

GOVERNMENT ARTS COLLEGE (AUTONOMOUS)

SALEM – 636 007

ACCREDITED BY NAAC AS B++ STATUS

AFFILIATED TO PERIYAR UNIVERSITY

SALEM -11

B.Sc., BOTANY

REGULATIONS, COURSE STRUCTURE AND SYLLABUS

FOR CANDIDATES ADMITTED FROM 2017-18 ONWARDS UNDER CBCS PATTERN

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), SALEM-636 007

NAAC ACCREDITED B++ STATUS

AFFILIATED TO PERIYAR UNIVERSITY, SALEM-11

B.Sc., Branch V Botany

For candidates admitted from **2017-18** onwards under **CBCS** Pattern

1. Condition for Admission

A candidate who has passed Higher Secondary Examination in Academic stream With Botany under higher secondary board of examinations, Tamilnadu or an examination accepted as Equivalent thereto or as per norms set by the Government of Tamilnadu are permitted to appear and qualify for the B.Sc. degree examination of this autonomous college affiliated to Periyar University after a course of study of three academic years.

2. Duration of the course

The course for the degree of Bachelor of Science shall consist of three academic years divided into six semesters.

3. Course of study

The course of study shall comprise of instruction in the following subjects according to the syllabus and books prescribed from time to time.

4. Examination

The theory examination shall be of three hours duration to each paper at the end of each semester. The candidate failed in any subject will be permitted to appear for each failed subject or subjects in the subsequent examination.

The practical examination for U.G. Courses shall be conducted at the end of even semester.

The examinations consist of INTERNAL ASSESSMENT (I.A) and Semester Examinations (S.E)

Internal assessment marks for theory papers are as follows.

| ATTENDANCE + | ASSIGNMENT + | SEMINAR + | TEST+ | TOTAL |
|--------------|--------------|-----------|-------|-------|
| 5 | 10 | NIL | 10 | = 25 |

Internal assessment marks for practical papers are as follows.

| ATTENDANCE + | OBSERVATION + | TEST + | TOTAL |
|--------------|---------------|--------|-------|
| 10 | 10 | 20 | = 40 |

GOVERNMENT ARTS COLLEGE (Autonomous), SALEM -7

B.Sc. BOTANY

Choice Based Credit System (For the students admitted from the year 2017 onwards)

| Sem | Part | Code | Course | Title | Inst hrs | Credit | Marks | | |
|---------|------|---------|---|---|----------|--------|-------|-----|-----|
| | | | | | | | CIA | EA | TOT |
| I | I | 17FTLO1 | Language Course | Tamil Paper I | 6 | 3 | 25 | 75 | 100 |
| | II | 17FEL01 | English Language | English Paper I | 6 | 3 | 25 | 75 | 100 |
| | III | 17UBY01 | Core Course I | Major Paper I – Algae, Bryophytes | 4 | 5 | 25 | 75 | 100 |
| | | 17UBYP1 | Core Course II Extended to II semester | Major Practical I | 3 | - | - | - | - |
| | | 17AZL01 | First Allied Course I | Allied Zoology Paper I | 6 | 3 | 25 | 75 | 100 |
| | | 17AZLP1 | First Allied Course II Extended to II semester | First Allied Practical I | 3 | - | - | - | - |
| | IV | 17UVABE | Value Based Education | Paper I | 2 | 2 | 25 | 75 | 100 |
| II | I | 17FTL02 | Language Course | Tamil Paper II | 6 | 3 | 25 | 75 | 100 |
| | II | 17FEL02 | English Language | English Paper II | 6 | 3 | 25 | 75 | 100 |
| | III | 17UBY02 | Core Course III | Major Paper II – Fungi, Bacteria, Virus and Lichens | 4 | 5 | 25 | 75 | 100 |
| | | 17UBYP1 | Core Course II Extended from I semester | Major Practical I | 3 | 3 | 40 | 60 | 100 |
| | | 17AZL02 | First Allied Course II | Allied Zoology Paper II | 6 | 3 | 25 | 75 | 100 |
| | | 17AZLP1 | First Allied Course II Extended from I semester | Allied Zoology Practical I | 3 | 4 | 40 | 60 | 100 |
| | IV | 17UENST | Environmental studies | Environmental studies | 2 | 2 | 25 | 75 | 100 |
| III | I | 17FTL03 | Language Course | Tamil Paper III | 6 | 3 | 25 | 75 | 100 |
| | II | 17FEL03 | English Language | English Paper III | 6 | 3 | 25 | 75 | 100 |
| | III | 17UBY03 | Core Course IV | Major Paper III – Anatomy and Embryology of Angiosperms | 4 | 5 | 25 | 75 | 100 |
| | | 17UBYP2 | Core Course V Extended to IV semester | Major Practical II | 3 | - | - | - | - |
| | | 17ACH01 | Second Allied Course I | Second Allied Chemistry Theory I | 6 | 3 | 25 | 75 | 100 |
| | | 17ACHP1 | Second Allied Course II Extended to IV semester | Second Allied Chemistry Practical | 3 | - | - | - | - |
| | IV | 17UNME1 | Non – Major Elective I | Mushroom Cultivation | 1 | 2 | 25 | 75 | 100 |
| 17UBYS1 | | SBECI | Mushroom Culture Technology | 1 | 2 | 25 | 75 | 100 | |
| IV | I | 17FTL04 | Language Course | Tamil Paper IV | 6 | 3 | 25 | 75 | 100 |
| | II | 17FEL04 | English Language | English Paper IV | 6 | 3 | 25 | 75 | 100 |
| | III | 17UBY04 | Core Course VI | Major Paper IV – Pteridophytes, Gymnosperms and Paleobotany | 3 | 5 | 25 | 75 | 100 |
| | | 17UBYP2 | Core Course V Extended from III semester | Major Practical II | 3 | 4 | 40 | 60 | 100 |
| | | 17ACH02 | Second Allied Course III | Second Allied Chemistry Theory II | 6 | 3 | 25 | 75 | 100 |

