DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

REVISED SYLLABUS

OF

B.Sc. Botany

SECOND YEAR

[Optional]

Third & Fourth Semester

[Effective for - June, 2014-15]

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B. Sc. II YEAR SYLLABUS

Subject -BOTANY

Semester –III and IV

	Paper No	Title of Paper	Lectures	Marks
B. Sc. II		**Semester- III**		
	VII	Taxonomy of Angiosperms	**45**	**50**
	VIII	Plant Ecology	**45**	**50**
	IX	Practical based on Paper - VII	**45**	**50**
	X	Practical based on Paper - VIII	**45**	**50**
		SEMESTER – IV		
	XI	Gymnosperms and Utilization of plants	**45**	**50**
	XII	Plant Physiology	**45**	**50**
	XIII	Practical based on Paper - XI	**45**	**50**
	XIV	Practical based on Paper - XII	**45**	**50**

Effective From – Academic year -2014-15

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B.Sc. II YEAR (BOTANY)

Semester -III

Paper -VII

Taxonomy of Angiosperms

Period-45L

Unit-01

1. Salient features, origin and evolution of Angiosperms. (03)

2. Systems of classification –Introduction of Natural, Artificial and Phylogenetic. (01)

3. Bentham and Hooker's system of classification up to series level, its merits and demerits. (02)

4. Taxonomy in relation to anatomy, embryology, palynology, ecology and cytology. (05)

5. Concept of Binomial Nomenclature and its advantages . (02)

6. Concept of genus, species and epithet. (02)

7. Herbaria:- What is herbaria, procedure for collection of plants, pressing of the plants specimen, drying of specimen, poisoning, mounting, labelling of specimens, storing of specimen, function of herbaria and some important herbaria of the India; Digital herbaria. Botanical Gardens: What is botanical garden, functions of botanical garden and major botanical gardens of India. (05)

Unit: 02

Study of the following families: systematic position, salient features, floral formula, (25)

floral diagram, common examples and their economic importance.

i. Annonaceae

ii. Malvaceae

iii. Leguminosae

Fabaceae (Papilionaceae)

Caesalpiniaceae

Mimosaceae

iv. Apocynaceae

v. Solanaceae

vi. Acanthaceae

vii. Lamiaceae (Labiateae)

viii. Nyctaginaceae

ix. Liliaceae

x. Poaceae (Gramineae)

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B.Sc. II YEAR (BOTANY)

Semester -III

Paper -VIII

Plant Ecology

Period- 45L

Unit – 1

Plant and environment

A)Climatic factors –

a) Light as an ecological factor, global radiation and photosynthetically active radiation (02)

b) Temperature as an ecological factor. (02)

c) Water as an ecological factor, physicochemical properties of water. (03)

B) Edaphic factor –

Soil formation, soil profile, physicochemical properties of soil, major soil types of India, soil erosion and soil conservation. (08)

Unit:2

1. Response of plants to water

Morphological, physiological and anatomical response of plants to water:– hydrophytes, xerophytes, halophytes and epiphytes. (12)

2. Phytogeography: (03)

Biogeographical regions of India, vegetation types of India.

Unit: 3

1. Community ecology:

Community characteristics -frequency, density, life forms, biological spectrum. (06)

1. Ecosystem:

Structure -biotic and abiotic components, food chain, food web, ecological pyramids, energy flow, biogeochemical cycles-nitrogen and phosphorus. (09)

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B.Sc. II YEAR (Practical)

Semester -III

Paper- IX

Taxonomy of Angiosperms

(Based on Paper- VII)

45 L

Angiosperms:

Study of locally available plants of the following families :

1. Annonaceae
2. Malvaceae
3. Leguminosae
   a) Fabaceae (Papilionaceae)
   b) Caesalpiniaceae
   c) Mimosaceae
4. Apocynaceae
5. Solanaceae
6. Acanthaceae
7. Lamiaceae (Labiatae)
8. Nyctaginaceae
9. Liliaceae
10. Poaceae (Gramineae)

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B. Sc. II year (Practical)

Semester - III

Paper - X

Plant Ecology

(Based on Paper no –VIII)

