# BHAKTA KAVI NARSINH MEHTA UNIVERSITY, JUNAGADH

**Syllabus on the bases of Choice Based Credit System (CBCS)**

For

## Semester- II (F. Y. B. Sc.)

# BOTANY

**SEMESTER – II**

**Paper No. B – 201: Angiosperms and applied Botany**

**INFORCE FROM JUNE – 2018**

# BHAKTA KAVI NARSINH MEHTA UNIVERSITY, JUNAGADH

## FOREWORD

Renewing and updating of the curriculum is an essential part of any vibrant university academic system. Revising the curriculum should be continues process to provide an updated education to the students at large. To meet the need and requirement of the society and in order to enhance the quality and standards of education, updating and restructuring of the curriculum must continue as a perpetual process. As a part of duty of study board, we the member of botany study board designed the new curriculum for First year (i.e. semester I & II) botany students. For designing of the curriculum we followed the UGC guideline for model curriculum. The exercise would not have been possible without the support of our respected faculties of botany. We hope that the results will fulfill expectations of the society.

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## *Conceptual Framework of the Syllabus of Botany-Semester 1 & 2*

| Sr. *No* | Level UG or *PG* | Sem *ester* | Course Group Core Elective -1 *Elective -2 etc* | Course *(Paper) Title* | *Paper No.* | *Credit* | Internal Marks for Theory | Internal Marks for Practical | External Marks for Theory | External Marks for Practical | Total Marks | Course (Paper) Unique Code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | UG | 1 | 1 | Cryptogamic Botany | B-101 | 06 | 30 | 15 | 70 | 15 | 150 | |
| 2 | UG | 2 | 1 | Angiosperms and applied Botany | B-201 | 06 | 30 | 15 | 70 | 15 | 150 | |

**Total Scheme of evaluation**

| **Semester** | **Theory** | | | **Practical** | | |
|---|---|---|---|---|---|---|
| | **Internal** | **External** | **Total** | **Internal** | **External** | **Total** |
| **I** | **30** | **70** | **100** | **15** | **35** | **50** |
| **II** | **30** | **70** | **100** | **15** | **35** | **50** |

## Minimum requirements of plant material and Instruments for Botany Practical based on Paper B-101 and Paper B-201

- Use of one micro scope for two students in practical batch
- Fresh plant material as well preserve material as per syllabus
- Different types of stain for slide preparation
- Charts for life cycles
- Original plant / Photographs / charts for Medicinal plants.
- Different types of stain for slide preparation
- Paper chromatography chamber and their equipment's & Chemicals
- Twig of plant and charts for Families

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# SKELETON OF THEORY EXAMINATION

# (EXTERNAL)

| | | |
|---|---|---|
| **QUESTION 1 – UNIT 1** | | |
| **Q 1 A** | **Objective type questions** | **4 Marks** |
| **Q 1 B** | **Answer in brief (Any 1 out of 2)** | **3 Marks** |
| **Q 1 C** | **Write a note on (Any 1 out of 2)** | **7 Marks** |
| **QUESTION 2 – UNIT 2** | | |
| **Q 2 A** | **Objective type questions** | **4 Marks** |
| **Q 2 B** | **Answer in brief (Any 1 out of 2)** | **3 Marks** |
| **Q 2 C** | **Write a note on (Any 1 out of 2)** | **7 Marks** |
| **QUESTION 3– UNIT 3** | | |
| **Q 3 A** | **Objective type questions** | **4 Marks** |
| **Q 3 B** | **Answer in brief (Any 1 out of 2)** | **3 Marks** |
| **Q 3 C** | **Write a note on (Any 1 out of 2)** | **7 Marks** |
| **QUESTION 4 – UNIT 4** | | |
| **Q 4 A** | **Objective type questions** | **4 Marks** |
| **Q 4 B** | **Answer in brief (Any 1 out of 2)** | **3 Marks** |
| **Q 4 C** | **Write a note on (Any 1 out of 2)** | **7 Marks** |
| **QUESTION 5 – UNIT 5** | | |
| **Q 5 A** | **Objective type questions** | **4 Marks** |
| **Q 5 B** | **Answer in brief (Any 1 out of 2)** | **3 Marks** |
| **Q 5 C** | **Write a note on (Any 1 out of 2)** | **7 Marks** |
| **TOTAL MARKS : 70 TOTAL TIME : 2½ HOURS** | | |