| | | | | | | | | | |
|---------|---------|---|--|--|---|-----|-----|-----|-----|
| | | 17ACHP1 | Second Allied course II Extended from III semester | Allied Chemistry Practical | 3 | 4 | 40 | 60 | 100 |
| | | 17UNME2 | Non-Major Elective II | Organic Farming | 1 | 2 | 25 | 75 | 100 |
| | IV | 17UBYS2 | SBEC II | Microtechnique | 2 | 2 | 25 | 75 | 100 |
| | V | 17UEXAT | Extension Activities | | | | | | |
| V | III | 17UBY05 | Core Course VII | Major Paper V – Morphology and Taxonomy | 5 | 5 | 25 | 75 | 100 |
| | | 17UBY06 | Core Course VIII | Major Paper VI – Biochemistry and Biophysics | 5 | 5 | 25 | 75 | 100 |
| | | 17UBY07 | Core Course IX | Major Paper VII – Plant Ecology and Phytogeography | 5 | 5 | 25 | 75 | 100 |
| | | 17UBYP3 | Core Course X Extended to VIth semester | Major Practical III | 3 | - | - | - | - |
| | 17UBYP4 | Core Course XI Extended to VI semester | Major Practical IV | 3 | - | - | - | - | |
| | 17UBYE1 | Major Elective I | Biotechnology | 5 | 5 | 25 | 75 | 100 | |
| | IV | 17UBYS3 | SBEC III | Horticulture | 2 | 2 | 25 | 75 | 100 |
| 17UBYS4 | | SBEC IV | Seed Technology | 2 | 2 | 25 | 75 | 100 | |
| VI | III | 17UBY08 | Core Course XII | Major Paper VIII – Plant Physiology | 5 | 5 | 25 | 75 | 100 |
| | | 17UBY09 | Core Course XIII | Major Paper IX – Cytology and Genetics | 5 | 5 | 25 | 75 | 100 |
| | | 17UBYP3 | Core Course X Extended from Vth semester | Major Practical III | 3 | 4 | 40 | 60 | 100 |
| | | 17UBYP4 | Core Course XI Extended from V semester | Major Practical IV | 3 | 4 | 40 | 60 | 100 |
| | | 17UBYM2 | Major Elective II | Agricultural Microbiology | 5 | 5 | 25 | 75 | 100 |
| | | 17UBYM3 | Major Elective III | Medicinal Botany | 5 | 5 | 25 | 75 | 100 |
| | IV | 17UBYS5 | SBEC V | Biofertilizers | 2 | 2 | 25 | 75 | 100 |
| | | 17UBYS6 | SBEC VI | Plant Protection | 2 | 2 | 25 | 75 | 100 |
| | | | | | | 180 | 140 | | |

SBEC – Skill Based Elective Course

5. Scheme of Examinations

The scheme of Examinations for different semesters shall be as follows.

| S. No. | Title of the paper | Duration HRS | I.A | S.E | total |
|---------------------|---|-----------------|-----|-----|-------|
| SEMESTER-I | | | | | |
| 1 | Language Course-Paper I | 3HRS | 25 | 75 | 100 |
| 2 | English Paper-I | 3HRS | 25 | 75 | 100 |
| 3 | Core Course-I-Algae and Bryophytes | 3HRS | 25 | 75 | 100 |
| 4 | Allied Course I-paper I- Zoology | 3HRS | 25 | 75 | 100 |
| 5 | Value Based Education | 3HRS | 25 | 75 | 100 |
| SEMESTER-II | | | | | |
| 6 | Language Course-paper II | 3HRS | 25 | 75 | 100 |
| 7 | English Paper-II | 3HRS | 25 | 75 | 100 |
| 8 | Core Course-III-Fungi, Bacteria, Virus and Lichens | 3HRS | 25 | 75 | 100 |
| 9 | Allied Course II-paper II- Zoology | 3HRS | 25 | 75 | 100 |
| 10 | Environmental Studies | 3HRS | 25 | 75 | 100 |
| 11 | Core Course-II- Major Practical I | 3HRS | 40 | 60 | 100 |
| 12 | Allied Course-II- Allied Practical II | 3HRS | 40 | 60 | 100 |
| SEMESTER-III | | | | | |
| 13 | Language Course- Paper III | 3HRS | 25 | 75 | 100 |
| 14 | English Paper-III | 3HRS | 25 | 75 | 100 |
| 15 | Core Course IV- Anatomy and Embryology of Angiosperms | 3HRS | 25 | 75 | 100 |
| 16 | Second Allied course I- Paper I- Chemistry | 3HRS | 25 | 75 | 100 |
| 17 | Non-Major Elective Paper I | 3HRS | 25 | 75 | 100 |
| 18 | SBEC- Paper I- Mushroom culture Technology | 3HRS | 25 | 75 | 100 |
| SEMESTER-IV | | | | | |
| 19 | Language Course- Paper IV | 3HRS | 25 | 75 | 100 |
| 20 | English Paper-IV | 3HRS | 25 | 75 | 100 |

| | | | | | |
|--------------------|--|------|----|----|-----|
| 21 | Core Course V- Major Practical II | 3HRS | 40 | 60 | 100 |
| 22 | Core Course VI- Pteridophytes, Gymnosperms & Paleobotany | 3HRS | 25 | 75 | 100 |
| 23 | Second Allied course II- Allied Practical | 3HRS | 40 | 60 | 100 |
| 24 | Second Allied course III- Paper II- Allied Chemistry | 3HRS | 25 | 75 | 100 |
| 25 | Non-Major Elective Paper II | 3HRS | 25 | 75 | 100 |
| 26 | SBEC-Paper II- Microtechnique | 3HRS | 25 | 75 | 100 |
| SEMESTER-V | | | | | |
| 27 | Core Course-V-Morphology and Taxonomy | 3HRS | 25 | 75 | 100 |
| 28 | Core Course-VI- Bio chemistry and Bio Physics | 3HRS | 25 | 75 | 100 |
| 29 | Core Course-VII-Plant Ecology & Phytogeography | 3HRS | 25 | 75 | 100 |
| 30 | Major Elective Paper I- Biotechnology | 3HRS | 25 | 75 | 100 |
| 31 | SBEC-Paper III- Horticulture | 3HRS | 25 | 75 | 100 |
| 32 | SBEC-Paper IV- Seed Technology | 3HRS | 25 | 75 | 100 |
| SEMESTER-VI | | | | | |
| 33 | Core Course X- Major Practical III | 3HRS | 40 | 60 | 100 |
| 34 | Core Course XI- Major Practical IV | 3HRS | 40 | 60 | 100 |
| 35 | Core Course-XII-Plant Physiology | 3HRS | 25 | 75 | 100 |
| 36 | Core Course-XIII-Major paper IX- Cytology and Genetics | 3HRS | 25 | 75 | 100 |
| 37 | MBE- Paper II-Agricultural Microbiology | 3HRS | 25 | 75 | 100 |
| 38 | MBE- Paper III-Medicinal Botany | 3HRS | 25 | 75 | 100 |
| 39 | SBEC –Paper V-Bio fertilizers | 3HRS | 25 | 75 | 100 |
| 40 | SBEC –Paper VI-Plant Protection | 3HRS | 25 | 75 | 100 |

6. Question Paper Pattern for U.G. Course

6.1 Time: 3 Hrs

Maximum: 75 Marks

Part –A

10x2=20 Marks

Answer all questions.