45 L

1. Study of morphological and anatomical adaptations in hydrophytes – *Hydrilla, Eichhornia, Typha* and *Nymphaea* .
2. Study of morphological and anatomical adaptations in xerophytes -*Aloe, Nerium, Casuarina.*
3. Study of morphological adaptations in halophytes -Pneumatophore, Stilt roots.
4. Study of morphological and anatomical adaptations in epiphytes.
5. Study of vegetation by quadrat method.
6. Estimation of Importance Value Index (IVI) of grassland ecosystem on the basis of relative frequency, relative density and relative abundance.
7. Determination of water holding capacity of different soils.
8. Study of meteorological instruments -Rain gauge, Hygrometer, Barometer.
9. Determination of percent leaf area injury of different infected leaf samples.
10. Estimation of salinity of different water samples.
11. Determination of pH of different soils by pH papers/universal indicator/pH meter.

Note for paper IX and X:

Candidate shall submit the following at the time of practical exams: Certified laboratory record book, Field note book, Tour report and Collection of specimens. In addition to number of practicals prescribed above, the students are required to undertake field excursions to the places of botanical interest and industrial places under the guidance of teachers. Collection of rare flowering and non flowering plants should be avoided during excursion. There shall be frequent study tours in local areas. T.A. and D.A. be paid to the teachers, peons and field collectors as per university rules. The record book is to be signed periodically by teacher in charge and certified by the Head of Department at the end of the term. Candidate should not be allowed to appear for practical examination without a certified record book or a certificate from the Head of Department.

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B. Sc. II Year (Theory)

Semester - IV

Paper - XI

Gymnosperms and Utilization of Plants

45 L

Unit:1

Gymnosperms:

1. Salient features, classification as per Sporne 1965, economic importance. (02)
2. Geological time scale, fossilization, types of fossils, *Lyginopteris*, fossil fuels. (04)
3. Contributions of Prof. Birbal Sahani. (01)
4. Study of morphology, anatomy, reproduction (excluding developmental stages) and graphical representation of life cycle of the following types: (16)

a) Cycadales – *Cycas*

b) Coniferales – *Pinus*

c) Gnetales - *Gnetum*

Unit:2

Utilization of Plants:

1. Domestication of plants and their centers of origin. (02)
2. History, origin, cultivation, harvesting, improved varieties and economic importance of the following plants: (15)

i. Food plants – Wheat, Jowar.

ii. Sugar – Sugarcane.

iii. Fibers -Cotton, Jute.

iv. Vegetable oils – Groundnut, Sunflower.

v. Beverages – Tea, Coffee.

vi. Mushroom e. g. (Oyster) *Pleurotus*.

3. Botanical name, family name and economic importance of the following plants: (05)

i. Medicinal plants – Korphad, Aswagandha, Turmeric and Nirgudi.

ii. Timber and Gum – Teak, Neem, Babul, Sisham.

iii. Cosmetics and Perfumes – Rose, Mogara, Tuberose.

iv. Spices – Clove, Black pepper, Cumin, Coriander, Cinnamon.

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B. Sc. II Year (Theory)

Semester -IV

Paper -XII

Plant Physiology

45 L

Unit:1

1. Plant water relations:

a) Diffusion, osmosis, plasmolysis and imbibition. (02)

b) Water absorption and ascent of sap (Transpiration pull theory). (03)

c) Transpiration – Definition, types -cuticular, lenticular and stomatal, structure of stomata, mechanism of opening and closing of stomata (starch – sugar hypothesis). (02)

2. Mineral nutrition:

a) Macro and microelements: roles and deficiency symptoms of N, P, K, Mg, Ca, Fe, Zn, Bo, Mo.

b) Mineral uptake – passive (ion exchange theory) and active (carrier concept) . (05)

3. Translocation of solutes:

Mass flow hypothesis, protoplasmic streaming theory, Source and sink relationship. (03)

Unit:2

1. Enzymes :

Chemical nature holoenzyme , apoenzyme, prosthetic group, cofactor and coenzyme, properties , nomenclature, classification based on type of reactions, mechanism of enzyme action . (06)

2. Growth: Definition, Phases of Growth, Sigmoid growth curve. (02)

3.Growth regulators:

Discovery, structure, roles and practical applications of Auxins, Gibberellins, Cytokinins, Abscisic acid and Ethylene. (07)

