SAURASHTRA UNIVERSITY- RAJKOT (Guj.)

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

For

Semester I & II (F.Y.B.Sc.)

BOTANY

SEMESTER – I


SEMESTER – II

Paper No. B – 201: Angiosperms, Biochemistry, Genetics and Techniques

INFORCE FROM JUNE – 2019
Conceptual Framework of the Syllabus of Botany-Semester I & II

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Level</th>
<th>UG or PG</th>
<th>Semester</th>
<th>Course Group Core Elective - 1</th>
<th>Elective -2</th>
<th>Course (Paper) Title</th>
<th>Paper No.</th>
<th>Credit (Theory - 4 and practical - 2)</th>
<th>Internal Marks for Theory</th>
<th>External Marks for Theory</th>
<th>Internal Marks for Practical</th>
<th>External Marks for Practical</th>
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<td>UG</td>
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<td>1</td>
<td>Cryptogamic Botany</td>
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<td>B-101</td>
<td>06</td>
<td>30</td>
<td>70</td>
<td>15</td>
<td>35</td>
<td>150</td>
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<td>UG</td>
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<td>1</td>
<td>Angiosperms , Biochemistry, Genetics and Techniques</td>
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<td>B- 201</td>
<td>06</td>
<td>30</td>
<td>70</td>
<td>15</td>
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Total Scheme of evaluation

<table>
<thead>
<tr>
<th>Semester No.</th>
<th>Internal Theory Mark</th>
<th>Internal Theory Passing Mark (40%)</th>
<th>External Theory Mark</th>
<th>External Theory Passing Mark (40%)</th>
<th>Total Theory Mark</th>
<th>Internal Practical Mark</th>
<th>Internal Practical Passing Mark (40%)</th>
<th>External Practical Mark</th>
<th>External Practical Mark (40%)</th>
<th>Total Marks of practical</th>
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<tbody>
<tr>
<td>I</td>
<td>30</td>
<td>12</td>
<td>70</td>
<td>28</td>
<td>100</td>
<td>15</td>
<td>6</td>
<td>35</td>
<td>14</td>
<td>50</td>
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<tr>
<td>II</td>
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<td>12</td>
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<td>28</td>
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<td>15</td>
<td>6</td>
<td>35</td>
<td>14</td>
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### Semester I & II (First Year B.Sc.)

**SKELETON OF QUESTION PAPER FOR THEORY PAPERS**

**(EXTERNAL EXAMS)**

<table>
<thead>
<tr>
<th>Question 1A, 1B, 1C and 1D From Unit -1 (14 Marks)</th>
</tr>
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<tbody>
<tr>
<td>Q – 1 (A) Objective type four questions</td>
</tr>
<tr>
<td>Q – 1 (B) Answer in brief (Any 1 out of 2)</td>
</tr>
<tr>
<td>Q – 1 (C) Answer in detail (Any 1 out of 2)</td>
</tr>
<tr>
<td>Q – 1 (D) Write a note on (Any 1 out of 2)</td>
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<table>
<thead>
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<th>Question 2A, 2B, 2C and 2D From Unit -2 (14 Marks)</th>
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<tr>
<td>Q – 2 (A) Objective type four questions</td>
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<tr>
<td>Q – 2 (B) Answer in brief (Any 1 out of 2)</td>
</tr>
<tr>
<td>Q – 2 (C) Answer in detail (Any 1 out of 2)</td>
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<td>Q – 2 (D) Write a note on (Any 1 out of 2)</td>
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<tr>
<th>Question 3A, 3B, 3C and 3D From Unit -3 (14 Marks)</th>
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<tr>
<td>Q – 3 (A) Objective type four questions</td>
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<tr>
<td>Q – 3 (B) Answer in brief (Any 1 out of 2)</td>
</tr>
<tr>
<td>Q – 3 (C) Answer in detail (Any 1 out of 2)</td>
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<tr>
<td>Q – 3 (D) Write a note on (Any 1 out of 2)</td>
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<tr>
<th>Question 4A, 4B, 4C and 4D From Unit -4 (14 Marks)</th>
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<tbody>
<tr>
<td>Q – 4 (A) Objective type four questions</td>
</tr>
<tr>
<td>Q – 4 (B) Answer in brief (Any 1 out of 2)</td>
</tr>
<tr>
<td>Q – 4 (C) Answer in detail (Any 1 out of 2)</td>
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<td>Q – 4 (D) Write a note on (Any 1 out of 2)</td>
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<table>
<thead>
<tr>
<th>Question 5A, 5B, 5C and 5D From Unit -5 (14 Marks)</th>
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<tbody>
<tr>
<td>Q – 5 (A) Objective type four questions</td>
</tr>
<tr>
<td>Q – 5 (B) Answer in brief (Any 1 out of 2)</td>
</tr>
<tr>
<td>Q – 5 (C) Answer in detail (Any 1 out of 2)</td>
</tr>
<tr>
<td>Q – 5 (D) Write a note on (Any 1 out of 2)</td>
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</table>

<table>
<thead>
<tr>
<th>Total Marks</th>
<th>70 Marks</th>
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</table>

**Total Time Of Paper : 2½ HOURS**
Semester - I

Paper – B-101: Plant Diversity

Unit-1: Introductory Botany and Algae 0.8 Credit (12 Lectures)

1.1 Branches of Botany
1.2 Classification: Whittaker (Five Kingdom)
1.3 General characters, Smith’s classification and Algae in human welfare.
1.4 Life history of Spirogyra (Chlorophyceae), Sargassum (Phaeophyceae)
   (Excluding development)

List of Reference Books:


   Meerut, New Delhi. 5th revised edition.