Two questions from each unit.

6.2

Part –B

5x5=25 Marks

Two questions from each unit with internal choice.

6.3

Part – C

3x10=30 Marks

One question from each unit.

Out of 5 Questions 3 should be answered.

6.4 Question paper pattern for practical examinations to be framed and decided by concerned board of studies.

6.5 Internal Assessment.

6.5.1 For attendance – 5 Marks

| | | | | |
|--------|---------|---------|---------|---------|
| 75-80% | 81-85% | 86-90% | 91-95% | 96-100% |
| 1 Mark | 2 Marks | 3 Marks | 4 Marks | 5 Marks |

6.5.2 For Assignment – 10 Marks

6.5.3 For Test- 10 Marks

Minimum of Three tests and assignment to be conducted. Average of best two tests is taken into account.

7. Passing Minimum

A candidate shall be declared to have passed the examination if the candidate secures not less than 40% of the marks in semester examination and in IA in each course of practical. The candidate should get a minimum of 40% marks in SE as well as a minimum of 40% marks in IA, i.e. a minimum of 30 marks out of 75 in SE and a minimum of 10 marks out of 25 in IA in the theory courses.

For practical courses, the distribution of marks will be IA 40, practical 60 (Practical 50 + Record 10). The candidate should get a minimum of 16 marks out of 40 in IA and a minimum of 24 out of 60 marks in practical examinations. The

practical mark 50 and the record mark 10 will be taken together as 60 marks for practical examinations. No passing minimum for record note book submission. However submission of record is a must in the practical examinations.

8. Classification of successful candidates

The performance of the student is indicated by letter Grades and the Corresponding Grade Point (GP), Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA).

| Letter Grade | Cumulative Grade Points Average | Grade Description | Range of Marks* |
|--------------|---------------------------------|-------------------|-----------------|
| S | 10 | Outstanding | 90-100 |
| A | 9 | Excellent | 80-89 |
| B | 8 | Very Good | 70-79 |
| C | 7 | Good | 60-69 |
| D | 6 | Average | 50-59 |
| E | 5 | Satisfactory | 40-49 |
| RA | 0 | Re-Appear | 0-39 |

A student is deemed to have completed a course successfully and earned the appropriate credit, only if, the candidate earned a grade of E and above. RA denotes the candidate should Reappear the course again.

$$GP = (\text{Marks obtained in a course} \times \text{credit}) / 10$$

$$GPA = \frac{\text{Total Grade points earned in a semester}}{\text{Total Credits registered in a semester}}$$

$$CGPA = \frac{\text{Sum of Grade points earned}}{\text{Sum of credits registered}}$$

Classification

| | | |
|------|-------------------|--------------------------|
| CGPA | 9 and Above | I Class with distinction |
| CGPA | between 7 and 8.9 | I Class |
| CGPA | between 5 and 6.9 | II Class |

Note: The above classification shall be given for overall performance including Non-Major Elective and Skill Based Elective Courses.

9. Duration for the completion of the U.G. Programme

The duration for completion of U.G. Programme shall not exceed six semesters.

10. Commencement of this regulation

These regulations shall take effect from the academic year 2017-2018 (i.e.,) for students who are to be admitted to the year of the course during the academic year 2017-2018 and thereafter.

11. Transitory Provision

Candidates who were admitted to the UG course of study from 2017-18 shall be permitted to redo or reappear for the examinations under these regulations for a period of FIVE years from the year of admission to the course. Arrear candidates will be permitted to appear for the examination under these regulations up to 2 consecutive years or 4 consecutive semesters from their final or third year of their course. Thereafter they will be permitted to appear for examinations only under those regulations in force.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

SEMESTER I – 17UBY01

CORE COURSE –I - PLANT DIVERSITY-I (ALGAE AND BRYOPHYTES)

Objectives

1. To understand the structure, reproduction and life cycle of different algae
2. To understand different uses of algae
3. To understand the structure and life cycle of Bryophytes

Unit I

Algae - General characteristics and classification (F.E. Fritch). Pigmentation and reserve food in algae. Economic importance of algae.

Unit II

A detailed study of the structure, reproduction and life cycle of the following algal genera; Oscillatoria, Nostoc, Chlamydomonas, Volvox, Oedogonium, Ulva and Caulerpa.

Unit III

A detailed study of the structure, reproduction and life cycle of the following algal genera; Chara, Navicula, Sargassum and Polysiphonia.

Unit IV

Bryophytes- General characteristics, occurrence and classification (Rothmaler, 1951). Economic importance of bryophytes. A detailed study of the structure, reproduction and life cycle of the following genus; Riccia.

Unit V

A detailed study of the structure, reproduction and life cycle of the following genera; Porella, Anthoceros and Polytrichum.

Practical

A detailed study of the examples cited in the theory syllabus

To make suitable micro preparations of type prescribed in Algae and Bryophytes

To observe and identify microscope specimens and to write illustrated and explanatory notes on them.

Text books

1. Palaniyappan S., (1988), Algakkal (in tamil), T.K. Publishing house, Chennai, India.
2. Palaniyappan S., (1988), Bryophyta (in tamil), T.K. Publishing house, Chennai, India.
3. Vashishta B.R., (1993), Botany for Degree students-Algae, S.Chanad & Co. (P) Ltd., New Delhi, India.
4. Kumerasen V., (1997), Algae and Bryophytes, Saras Publications, Nagarcoil, India.
5. Pandey B.P., (1993), A text book of botany-Algae, S.Chanad & Co. (P) Ltd., New Delhi, India.

REFERENCE BOOKS

1. Smith, G.M (1995) – Cryptogamic Botany (Vol. I-Algae, Fungi & Lichens), Mc Graw Hill Book Co, New York.
2. Trainor, F.A (1990) – Introductory Phycology, John Wiley.
3. Lee, R.E (1980) – Phycology, Cambridge University Press.
4. Kumar, H.D (1990) – Introductory Phycology, Affiliated East West Press (P) Ltd., New Delhi.
5. Kumaresen, V (1997) – Algae and Bryophytes, Saras Publications, Nagar Coil, India.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

Major Paper -I- 17UBY01

PLANT DIVERSITY-1 (ALGAE AND BRYOPHYTES)

Time: 3 hrs.