Unit:3

1. Photosynthesis:

Definition, ultrastructure of chloroplast, photosynthetic pigments, Light reactions -Hill reaction, red drop and Emerson enhancement effect, two pigment systems (PS I, PS II), photophosphorylation – cyclic and non cyclic, Z-scheme; Dark reactions -C_3, C_4 and CAM pathways. (08)

2. Respiration:

Definition, Ultrastructure of mitochondria, types of respiration, Glycolysis, TCA Cycle, Electron transport system, alcoholic and lactic acid fermentation. (07)

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B.Sc. II year (Practical)

Semester -IV

Paper -XIII

Gymnosperms and Utilization of plants

(Based on paper no - XI)

45L

Gymnosperms:

a) Cycas

i. Habit, young leaf, bulbils, male cone, microsporophyll, megasporophyll, pollen grains, mature seed.

ii. Study through permanent slides-Normal root (T.S.). Stem (T.S.), Ovule (L.S.).

iii. Study through hand section-Coralloid root (T.S.), Rachis (T.S.), Leaflet (T.S.).

b) Pinus

i. Habit, long and dwarf shoot, scale leaves, foliage leaves, male cone, female cone, pollen grains (W.M.), winged seed.

ii. Study through hand sections and permanent slides Root (T.S.), Stem (T.S.), Needle (T.S.).

iii. Study through permanent slide - T.L.S. & R.L.S. of stem, L.S. of male cone, L.S. of female cone.

c) *Gnetum*

i) Habit, T. S. of Stem, Male cone and female cone.

Paleobotany:

a) Types of fossils (Specimens).

b) *Lygynopteris* (Specimen / Permanent slide).

Utilization of plants :

a) Food plants – Study of the morphology, structure,and histochemical tests of food storing tissue in Jowar & Wheat.

b) Histochemical test of lignin and cellulose.

c) Cultivation of Oyster (*Pleurotus*) mushroom on agricultural waste.

d) Vegetable oils – hand section of Groundnut & Sunflower Seed and staining of oil droplets by Sudan III.

e) Study of the sources of Timber, Gum, Medicinal plants, Cosmotics and Perfumes.

f) Study of Black pepper, Clove, Cinnamon, Cumin, Coriander.

f) Field notebook, specimen collection, and tour report.

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

B.Sc. II year (Practical)

Semester -IV

Paper- XIV

Plant Physiology

(Based on paper no. -XII)

45L

1. Osmosis by egg membrane and potato osmoscope.
2. Plasmolysis in *Tradescantia* leaves.
3. Effect of different conc. of organic solvents on membrane permeability.
4. Determination of water potential of any tuber.
5. Detection of mineral elements in plant ash.
6. Digestion of starch by amylase.
7. Detection of enzyme activity : oxidase, peroxidase, catalase and dehydrogenase.
8. Separation of chloroplast pigments by paper chromatography.
9. Demonstration of Hill reaction.
10. Effect of different intensities of light on photosynthesis.
11. Effect of different colors of light on photosynthesis.
12. Fermentation by Kuhnes fermentation vessel.
13. Isolation of starch.
14. Isolation of pectin.
15. Estimation of total and reducing sugars in fruit juice by Fehling solution.
16. Separation of amino acids by paper chromatography.
17. Effect of IAA and Gibberellins on seed germination.

Note for paper XI and XII

Candidate shall submit the following at the time of practical examination: Certified laboratory record book. Field report , Tour report. and Collection of specimens. In addition to number of practicals prescribed above, the students are required to undertake field excursions to the places of botanical interest and industrial places under the guidance of teachers. Collection of rare flowering and non flowering plants should be avoided during excursion. There shall be frequent study tours in local areas. T.A. and D.A. be paid to the teachers, peons and field collectors as per university rules. The record book is to be signed periodically by teacher in charge and certified by the Head of the Department at the end of the term. Candidate should not be allowed to appear for practical examination without a certified record book or a certificate from the Head of the Department.