   Nagar-New Delhi. 7th edition.

   Tamilnadu. 1st edition.


Unit –2: Fungi 0.8 Credit (12 Lectures)

2.1 General characters, Alexopolus’ classification and fungi in human welfare.
2.2 Life history of Mucor (Zygomycotina), Agaricus (Bacidiomycotina)
   (Excluding development)

List of Reference Books:


Unit – 3: Bryophyte  

0.8 Credit     (12 Lectures)

3.1 General account and outline of classification of bryophytes by Rothmaller up to class

3.2 Life history of Riccia (Excluding development)

List of Reference Books:


Unit – 4: Pteridophyte  

0.8 Credit     (12 Lectures)

4.1 General accounts and outline of classification of Pteridophytes by G.M. Smith up to class

4.2 Life history of Nephrolepis (Excluding development)

List of Reference Books:


Unit – 5: Gymnosperm 0.8 Credit (12 Lectures)

5.1 General characters, outline of classification by GM Smith and characters of gymnosperms classes

5.2 Life history of Cycas (Excluding development)

List of Reference Books:


Practical based on Paper B-101

1) Study of morphology, anatomy and reproductive structures in Spirogyra algae

2) Study of morphology, anatomy and reproductive structures in Sargassum algae

3) Study of morphology, anatomy and reproductive structures in Fungi : Mucor

4) Study of morphology, anatomy and reproductive structures in Fungi : Agaricus

5) Study of morphology, anatomy and reproductive structures in Riccia

6) Study of morphology, anatomy and reproductive structures in Nephrolepis

7) Study of morphology, anatomy and reproductive structures in Cycas

8) To study the Medicinal plants: Vitex negundo; Cassia fistula; Terminalia belerica; Emblica officinalis; Pongamia pinnata

9) Field study

List of Reference Books:

Semester II

Paper – B-201: Angiosperms, Biochemistry, Genetics and Techniques

Unit – 1: Vegetative Morphology 0.6 Credit (11 Lectures)

1.1 Habit, Habitat of plants
1.2 Root and Stem (Excluding modification)
1.3 Parts of leaf; phyllotaxis; types of leaves; venation.
1.4 Leaf shapes; leaf margin; leaf apex.

Unit – 2: Reproductive Morphology 0.8 Credit (14 Lectures)

2.1 Inflorescences: Racemose and Cymose and special types – Cyathium,
Verticillaste, 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
2.2.7 Floral formula and Floral diagram

Unit – 3: Systematic Botany 0.5 Credit (10 Lectures)

3.1 Systems of classification – Bentham & Hooker with merits and demerits
3.2 Taxonomic studies of plants from each following angiosperm’s families
   3.2.1 Rosaceae
   3.2.2 Apocynaceae
   3.2.3 Amaryllidaceae

List of Reference Books for Unit 1, 2 and 3


**Unit – 4: Tools and Techniques in Botany**  
**0.5 Credit (09 Lectures)**

4.1 Principle and applications of paper chromatography techniques

4.2 Tissue culture (Applications, Brief introduction)

4.3 Principle and function of pH meter

4.4 Principles and function of Spectrophotometer

**List of Reference Books:**


**Unit – 5: Biochemistry and Genetics**  
**1.6 Credit (16 Lectures)**

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

5.2 Classification and action mechanisms of enzymes

5.3 Principles of Mendelian genetics

5.4 Structure of DNA

5.5 DNA replication

5.6 Protein synthesis

**List of Reference Books:**


**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)
4) Morphological studies of different plants parts – Flowers (Androciium, and Gynoecium).
5) Taxonomic study of Rosaceae family with its economical and medicinal values.
6) Taxonomic study of Apocynaceae family with its economical and medicinal values.
7) Taxonomic study of Amaryllidaceae family with its economical and medicinal values.
8) Enzyme activity of catalase, invertase, amylase
9) To extract and separate chloroplast pigments by paper chromatographic technique
10) Visit of the research laboratories / Universities / Forest etc according to conveniences of colleges.

**List of Reference Books:**

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Semester – I CBCS, Subject: - Botany
Practical Examination

Practical Skeleton Based on Paper: B-101

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

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

X
A –
B –

Y
A –
B –

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

X
C –
D –

Y
C –
D –

Q – 3 Identify and describe the specimen “E” and “F” ----------------------------- (06)

X
E –
F –

Y
E –
F –

Q – 4 Identify and describe the specimen “G” ------------------------------- (04)

X
G –

Y
G –

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

H –
I –
J –
K –

Q – 6 Journal ------------------------------------------------------- (05)
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Semester – II CBCS, Subject: - Botany

Practical Examination

Practical Skeleton Based on Paper: B-201

Time: - 3 hours
Date: ---------------
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)