# BHAKTA KAVI NARSINH MEHTA UNIVERSITY, JUNAGADH

## Semester II

## Paper – B-201: Angiosperms and applied Botany

### Unit – 1: Vegetative Morphology

1.1 Habit, Habitat, Root and Stem (Excluding modification)

1.2 Leaf : Parts of leaf; phyllotaxy; types of leaves; venation.; stipules; leaf shapes; leaf margin; leaf base; leaf apex; venation.

### Unit – 2: Reproductive Morphology

2.1 Inflorescences: Racemose and Cymose and special types – *Cyathium, Verticillaster, Hypanthodium*

2.2 Typical Flowers

2.2.1 Definition; bract; pedicel; symmetry; sexuality; hypogynous; epigynous; perigynous.

2.2.2 Calyx: function and types.

2.2.3 Corolla: function forms and aestivation.

2.2.4 Perianth

2.2.5 Androecium: Parts of a Stamen, Attachment

2.2.6 Gynoecium: Parts of carpels; function; placentation, Structure of stigma style and ovary Types of fruit

2.2.7 Floral formula and Floral diagram

### Unit – 3: Systematic Botany

3.1 Systems of classification – Bentham & Hooker with merits and demerits

3.2 Floristic Biodiversity of Gujarat.

3.3 Taxonomic studies of plants from each following angiosperm's families

3.3.1 Malvaceae

3.3.2 Apocynaceae

3.3.3 Nyctaginaceae

3.3.4 Poaceae

**List of Reference Books for Unit 1, 2 and 3**


1) *Sundara Rajan, S., (1996). Introductory Taxonomy of Angiosperms. Himalaya Publishing House, Bombay/Delhi/Nagpur. 1st edition.*
2) *Datta, S. C. (1988). Systematic botany. Wiley eastern limited- New Delhi.4th edition.*
3) *Pandey, B.P. (1999). Taxonomy of Angiosperms. For university student. S. Chand and Com. Ltd, New Delhi 1st edition reprints.*
4) *Kumavesan Annie. (2010.) Taxonomy of Angiosprems. Saras publication, Nagercoil, Tamilnadu. 3rd edition.*
5) *Sutariya, R. N. (1958). A text book of Systematic Botany. Khadayata Book Depot, Ahmedabad. 2nd edition.*
6) *Singh, V. and Jain, D. K. (1996). Taxonomy of Angiosperms. Rastogi Publications, Meerut, India. 2nd edition.*


## Unit – 4: Tools and Techniques in Botany

4.1 Principles and mechanisms of light and electron microscope

4.2 Principle and applications of paper chromatography techniques

4.3 Tissue culture (Basics, Media preparations, Applications, Brief introduction)

4.4 Principle and function of pH meter

4.5 Principles and function of colorimeter

**List of Reference Books:**


1) Rana, S. V. S. (2009). Biotechniques Theory & Practice. Rastogi Publications, Meerut. 2nd edition.