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

Pattern of Theory Question Paper

B.Sc. II YEAR (BOTANY)

Semester -III

Paper -VII

Taxonomy of Angiosperms

Time: 2 Hour Max. Marks: 50

N.B.: i) Attempt all questions
ii) All questions carry equal marks
iii) Draw neat and well-labelled diagrams wherever necessary

Q.1. Long answer question ……..……(Unit 1) 10
or
Long answer question (Unit 1)

Q.2. Long answer question ……..……(Unit 2) 10
or
Long answer question……..……(Unit 2)

Q.3. Long answer question ..……...(Unit 2) 10
or
Long answer question……..……(Unit 2)

Q.4. Short notes on any two of the following (**based on all Units)** 10
a) Short answer question
b) Short answer question
c) Short answer question
d) Short answer question

Q.5. Multiple choice question: **(based on all Units)** 10
1) ……(Unit 1)
2) ……(Unit 1)
3) ……(Unit 1)
4) ……(Unit 1)
5) …….(Unit 1)
6) ……..(Unit 2)
7) ……..(Unit 2)
8) ……..(Unit 2)
9) ……..(Unit 2)
10) …….(Unit 2)

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

Pattern of Theory Question Paper

B.Sc. II YEAR (BOTANY)

Semester -III

Paper -VIII

Plant Ecology

Time: 2 Hour **Max. Marks: 50**

N.B.: i) Attempt all questions
ii) All questions carry equal marks
iii) Draw neat and well-labelled diagrams wherever necessary

Q.1. Long answer question ……..……(Unit 1) 10
or
Long answer question (Unit 1)

Q.2. Long answer question ……..……..(Unit 2) 10
or
Long answer question……..……(Unit 2)

Q.3. Long answer question ..……...(Unit 3) 10
or
Long answer question……..……(Unit 3)

Q.4. Short notes on any two of the following (**based on all Units)** 10
a) Short answer question
b) Short answer question
c) Short answer question
d) Short answer question

Q.5. Multiple choice question: **(based on all Units)** 10
1) …….(Unit 1)
2) …….(Unit 1)
3) …….(Unit 1)
4) …….(Unit 2)
5) …….(Unit 2)
6) …….(Unit 2)
7) …….(Unit 3)
8) …….(Unit 3)
9) …….(Unit 3)
10) ……...(Unit 3)

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

Pattern of Theory Question Paper

B.Sc. II YEAR (BOTANY)

Semester- IV

Paper -XI

Gymnosperms and Utilization of plants

Time: 2 Hour Max. Marks: 50

N.B.: i) Attempt all questions
ii) All questions carry equal marks
iii) Draw neat and well-labelled diagrams wherever necessary

Q.1. Long answer question ……..……(Unit -1) 10

or

Long answer question..……(Unit- 1)

Q.2. Long answer question ……..……(Unit- 1) 10

or

Long answer question ……(Unit-1)

Q.3. Long answer question ..……(Unit- 2) 10

or

Long answer question ..……(Unit- 2)

Q.4. Short notes on any two of the following **(based on all Units)** 10

a) Short answer question
b) Short answer question
c) Short answer question
d) Short answer question

Q.5. Multiple choice question: **(based on all Units)** 10

1) …….(Unit 1)
2) …….(Unit 1)
3) …….(Unit 1)
4) …….(Unit 1)
5) ……..(Unit 2)
6) ……..(Unit 2)
7) ……..(Unit 2)
8) ……..(Unit 2)
9) ……..(Unit 2)
10) ……...(Unit 2)

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty Of Science

Pattern of Theory Question Paper

B.Sc. II YEAR (BOTANY)

Semester- IV

Paper- XII

Plant Physiology

Time: 2 Hour Max. Marks: 50

N.B.: i) Attempt all questions
ii) All questions carry equal marks
iii) Draw neat and well-labelled diagrams wherever necessary

Q.1. Long answer question ……..……(Unit- 1) 10

or

Long answer question..……(Unit-1)

Q.2. Long answer question ……..……(Unit-2) 10

or

Long answer question ……(Unit-2)

Q.3. Long answer question ..……(Unit- 03) 10

or

Long answer question ..……(Unit-3)

Q.4. Short notes on any two of the following **(based on all Units)** 10

a) Short answer question
b) Short answer question
c) Short answer question
d) Short answer question