Max. Marks: 75

Part A

10X2=20

Answer all the questions

Each answer should not exceed 50 words

Draw diagram wherever necessary

1. Chlorellin
2. Pyrenoid
3. Heterocyst
4. Dwarf male
5. Cystocarp
6. Amorphous bulbil
7. Rhizoid
8. Peat
9. Elators
10. Columella

Part B

5X5=25

Answer all the questions

Each answer should not exceed 300 words

Draw diagram wherever necessary

11. a. Write the classification of algae proposed by Fritch
(or)
b. Write brief notes on fresh water algae
12. a. Write notes on reproduction of *Oscillatoria*
(or)
b. with suitable diagram explain the structure of *Caulerpa* rhizome
13. a. Write notes on male conceptacle of *Sargassum*
(or)
b. Give the outlines on life cycle of *Navicula*

14. a. Write the economic importance of Bryophytes

(or)

b. Write about thallus structure of *Riccia*

15. a. Give details on gametophyte structure of *Porella*

(or)

b. Write about *Polysiphonia* stem structure with neat diagram

Part C

3X10=30

Answer any three questions

Each answer should not exceed 1000 words

Draw diagram wherever necessary

16. Write the economic importance of algae

17. Write about life cycle of *Ulva*

18. Give details on life cycle of *Polysiphonia*

19. Write the general characteristics and classification of Bryophytes

20. Write about the life cycle of *Anthoceros*

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

VALUE BASED EDUCATION (17UVABE)

UNIT I: Concept of Human values, Value Education towards Personal Development

Aim of education and value education; Evolution of Value oriented education; Concept of Human values; types of values; Components of value education

Personal development :

Self analysis and introspection; sensitization towards gender equality, physically challenged, intellectually challenged. Respect to age, experience, maturity, family members, neighbors, co- workers.

Character formation towards Positive Personality:

Truthfulness, Constructivity, Sacrifice, Sincerity, Self Control, Altruism, Tolerance, Scientific Vision

UNIT II: Value Education towards National and Global development

National and International Values:

Constitutional or national values – Democracy, socialism, secularism, equality, justice, liberty, freedom and fraternity.

Social Values – Pity and probity, self control, universal brotherhood.

Professional values – Knowledge thirst, sincerity in profession, regularity, punctuality and faith.

UNIT III:

Religious values – Tolerance, wisdom, character

Aesthetic values – Love and appreciation of literature and fine arts and respect for the same.

National Integration and International understanding.

UNIT IV : Impact of Global Development of Ethics and Values

Conflict of cross – cultural influences, mass media, cross- border education, materialistic values, professional challenges and compromise.

Modern challenges of Adolescent Emotions and behavior, Sex and Spirituality: Comparison and Competition: positive and negative thoughts.

Adolescent Emotions, arrogance, anger, sexual instability, selfishness, defiance.

UNIT V: Therapeutic Measures

Control of the mind through

- a. Simplified physical exercise
- b. Meditation – objectives, types, effect on body, mind and soul
- c. Yoga- Objectives, Types , Asanas
- d. Activities:
 - i) Moralization of desires
 - ii) Neutralization of Anger
 - iii) Eradication of Worries
 - iv) Benefits of Blessings

QUESTION PAPER PATTERN

Semester examination question paper should carry 75 marks.

Part A – Answer all the question (10X2=20)

Part B – Answer all the questions (in built choice) (5X5=25)

Part C – Essay type – Answer any 3 questions out of 5 (3X10=30)

Internal assessment marks = 25

REFERENCE:

1. Value Education for Health, Happiness and Harmony, The World Community Service Centre Vethari Publication Rs 35/- (for All Units)
2. Philosophy of Universal Magnetism (Bio-magnetism, Universal Magnetism) The World Community Service Centre Vethari Publication (for Unit IV)
3. Thirukkural with English Translation of Rev. Dr. G. U Pope, Uma Publication, 156, Serfoji Nagar, Medical College Road, Thanjavur – 613004 (for All Units)

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

MAJOR PAPER-II – 17UBY02

PLANT DIVERSITY-II

FUNGI, BACTERIA, VIRUSES AND LICHENS

Objectives

1. To understand the salient features of Fungi, Bacteria, Viruses and Lichens.
2. To study the structure and reproduction of various genera mentioned in the syllabus.

FUNGI

Unit I

A study of the general characteristics and mode of nutrition and life of the main classes of fungi. Classification of fungi (C.J.Alexopoulos, 1962). Economic importance of Fungi.

Unit – II

A study of the occurrence, structure, reproduction, life cycle and significance of the following genera:

Albugo, Saccharomyces, Aspergillus, Neurospora and Peziza.

Unit – III

A study of the occurrence, structure, reproduction and life cycle of the following genera: **Puccinia, Polyporus and Cercaspora. An account on VAM.**

LICHENS, VIRUSES

Unit – IV

Lichens: General characteristics, occurrence, classification, structure, reproduction and economic importance.

Viruses: General characters of plant Viruses, General account of Bacteriophages, Cyanophages and Mycophages. Reproduction of T₄- Phage.

BACTERIA

Unit – V

Bacteria – classification (Bergey's 74), Morphology, Structure, Growth, Physiological characteristics Nutrition, Photosynthetic and Chemosynthetic Bacteria. Reproduction in bacteria. Economic importance of bacteria.

PRACTICALS

1. A detailed of the examples cited in the theory part.
2. A general study of various types of Lichens.
3. To make suitable micro preparation of the types prescribed in Fungi and Lichens.
4. To observe and identify microscopic specimens and write illustrated and explanatory notes on them.

TEXT BOOKS

1. Alexopoulos, C.J. (1962) introductory Mycology. John Wiley.
2. Vashista, B.R. (1969) Botany for degree students. Part II. Fungi. S.Chand and Co.
3. Srivastava, J.P. (1970) an introduction of Fungi, Central Book Depot, Allahabad.
4. Dube, H.C. (1978) A Text Book of Fungi, Bacteria and Viruses, Vikas Publishing House (P) Ltd.
5. Purohit, S.S. (1986) Visues, Bacteria and Mycoplasma. Agro Botanical Publishers, Bicaner, India.
6. Sharma, O.P. (1992) Text Book of Fungi. Tata McGraw Hill Publishing Co., New Delhi.

