 C) Landscape designs in India: Buddhist & Mughals etc.

 D) Nursery Management

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany) Syllabus as CBCS System

**Semester VI** (w.e.f. June 2016)

Name of the Paper : **Gymnosperms, Phytogeography & Applied Botany (PRACTICAL)**

Code: USCEBO-611

1. Study of Ginkgo: Reproductive organs
2. Study of Ephedra: Reproductive organs
3. Study of Fossils as per theory (Specimen/ Chart/ Photograph)
4. To prepare map showing major plant communication/ Biomes of Gujarat and write major Plant species
5. To prepare map showing major pant communities/ Biomes of India and write major Plant species
6. To prepare map showing major plant communities/ Biomes of World and write major Plant species
7. Preparation of male flowers for hybridization
8. Preparation of female flowers for hybridization
9. Study of different methods of plant breeding through chart/ Model/ Photograph/ Specimen as per theory
10. Visit to a garden to study the principle and materials used in gardening and landscape. Report to be submitted during practical exam
11. Visit to a nursery to study its management. Report to be submitted during practical exam

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany), CBCS System

**Semester VI** (w.e.f. June 2016) **Botany: USCEBO - 611**

**Internal Practical Exam**

Total Marks: 20 Time:- 6 Hours

**Session-I**

**Total Marks: 10 Time: 3 Hours**

Ex.1 Identify and Describe\ Expose Reproductive organ from Specimen **A** 4

Ex.2 To prepare map showing major plant communication/ Biomes of Gujarat and

write major Plant species 2

Ex.3 To prepare map showing major pant communities/ Biomes of India and

write major Plant species 2

Ex.4 To prepare map showing major pant communities/ Biomes of India and

write major Plant species 2

**Session-II**

**Total Marks: 10 Time: 3 Hours**

Ex.5 Prepare \_\_\_\_\_\_\_\_\_ flower for Hybridization 2

Ex.6 Identify and Describe the specimens 4 Specimen-1

 Specimen-2

Ex.7 Viva voce/ Submission 2

Ex.8 Journal 2

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany), CBCS System

**Semester VI** (w.e.f. June 2016) **Botany: USCEBO - 611**

**External Practical Exam**

Total Marks: 30 Time:- 6 Hours

**Session-I**

**Total Marks: 15 Time: 3 Hours**

Ex.1 Identify and Describe\ Expose Reproductive organ from Specimen **A** 5

Ex.2 To prepare map showing major plant communication/ Biomes of Gujarat and

write major Plant species 3

Ex.3 To prepare map showing major pant communities/ Biomes of India and

write major Plant species 3

Ex.4 To prepare map showing major pant communities/ Biomes of India and

write major Plant species 3

**Session-II**

**Total Marks: 15 Time: 3 Hours**

Ex.5 Prepare \_\_\_\_\_\_\_\_\_ flower for Hybridization 5

Ex.6 Identify and Describe the specimens 6 Specimen-1

 Specimen-2

Ex.7 Viva voce/ Submission 3

Ex.8 Journal 2

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany) Syllabus as CBCS System

**Semester VI** (w.e.f. June 2016)

Name of the Paper : **Analitical Techniques & Research Methodology**

Paper No. : USCEBO- 612

**Unit-1 Tools & Techniques**

* 1. Principle, Structure and Uses of;
		1. pH meter
		2. EC meter
		3. Colori meter
		4. Water bath
		5. Spectrophotometer
		6. Centrifuge
		7. Oven
		8. Stirrer
		9. Micro pipette

**Unit-2 Imaging Related Techniques**

* 1. Principles of Microscopy
	2. Light Microscopy
	3. Phase Contrast Microscopy
	4. Fluorescence Microscopy
	5. Confocal Microscopy
	6. Electron Microscopy: SEM, TEM

**Unit-3 Chromatography**

3.1 Paper Chromatography

 3.2 Column Chromatography

 3.3 TLC

* 1. GLC

**Unit-4 Biostatics & Bioinformatics**

4.1 Biostatistics

 4.1.1 Introduction

 4.1.2 Statistical Methods: - Collection of Data: Primary & Secondary

 4.1.3 Collection of Primary Data

 4.1.4 Sampling Methods: (A) Random (B) Non Random

 4.1.5 Classification & Tabulation of Data

 4.1.6 Diagrammatic & Graphic presentation of Data

 4.1.6 Mean, Median, Mode

4.2 Bioinformatics: Introduction, Aim & Scopes

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany) Syllabus as CBCS System

**Semester VI** (w.e.f. June 2016)

Name of the Paper : **Analitical Techniques & Research Methodology (PRACTICAL)**

Code: USCEBO-612

To Study Principle, Structure and functioning of 1 to 9;

1. pH meter
2. EC meter
3. Colori meter
4. Water bath
5. Spectrophotometer
6. Centrifuge
7. Oven
8. Stirrer
9. Micro pipette
10. To study various types of Microscope/ methods of Microscopy through Chart/ Photograph
11. Separation of Chlorophyll by paper Chromatography
12. Separation of Amino Acids by Paper Chromatography
13. Study of TLC through chart/ photograph
14. Solve the examples of Mean, Median & Mode
15. Dissertation work based on unit-4

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany), CBCS System

**Semester VI** (w.e.f. June 2016) **Botany: USCEBO - 612**

**Internal Practical Exam**

Total Marks: 20 Time:- 6 Hours

**Session-I**

**Total Marks: 10 Time: 3 Hours**

Ex.1 Determine pH of given sample **A** 3

Ex.2 Determine EC of given sample B 3

Ex.3 Separation of Chlorophyll by paper Chromatography Sample C 3

Ex.4 Solve the examples of Mean, Median & Mode D 2

**Session-II**

**Total Marks: 10 Time: 3 Hours**

Ex.5 Identify and Describe the specimens 3 Specimen-1

 Specimen-2

Ex.6 Viva voce 2

Ex.7 Journal 2

Ex-8 Submission Dissertation Project 2

**KSKV Kachchh University, Bhuj - Kachchh**

T.Y. B.Sc. (Botany), CBCS System

**Semester VI** (w.e.f. June 2016) **Botany: USCEBO - 612**

**External Practical Exam**

Total Marks: 30 Time:- 6 Hours

**Session-I**

**Total Marks: 15 Time: 3 Hours**

Ex.1 Determine pH of given sample **A** 4

Ex.2 Determine EC of given sample B 4

Ex.3 Separation of \_\_\_\_\_\_\_\_\_\_ by paper Chromatography Sample C 4

Ex.4 Solve the examples of Mean, Median & Mode 3

**Session-II**

**Total Marks: 15 Time: 3 Hours**

Ex.5 Identify and Describe the specimens 4 Specimen-1

 Specimen-2

Ex.6 Viva voce 2

Ex.7 Submission: Dissertation Project 7

Ex-8 Journal 2