Q.5. Multiple choice question: **(based on all Units)** 10

1) ……(Unit 1)
2) ……(Unit 1)
3) ……(Unit 1)
4) ……(Unit 1)
5) …….(Unit 2)
6) ……..(Unit 2)
7) ……..(Unit 2)
8) ……..(Unit 3)
9) ……..(Unit 3)
10) …….(Unit 3)

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty of Science

Practical Examination

B.Sc. II YEAR (BOTANY)

Semester- IV

Paper -IX and XIII

(Taxonomy of Angiosperm, Gymnosperms and Utilization of plants)

Time: 09.00 A.M. to 01.00 P.M. Marks: 100

Date: _____ Batch No. _____

Center: _____

Q.1. Identify, classify giving reasons and describe the specimen "A" 20
Give floral formula and floral diagram.

Q.2. Make a double stained permanent preparation of the given specimen 'B'
(Gymnosperm). Identify and describe with a well labeled diagram. 20

Q.3.Perform Micro chemical test in given material "C"
(Protein / Carbohydrate /Lipid / cellulose / Lignin) 10

Q.4. Identify and describe the specimen D, E , F, G and H as per the instructions 25
(D and E- Angiosperms, F- Gymnosperms, G- and H- Utilization of plants)

Q.5. Submission: 10

a) Record book,

b) Permanent slides and collection, field notebook/Tour report 10

c) Viva - voce and collection 05

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,AURANGABAD

Faculty of Science

Practical Examination

B.Sc. II YEAR (BOTANY)

Semester IV

Paper X and XIV

(Plant Ecology and Plant Physiology)

Time: 02.00 P. M. to 06.00 P.M. Marks: 100

Date: _____ Batch No. _____

Center: _____

Q.1. Identify and describe morphological and anatomical adaptations in the given specimen. Make a temporary preparation of the given specimen. 20

Q.2.Conduct the ecological experiment, allotted to you, write the principal and record the observations and results. 15

Q. 3. Make a list of materials required for the physiological experiment allotted to you. Show it to the examiner, write the procedure and record the readings. 20

Q. 4. Make a list of materials required for the physiology experiment allotted to you. Show results to the examiner. 20

Q.5. Submission:

a) Record book, 10

b) Project report and collection 10

c) Viva - voce 05

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DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

REVISED SYLLABUS

OF

B.Sc. Botany

THIRD YEAR

Fifth & Sixth Semester

[Effective from - June, 2015-16 & onwards]

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

Faculty of Science

B.Sc. III YEAR SYLLABUS

Subject- BOTANY

Semester- V AND VI

	Paper No.	Title of Paper	Lectures	Marks
		SEMESTER – V		
	XV	Cell Biology and Molecular Biology	45	50
B.Sc. III	XVI(A) OR XVI (B) OR XVI (C)	Diversity of Angiosperms - I OR Plant Breeding and Seed Technology OR Plant Pathology OR Biotechnology	45	50

	XVI(D)			
	XVII	Practical based on Paper - XV	45	50
	XVIII	Practical based on Paper - XVI	45	50
		SEMESTER – VI		
	XIX	Genetics and Biotechnology	45	50
	XX (A) XX (B) XX (C) XX (D)	Diversity of Angiosperms - II OR Economic Botany OR Microbiology and Disease Management OR Bioinformatics	45	50
	XXI	Practical based on Paper - XIX	45	50
	XXII	Practical based on Paper - XX	45	50

a. Human genome project b. Plant genome project
c. DBT, Ministry of Science and Technology.

B.Sc. III Botany (Practical)

Semester -V

Paper XVII

(Cell Biology & Molecular Biology)

(45 L)

Unit-1

1. Study of the cell structure from onion leaf or *Tradescantia* leaf
2. Preparation of cytological (AA, FAA etc.) fixatives and stains (acetocarmine, aceto-orcein).
3. Study of electron micrographs of viruses, bacteria and cyanobacteria
4. Study of electron micrographs of eukaryotic cell and different cell organelles
5. Preparation of slides for the study of mitosis (root tips of onion)
6. Preparation of slides for the study of meiosis (*Rhoeo*, *Aloe* or onion flower buds)
7. Preparation of idiogram from the given micrograph of karyotype
8. Observation of giant chromosomes in *Chironomous* larvae
9. Preparation of wool models of mitosis, meiosis, cell structure, Chromosome, DNA and RNA.