REFERENCE BOOKS

1. Sistrom, W.R. (1962) Microbial life. Holt, Rinchart Winson.
2. Mistra, A and Agarwal, R.P. (1970) Lichens, A Preliminary Text, Oxford & IBH Publishing Co.
3. Webster, J. (1970) Introduction to Fungi. Cambridge University Press.
4. Ainsworth, G.C and Alfred, S. (1973) The Fungi (An Advanced Treatise) Academic Press, New York.
5. Biswas, S.B. and Biswas, A. (1976) An Introduction to Viruses. Vikas Publishing Houses Pvt. Ltd.
6. Pelczar, J., Chan, Ecs, and Kriez, R. (1998) Microbiology. Tata McGraw Hill, New Delhi.

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B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

PLANT DIVERSITY-II-17UBY02

FUNGI, BACTERIA, VIRUSES AND LICHENS

Time: 3 hrs

Max. Marks: 75

Part – A

10x2=20

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 100 words

1. Mushroom.
2. Ascomycetes.
3. Conidia.
4. Budding.
5. Basidiocarp.
6. White rust.
7. Litmus paper.
8. T-Phage
9. Sulphur bacteria.
10. *Rhizobium*.

Part- B

5x5=25

Answer all questions

All question carry equal marks

Each answer should not exceed 300 words.

11. a) Give an account of the useful aspects of fungi.
(or)
b) Give an account of the classification of fungi proposed by Alexopoulos.
12. a) Describe the structure and asexual reproduction in *Albugo*.
(or)
b) Describe structure and reproduction in *Peziza*.
13. a) Give an account the structure and life cycle of *Fusarium*.
(or)
b) Write about the structure and fruit body of *Polyporus*.
14. a) Mention about reproduction in Lichens.
(or)
b) Write about Mycoplasma.

15. a) Write about nutrition in bacteria.
(or)
b) Mention about plant diseases caused by bacteria.

Part- C

3x10=30

Answer all three questions
All question carry equal marks
Each answer should not exceed 1000 words

16. Give an account of variation in structure and mode of life in Ascomycetes.
17. Write an essay on the structure and reproduction in *Saccharomyces*.
18. Give an account of on the life cycle of a heteroecious fungus you have studied.
19. Enumerate the classification, types, morphology and uses of lichens.
20. Give an account of the economic importance of bacteria.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

(Major Practical Papers – Model for I Year)

CORE – MAJOR PRACTICAL -1- 17UBYP1

(For Theory Papers I&, II)

Time: 3 hrs

Max: 60 Marks

Practical: 50 Marks

Record : 10 Marks

1. Cut transverse section of A, B and C. Stain and mount in glycerin. Identify giving reason. Draw diagrams. Leave the slides for valuation. (21)
2. Draw diagrams and write notes of interest on D, E, F and G. (16)
3. Name the genus, group and morphology of given part of H, I and J. (9)
(Diagrams not necessary)
4. Identify and write notes on economic importance of K and L (4)

KEY

A, B, C - Sectioning of materials from Algae, Fungi and Bryophyta.

D, E, F, G - Spotters / Permanent Microslides

H, I, J - Macroscopic specimens

K and L - Economic importance

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

ENVIRONMENTAL STUDIES (17UENST)

Part – IV

Unit – 1 Natural resources

Definition, scope, importance and public awareness.

Forest resources: Deforestation, mining, dams and their effects on forest.

Water resources: Utilization of surface and ground water, floods, benefit and problems.

Mineral resources: Environmental effects of extracting and using mineral resources.

Unit – 2 Eco systems

Concept, structure and functions of ecosystem

Producers, consumers and decomposers.

Energy flow in ecosystem.

Ecological succession.

Food chain, food webs and ecological pyramids.

Outline of important ecosystem.

Unit – 3 Biodiversity and Pollution

Threats of biodiversity: Habitat loss poaching of wildlife, man wild life conflicts.

Endangered and endemic species of India.

Environmental pollution: Causes, effects and control measures. Role of an individual in the prevention of pollution of air, water and soil.

Solid waste management: causes, effects and control measures of urban and industrial wastes.

Disaster management: Floods, earthquake, cyclone and landslides.

Unit – 4 Social issues and the environment

From unsustainable to sustainable development.

Environmental Ethics: Issues and problem – solutions.

Climate change global warming, acid rain, ozone layer depletion.

Unit – 5 Population issues and Legislation

An outline of Environmental Pollution Act.

Population explosion and problems.

Environment and human health.

Reference Books:

1. Miller T.G., Jr. Environmental Science, Wadsworth Publishing Co, (TB).
2. A Text book of Environmental studies – P. Arul – Environmental Agency Chennai - 42
3. Environmental Science- P.D. Sharma.
4. Arunachalam, N. et al (2000). Environmental Science and Engineering, Charulatha Publications, Chennai
5. Kumaraswamy , K. et al (2000). Environmental studies, Bharathidasan University, Trichy – 24.
6. Editorial Board, Periyar EVR college professors, Environmental studies, Trichy – 23.

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B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

MAJOR PAPER-III-17UBY03

ANATOMY AND EMBRYOLOGY OF ANGIOSPERMS

Objectives

1. To impart knowledge about the plant tissues, distribution and internal structures.
2. To study the basic principles of reproduction and development of embryo.

ANATOMY

UNIT-I

Meristems: Classification, distribution, structure function - Theories: Tunica-Corpus and Quiescent centre- Simple permanent tissues: Parenchyma, Collenchyma, Sclerenchyma (fibres and sclereids)- Transfer cells.

UNIT-II

Complex tissues: Xylem- tracheids, vessels, xylem fibres and xylem parenchyma. Secondary xylem, Annual rings, Heart wood and sap wood - Phloem: Sieve elements, companion cells, phloem fibres and phloem parenchyma. Secondary phloem: Laticifers – Structure of dicot and Monocot leaf - Stomatal types: Ranunculaceous, Cruciferous, Caryophyllaceous, Rubiaceae and Gramineae.

UNIT-III

Primary and secondary structure of dicot stem – Anomalous secondary growth in dicot and monocot stems of *Bignonia*, *Boerhaavia*, *Nyctanthes* and *Dracaena*- Primary and Secondary structure of Dicot Root – Primary structure of Monocot stem and root –Nodal Anatomy (Uni, Tri and Multilacunar nodes).