## Unit – 5: Biochemistry and Genetics

5.1 Characters and classification (Reaction base and polarity base) of amino acids

5.2 β – Oxidation

5.3 Classification and action mechanisms of enzymes

5.4 Structure and types of DNA

5.5 DNA replication

5.6 Protein synthesis

**List of Reference Books:**


1) *Gupta, P. K. (2007). Genetics, cytology and evolution .Rastogi Publications, Meerut, New Delhi. 1st edition.*

2) *Gupta, P.K. (2007). Genetics-classical to modern Rastogi Publication-Meerut. 1st edition.*

3) *Gupta, P.K. (2007). Genetics Rastogi Publication-Meerut. 3rd edition.*

4) *Arumugam, N., Meyyan, R.P., Kumarsen, V., Sundaralingam, R. (2014) Genetics, Biometrics and Bioinformatics. Saras publication, Nagercoil, Tamilnadu. 1st edition.*

5) *Anne. Regaed. , Kumaresan, V., Arumugam, N. (2014) Algae. Saras publication, Kattar P.O. Nagercoil, Tamilnadu. 1st edition.*

6) *Gupta, P.K. (2010). Cell and molecular biology. Rastogi publications - Meerut 3rd edition.*

7) *Kochae, P. L. (1970). Genetics and Evolution. S. Nagin & Co., Delhi. 6th edition.*


## Practical based on Paper B-201

1) Morphological studies of different plants parts – leaf
2) Morphological studies of different plants parts – Inflorescences
3) Morphological studies of different plants parts – Flowers (Calyx, Corolla, Perianth, Androcium, and Gynoecium).
4) Morphological studies of different plants parts – Fruits
5) Taxonomic study of Malvaceae family with its economical and medicinal values.
6) Taxonomic study of Apocynaceae family with its economical and medicinal values.
7) Taxonomic study of Nyctaginace family with its economical and medicinal values.
8) Enzyme activity of catalase, invertase, amylase
9) Study of plastids to examine pigment distribution in plants (e.g. Cassia, Lycopercicon, Capsicum).
1) To extract and separate chloroplast pigments by paper chromatographic technique
2) Visit of the research laboratories / Universities / Forest etc according to conveniences of colleges.

**List of Reference Books:**

1) *Bendre, A. M. and Ashok Kumar, (2009) A Text book of Practical Botany Vol. I & II. Rastogi Publications, Meerut. 9th edition.*

# BHAKTA KAVI NARSINH MEHTA UNIVERSITY, JUNAGADH

## Semester – I CBCS Subject: - Botany
## Practical Examination

## Practical Skeleton Based on Paper – B-101

**Time: - 3 hours** **Total Marks: - 35**

**Q – 1** Identify and classify the given specimen "A" and "B" with reasons---------- (06)

| X | Y |
|---|---|
| A | A |
| B | B |

**Q – 2** Identify and describe the specimen "C" and "D" with diagrams ---------- (06)

| X | Y |
|---|---|
| C | C |
| D | D |

**Q – 3** Identify and describe the specimen "E" and "F" ---------- (06)

| X | Y |
|---|---|
| E | E |
| F | F |

**Q – 4** Identify and describe the specimen "G" ---------- (04)

| X | Y |
|---|---|
| G | G |

**Q – 5** Rotation H, I, J, K ---------- (08)

H – I –

J – K –

**Q - 6** Journal ---------- (05)

# BHAKTA KAVI NARSINH MEHTA UNIVERSITY, JUNAGADH

## Semester – II CBCS Subject: - Botany

## Practical Examination

## Practical Skeleton Based on Paper – B-201

**Time: - 3 hours** **Total Marks: - 35**

**Q – 1** Identify and classify the given families "A" and "B" by giving proper reasons, floral Diagram and floral formula ---------- (06)

| | X | Y |
|---|---|---|
| A | | A |
| B | | B |

**Q – 2** Identify and describe the specimen "C" and "D" (Morphology base) ---------- (06)

| | X | Y |
|---|---|---|
| C | | C |
| D | | D |

**Q – 3** Submission of study report of the field visit ---------- (04)

**Q – 4** Perform the enzyme activity of given enzyme sample ---------- (08)

OR

Separation of plant extract by paper chromatography ---------- (08)

**Q – 5** Rotation E, F. G ---------- (06)

**Q – 6** Journal ---------- (05)

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