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B.Sc. III Year (Practical)

Semester – V

Paper XVIII (A)

(Diversity of Angiosperms-I)

(45 L)

Unit: 1

1. Study of herbarium
2. Study of analytical characters
3. Preparation of indented and bracketed keys
4. Study of following families:
    1. Magnoliaceae
    2. Nymphaeceae
    3. Papaveraceae
    4. Brassicaceae
    5. Capparidaceae
    6. Rutaceae,
    7. Rhamnaceae
    8. Combretaceae
    9. Lythraceae
    10. Cucurbitaceae
    11. Apiaceae,
5. Mounting of pollen grains (acetolysis method)

Note: Students should undertake excursion to ecologically different areas for plant study and submission of list and photographs of wild plants at the time

of practical examination.

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B.Sc. III Year (Practical)

Semester – VI

Paper XXII (A)

(Diversity of Angiosperms-II)

(45 L)

1 . Study of following families:

1. Oleaceae
2. Asclepiadaceae
3. Convolvulaceae
4. Scrophulariaceae
5. Verbenaceae
6. Amaranthaceae
7. Euphorbiaceae
8. Orchidaceae
9. Liliaceae
10. Commelinaceae

2. Mounting of pollen grains (acetolysis method) and measurement of pollen size.
3. Study of different types of stomata and epidermal structures (Trichome)
4. Identification of plants up to species by using flora (Flora of Bombay Presidency/ Flora of Marathwada)
5. Students should undertake excursion to ecologically different areas for plant

study and submission of list and photographs of wild plants at the time of examination.

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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/SU/Sci./B.Sc. & M.Sc. Syll./5/2015

It is hereby notified for information to all the concerned that, on the recommendation of the Faculty of Science the Academic Council at its meeting held on 30-05-2015 has accepted the **revised semester-wise syllabi as mentioned against their names in the Faculty of Science as under** :-

Sr. No.	Name of the Subject	Semester
[1]	B.Sc. Computer Science Degree Course	III & IV
[2]	B.Sc. Information Technology Degree Course	III & IV
[3]	B.C.A. Science Degree Course	III & IV
[4]	B.Sc. Animation Degree Course	III & IV
[5]	B.Sc. Bioinformatics Degree Course	III & IV
[6]	B.Sc. Computer Science [Optional]	III & IV
[7]	B.Sc. Information Technology [Optional]	III & IV
[8]	B.Sc. Computer Applications [Optional]	III & IV
[9]	B.Sc. Computer Maintenance [Optional]	III & IV
[10]	B.Sc. Environmental Science [Optional]	V & VI
[11]	B.Sc. Bio-Chemistry [Optional]	V & VI
[12]	B.Sc. Forensic Science Degree Course	V & VI
[13]	B.Sc. Industrial Chemistry [Optional]	V & VI
[14]	B.Sc. Electronics [Optional]	V & VI
[15]	B.Sc. Zoology [Optional]	V & VI
[16]	B.Sc. Microbiology [Optional]	V & VI
[17]	B.Sc. Instrumentation Practice [Optional]	V & VI
[18]	B.Sc. Statistics [Optional]	V & VI
[19]	B.A. Statistics [Optional]	V & VI
[20]	B.A. / B.Sc. Mathematics [Optional]	V & VI
[21]	B.Sc. Home Science Degree Course	V & VI
[22]	B.Sc. Textile Interior Decoration Degree Course	V & VI
[23]	B.Sc. Fishery Science [Optional]	V & VI
[24]	B.Sc. Dairy Science & Technology [Optional]	V & VI
[25]	B.Sc. Botany [Optional]	V & VI
[26]	B.Sc. Physics [Optional]	V & VI
[27]	M.Sc. Computer Science	III & IV
[28]	M.Sc. I.T.	III & IV

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/SU/SCI./
2015/3761-4160
Date:- 16-06-2015.

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Director,
Board of College and
University Development.

..2..