EMBRYOLOGY

UNIT –IV

Structure and development of anther. Development of male gametophyte. Ultra structure of pollen grain. Types of ovules. Development of female gametophyte: Monosporic (*Polygonum*), Bisporic (*Allium*) and Tetrasporic (*Peperomia*).

UNIT –V

A brief account on pollination, fertilization and double fertilization- Endosperm: Nuclear, Cellular, Helobial and Ruminant. Endosperm haustoria - Development of Embryo in Dicot (*Capsella bursa-pastoris*) –Polyembryony, Apomixis and Embryo Culture.

PRACTICALS

1. Study of simple and complex tissues by using permanent slides.
2. Study of primary structure and sectioning of Dicot stem, Dicot root, Monocot stem and Monocot root.
3. Normal secondary thickening in Dicot stem and root.
4. Anomalous secondary structure –*Bignonia Boerhaavia, Nyctanthes* (Permanent slides)
5. T.S. of Anther at various stages of development.
6. Types of ovules (Permanent slides).
7. Stages in Microporogenesis and megasporogenesis.
8. Male gametophyte and female gametophyte (Permanent slides).
9. Embryo mounting (*Tridax*).

TEXT BOOKS

1. Pandey, B.P. (1978) Plant Anatomy, S.Chand and Co., New Delhi.
2. Vashista, P.C. (1968). A Text book of Plant Anatomy.
3. John Jothi Prakash, E. (1987). A Text book of Plant Anatomy.
4. Bhojwani, S.S and Bhatnagar, S.P. The Embryology of Angiosperms, Vikas Publishing House Pvt. Ltd., New Delhi.
5. Dwivedi, J.N, 1988. Embryology of Angiosperms. Rastogi and Co. Meerut.

REFERENCE

1. Fahn, A. (1982). Plant Anatomy (3rd Edition). Pergoman Press, Oxford.
2. Mauselth, J.D. (1988). Plant Anatomy. The Benjamin Cummings Publication Co. Inc., Mehlo Part, California, USA.
3. Esau, K. (1960). Plant Anatomy. Wiley Eastern Private Ltd., New Delhi.
4. Maheswari, P. 1971. An introduction to the embryology of Angiosperms. Tata McGraw Hill Publishing Co., Ltd., New Delhi.
5. Swamy, B.G.L. and Krishnamurthy, K.V. From Flower to Fruit. Tata McGraw Hill Publishing Co. Ltd., New Delhi.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

MAJOR PAPER –III-17UBY03

ANATOMY AND EMBRYOLOGY OF ANGIOSPERMS

Time : 3 hrs

Max: 75 marks

PART –A: (10X2=20)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 100 words.

1. Parenchyma.
2. Meristems.
3. Annual rings.
4. Sieve elements.
5. Collateral vascular bundle.
6. Vessels.
7. Tapetum.
8. Anatropous ovule.
9. Triple fusion.
10. Suspensor.

PART – B: 5X5=25

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 200 words.

11. a) Write about classification of Meristems.
(or)
b) Explain Fibres.
12. a) Give an account on Heart wood and Sap wood.
(or)
b) Write about Phloem Tissue.
13. a) Bring out the primary structure of stem.
(or)
b) Describe the internal structure of Dicot Leaf.
14. a) Explain Stomatal types.
(or)
b) Describe the nucellus tissue.

15. a) Write about Endosperm Haustoria.
(or)
b) Explain Dicot Embryo.

PART –C (3X10=30)

Answer Any three questions
All question carry equal marks
(One question from each unit with internal choice)
Each answer should not exceed 1000 words.

16. Give an account on Tunica Corpus and Quiescent centre theories.
17. Write about Xylem.
18. Write an essay on nodal anatomy.
19. Explain the structure and development of male gametophyte.
20. Write about endosperm.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

NON-MAJOR ELECTIVE COURSE –I- 17UNME1

MUSHROOM CULTIVATION

Objectives

1. To facilitate self – employment.
2. To impart knowledge about the cultivation of mushroom.
3. To understand the nutritional and medicinal value of mushroom.

Unit – I

Biodiversity of Mushroom – History and scope – factors affecting mushroom cultivation – Importance of mushroom cultivation – Morphology of edible mushroom – production of spawn.

Unit – II

Cultivation – White button mushroom – Oyster mushroom and Milky mushroom – Giant mushroom – Black ear mushroom.

Unit – III

Cultivation – Paddy straw mushroom – Silver ear mushroom and Winter mushroom – species of edible and non-edible mushroom.

Unit – IV

Management of disease – pests and weed and fungal attack – production of vermicompost from spent mushroom bed – post harvest technology storage methods – food production.

Unit – V

Nutritive and medicinal value of mushroom – uses of mushroom – advantages of mushroom – marketing – cost-benefit analysis.

TEXT BOOK

1. Panneerselvan *et al.*, 2005. Hand book on edible Mushroom cultivation. KR Printers.
2. Panneerselvam *et al.*, 2016. Edible mushroom cultivation Technology KR Printers.
3. Kumaresan 2009. Text book of Biotechnology Saras Publication.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

NON-MAJOR ELECTIVE COURSE -I- 17UNME1

MUSHROOM CULTIVATION

Time : 3 hrs

Maximum: 75 marks

PART - A: (10x2=20)

Answer all the questions.

All questions carry equal marks

Draw diagrams wherever necessary

Each answer should not exceed 50 words

1. Fruit body of mushroom
2. Spawn
3. Sterilization
4. Substratum
5. Poisonous mushroom
6. *Pleurotus sajor - caju*
7. Vermicompost
8. Long time storage
9. Vegetable Meat
10. Medicinal values of mushrooms.

PART - B: (5x5=25)

Answer all the questions.

All questions carry equal marks

Draw diagrams wherever necessary

Each answer should not exceed 300 words

11. a) Briefly explain the history of mushrooms.
(or)
b) Write short notes on the importance of mushrooms cultivation.
12. a) Write the methodology of Spawn preparation.
(or)
b) Briefly explain the bed preparation for mushroom cultivation.

13. a) Write the flow chart of paddy straw mushroom cultivation.

(or)

b) Briefly explain the characters of edible mushrooms.

14. a) Give a flow chart for production of vermicompost from spent mushroom bed.

(or)

b) Briefly explain any two food products prepared from mushrooms.

15. a) List out the advantages of mushrooms.

(or)

b) Briefly explain the status of mushroom in marketing.

PART - C: (3x10=30)

Answer any three questions.

All questions carry equal marks

Each answer should not exceed 1000 words

16. Write an essay on Biodiversity of mushrooms.

17. Enumerate the methodology of Oyster mushroom cultivation.

18. Describe the method of paddy straw mushroom cultivation.

19. Give an account on disease management during mushroom cultivation.

20. Write an essay on nutritive and medicinal values of mushrooms.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

SKILL BASED ELECTIVE COURSE –I- 17UBYS1

MUSHROOM CULTURE TECHNOLOGY

Objectives

1. To impart knowledge about the nutritional values of mushrooms and their cultivation.
2. To facilitate self-employment.

Unit I:

Introduction- History of mushroom cultivation- classification, internal and external structure of mushroom. Types of mushroom-edible and poisonous, identification of poisonous mushroom.

Unit II:

Pure culture-Preparation of growth medium (PDA and OAT MEAL AGAR),sterilization-Preparation of test tube slant to store mother culture-Culturing of Pleurotus mycelium on petri plates, Preparation of mother spawn in saline bottle and polypropylene bag and their multiplication.

Unit III:

Infrastructure: Substrates (locally available) Polythene bags, vessels, Inoculation hood, inoculation loop, low cost stove, sieves, culture rack, mushroom unit (thatched house), water sprayer, tray, small polythene bag, Mushroom bed preparation, Paddy straw, sugarcane trash. Factors affecting mushroom bed preparation-low cost technology.

Unit IV:

Short term storage (Refrigeration-upto 24 hrs)Long term storage (Canning, Pickles, pappads), drying ,storage in salt Solution, Nutritive value-Protein, amino acid, carbohydrate, crude fibre content, vitamins- Medicinal values of mushroom.

Unit V:

Types of food prepared from mushroom: Soup, Cutlet, omelette, Samosa, Pickles, Curry,Value added products of mushroom-Mushroom soup powder, mushroom biscuit, mushroom nuggets, mushroom ketchup, Candy, Murabha, Chips,Research centres-National level and Regional level. Cost benefit ratio-marketing in India and abroad. Export value

Text Books:

1. Bahl,N.,(2009) Handbook on mushrooms, 4th edition, oxford and IBH publishing Co. Pvt. Ltd, New Delhi,.
2. Manjit Singh, Bhuvneshvijay, Shwet Kamal, GC Watchaure (Eds.) (2011). Mushrooms- cultivation, marketing and consumption. Directorate of Mushroom research, ICAR, Chambaghat, Solan, HP-173213

Reference books:

1. Marimuthu,T. Krishnamoorthy, AS. Sivaprakasam,K and Jayarajan R (1991).Oyster Mushrooms. Department of Plant Pathology, TNAU, Coimbatore.
2. Kapoor, J.N.,(1989) Mushroom Cultivation, ICAR Publication, KrishiAnusandhan, Pusa, New Delhi

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(For the candidates admitted from 2017-2018 onwards)

SKILL BASED ELECTIVE COURSE –I- 17UBYS1

MUSHROOM CULTURE TECHNOLOGY

Time: 3 hrs

Max: 75 marks

PART –A: (10X2=20)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 50 words.

1. Mushroom cultivation
2. Mushroom.
3. Sterilization
4. pure culture
5. Inoculation loop.
6. Define Low cost technology.
7. Vitamins
8. Short term storage
9. Pickles.
10. Export value.

PART – B: 5X5=25

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 300 words.

11. a) Briefly explain history of Mushroom.
(or)
b) Give an account on *Pleurotus citrinopileatus*.
12. a) Write about preparation of PDA medium.
(or)
b) Explain preparation of mother spawn in Saline bottle.

13. a) Write short notes on
- i. Culture rack.
 - ii. Inoculation hook.
- (or)
- b) Give an account on Mushroom bed preparation.
14. a) Write short notes on.
- i. Proteins.
 - ii. Carbohydrates.
- (or)
- b) Describe about long term storage.
15. a) Write about Samosa.
- (or)
- b) Give an account on National Research Centres.

PART –C (3X10=30)

Answer Any three questions

All question carry equal marks

Each answer should not exceed 1000 words.

16. Write an essay on types of edible Mushrooms available in India.
17. Describe detailed account on preparation of test tube slants to store mother culture.
18. Write short notes on
- i. Paddy straw.
 - ii. Maize straw.
19. Write an essay on amino acids and mineral elements nutrition.
20. Write an essay on cost benefit ratio marketing in India.

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B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

MAJOR PAPER - IV -17UBY04

PLANT DIVERSITY III

(PTERIDOPHYTES, GYMNOSPERMS AND PALAEOBOTANY)

Objectives

To expose the diversity of plant kingdom and to understand the importance of early life forms of fossil plants in tracing evolution.

Unit I: General characteristics of Pteridophytes- Classification of Pteridophytes by Reimers (1954); Stellar types and evolution in Pteridophytes- Heterospory and origin of seed habit. Economic importance of Pteridophytes.

Unit II: Pteridophytes as Ecological indicators. Morphology, Anatomy, Structure and Reproduction of the following genera: *Lycopodium* and *Selaginella*

Unit III Morphology, Anatomy, structure, Reproduction and life-history of *Equisetum*, *Marsilea* and *Adiantum*

Unit IV General characteristics and classification of Gymnosperms by Pliger and Melchior (1954); Economic importance of Gymnosperms- Morphology, Anatomy, structure, reproduction of the following genera: *Cycas*, *Pinus* and *Gnetum* (Morphology and anatomical structures only)

Unit V Palaeobotany– Contributions by Prof. Birbal Sahni, Fossils and Types of fossilization – Geological time–scale –A brief study of the following fossil forms:-*Rhynia*, *Lepidodendron* and *Williamsonia*.

Practicals

Study of Morphology, Anatomy and structure of the spore bearing parts and gametophytes of the genera listed in the theory. Fossil slides listed in the theory

Text Books

1. Vashista, P.C. (1972). Botany for Degree Students. Vol. IV- Vascular Cryptogams (Pteridophyta) S. Chand and Co., Pvt Ltd., New Delhi.
2. Vashista, P.C. (1972). Gymnosperms. S. Chand and Co., Pvt Ltd., New Delhi.
3. Venkateswaralu, V. and Narashimhamurthy CVL. Text book of Pteridophyta. Maruti Book Depot, Hyderabad.
4. Pandey, B.P. 1977. A Text Book of Bryophyta, Pteridophyta and Gymnosperms. K. Nath and Co., Meerut.
5. Parihar, N.S. 1977. An Introduction to Embryology Vol. II., Pteridophyta and Gymnosperms. K. Nath and Co. Meerut.
6. Shukla, A.C. and Misra, S.P. (1975). Essentials of Paleobotany. Vikas Publishing House (P) Ltd., New Delhi.
7. Vidyarthi R.D. and Tripathi S.C. (2002). A Text book of Botany. S Chand & Co Ltd., New Delhi.
8. Singh V. Pande P.C. and Jain D.K. (2014). A Text book of Botany. Rastogi publications. Meerut.