Copy forwarded with compliments to:-

1] The Principals, affiliated concerned colleges,
Dr. Babasaheb Ambedkar Marathwada University

Copy to :-

1] The Controller of Examinations,
2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
3] The Superintendent, [B.Sc. Unit],
4] The Superintendent, [M.Sc. Unit],
5] The Programmer [Computer Unit-1] Examinations,
6] The Programmer [Computer Unit-2] Examinations,
7] The Record Keeper.

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S*/-160615/-

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

REVISED SYLLABUS

OF

B.Sc. Botany

THIRD YEAR

Fifth & Sixth Semester

[Effective from - June, 2015-16 & onwards]

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

Faculty of Science

B.Sc. III YEAR SYLLABUS

Subject- BOTANY

Semester- V AND VI

	Paper No.	Title of Paper	Lectures	Marks
		SEMESTER – V		
	XV	Cell Biology and Molecular Biology	45	50
B.Sc. III	XVI(A) OR XVI (B) OR XVI (C)	Diversity of Angiosperms - I OR Plant Breeding and Seed Technology OR Plant Pathology OR Biotechnology	45	50

	XVI(D)			
	XVII	Practical based on Paper - XV	45	50
	XVIII	Practical based on Paper - XVI	45	50
		SEMESTER – VI		
	XIX	Genetics and Biotechnology	45	50
	XX (A) XX (B) XX (C) XX (D)	Diversity of Angiosperms - II OR Economic Botany OR Microbiology and Disease Management OR Bioinformatics	45	50
	XXI	Practical based on Paper - XIX	45	50
	XXII	Practical based on Paper - XX	45	50

a. Human genome project b. Plant genome project
c. DBT, Ministry of Science and Technology.

B.Sc. III Botany (Practical)

Semester -V

Paper XVII

(Cell Biology & Molecular Biology)

(45 L)

Unit-1

1. Study of the cell structure from onion leaf or *Tradescantia* leaf
2. Preparation of cytological (AA, FAA etc.) fixatives and stains (acetocarmine, aceto-orcein).
3. Study of electron micrographs of viruses, bacteria and cyanobacteria
4. Study of electron micrographs of eukaryotic cell and different cell organelles
5. Preparation of slides for the study of mitosis (root tips of onion)
6. Preparation of slides for the study of meiosis (*Rhoeo*, *Aloe* or onion flower buds)
7. Preparation of idiogram from the given micrograph of karyotype
8. Observation of giant chromosomes in *Chironomous* larvae
9. Preparation of wool models of mitosis, meiosis, cell structure, Chromosome, DNA and RNA.

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B.Sc. III Year (Practical)

Semester – V

Paper XVIII (A)

(Diversity of Angiosperms-I)

(45 L)

Unit: 1

1. Study of herbarium
2. Study of analytical characters
3. Preparation of indented and bracketed keys
4. Study of following families:
    1. Magnoliaceae
    2. Nymphaeceae
    3. Papaveraceae
    4. Brassicaceae
    5. Capparidaceae
    6. Rutaceae,
    7. Rhamnaceae
    8. Combretaceae
    9. Lythraceae
    10. Cucurbitaceae
    11. Apiaceae,
5. Mounting of pollen grains (acetolysis method)

Note: Students should undertake excursion to ecologically different areas for plant study and submission of list and photographs of wild plants at the time

B.Sc. III (Practical)

Semester -VI

Paper XXI

(Genetics and Biotechnology)

(45 L)

1. Quiz
2. Working out laws of inheritance by using seed mixtures
3. Problems based on gene interaction
4. Problems based on sex linked inheritance

B.Sc. III Year (Practical)

Semester – VI

Paper XXII (A)

(Diversity of Angiosperms-II)

(45 L)

1 . Study of following families:

1. Oleaceae
2. Asclepiadaceae
3. Convolvulaceae
4. Scrophulariaceae
5. Verbenaceae
6. Amaranthaceae
7. Euphorbiaceae
8. Orchidaceae
9. Liliaceae
10. Commelinaceae

2. Mounting of pollen grains (acetolysis method) and measurement of pollen size.
3. Study of different types of stomata and epidermal structures (Trichome)
4. Identification of plants up to species by using flora (Flora of Bombay Presidency/ Flora of Marathwada)
5. Students should undertake excursion to ecologically different areas for plant

study and submission of list and photographs of wild plants at the time of examination.

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