Reference Books

1. Smith, G.M. (1955). *Cryptogamic Botany Vol. II Bryophytes and Pteridophytes* (2nd Edn.). Tata McGraw-Hill Publishing Co., New Delhi.
2. Earnes, A.J. 1936. *Morphology of Lower Vascular Plants*. Tata McGraw Hill Publishing Co., Ltd., New Delhi.
3. Arnolds, C.A. 1947. *An Introduction to Paleobotany*, McGraw Hill Book Co., New York.
4. Sporne, K.R. 1977. *The Morphology of Gymnosperms*, B.I. Publications, Mumbai.
5. Skula, A.C. and Sharma M. 1992. Plant fossils. A link with the past, BirbalShani Institute Paleobotany, Lucknow, India.

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B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

MAJOR PAPER –IV-17UBY04

PLANT DIVERSITY III

(PTERIDOPHYTES, GYMNOSPERMS AND PALAEO BOTANY)

Time: 3 Hrs

Max. Marks: 75

Part A (10x2=20)

Answer All the questions

Draw diagrams wherever necessary

Each answer should not exceed 100 Words

1. Eusporangiate development
2. Heterospory
3. Ecological indicators
4. Microphyll
5. Ligule
6. Peltate disc
7. Pycnoxylic wood
8. Corolloid root
9. Paleobotany
10. Petrification fossils

Part B (5x5=25)

Answer All the questions

Draw diagrams wherever necessary

Each answer should not exceed 300 Words

- 11a. Describe the distinguishing features of Pteridophytes. (OR)
- b. Give an account on economic importance of Pteridophytes.
- 12a. Write short notes on Actinostele of Lycopodium.(OR)
- b. Explain the external morphology of Selaginella.
- 13a. Bring out the anatomical features of Equisetum stem. (OR)
- b. Briefly discuss on Adiantum sorus.
- 14a. With a neat sketch explain the salient characters of Cycas leaflet. (OR)
- b. Explain the economic importance of Gymnosperms with suitable examples.
- 15a. What do you mean by the process of fossilization? Explain its types. (OR)
- b. Write short notes on Williamsonia.

Part C (3x10=30)

Answer Any THREE questions

Draw diagrams wherever necessary

Each answer should not exceed 1000 Words

16. Write an essay on types of stele in Pteridophytes.
17. Write short notes on ligule, Rhizophore and strobilus of Selaginella
18. Discuss about the spore bearing structures of Equisetum.
19. Give an illustrated account of the morphological and reproductive structure of Pinus.
20. Explain in detail about the contributions of Prof. Birbal Sahni and Geological Time Scale.

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(For the candidates admitted from 2017-2018 onwards)

(Major Practical Papers – Model for II Year)

Core- Major Practical – II 17UBYP2

(For Theory Papers II, III)

Time: 3 hrs

Max: 75 marks

Practical: 50 Marks

Record: 10 Marks

1. Cut transverse sections of A, B and C. Stain and mount in glycerin. Identify giving reasons. Draw diagrams. Leave the slides for valuation. (24)
2. Make a suitable micro preparation of D. Identify giving reasons. Draw diagrams. Leave the slides for valuation. (6)
3. Dissect and mount any one of the stages of the given material E. (Diagram and note not necessary). (4)
4. Name the genus, group and morphology of given part of F and G. (6)
5. Write notes on H, I, J, K and L (10)

KEY

A. Angiosperm – Anatomy –Vegetative part.

B. Pteridophyte – Anatomy –Vegetative part.

C. Gymnosperm – Anatomy –Vegetative part.

D. Reproductive Part- Pteridophyte (or) Gymnosperm.

E. Embryo – dicot –*Tridax*

F & G. Macroscopic – Pteridophyte (or) Gymnosperm. H, I, J, K and L Permanent slides (Anatomy, Embryology, Pteridophytes, Gymnosperms, Fossil slides)

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(For the candidates admitted from 2017-2018 onwards)

NON-MAJOR ELECTIVE COURSE –II- 17UNME2

ORGANIC FARMING

Objectives: To learn the basics of organic farming practices – to know the methods and application of various organic farming systems.

UNIT – I

Organic farming – Concept of organic farming – Need of organic farming – Chemical fertilizers and pesticides and their disadvantages – Organic Agriculture in India – Principles of organic farming – Conversion of soil to organic – Status of rich and live organic soil – Advantages of organic farming – Organic products certification – Marketing of organic products – Future prospects of organic farming.

UNIT – II

Green manure – plants used as green manure – benefits to crops – Application methods – Farm yard manure (FYM) – nutrients and uses; Composting methods – Raw materials for composting – Different methods of composting: Pit method and heap method – Factors affecting composting process – Nutrient status of composts and application – Enriched compost – Recycling of organic wastes for soil enrichment – Advantages and disadvantages of composts.

UNIT – III

Vermicomposting and vermiculture – Scope and objectives – Types of earthworms suitable for vermicomposting – Raw materials for vermicomposting – Method of vermicomposting – Pit, tank and heap method – Preparation and maintenance of vermicompost beds – Nutrient status of vermicompost – Application of vermicompost to different crop plants – Advantages and disadvantages.

UNIT – IV

Biofertilizers – Types of microbial biofertilizers – outline and application of the following microbial biofertilizers – *Rhizobium*, *Azotobacter*, *Azospirillum*, Mycorrhiza, Blue Green Algae (BGA) – *Azolla-Anabaena* symbiosis – Phosphate solubilizing microbes – Microbial consortia for crop plants.

UNIT – V

Integrated pest management (IPM) – Concepts and benefits – Crop rotation – Biological control of insects and pests – Conservation and classical biological control – Agents of

biological control; Biopesticides – Bacterial, fungal and viral agents – Advantages and disadvantages – Biological control of weeds – Panchakaavya – preparation and application.

TEXT BOOKS

1. Natarajan, S., Devasenapathy, P., Kalpana, R., Sudhalakshmi, C., 2007. Organic Farming: An overview. Centre for Soil and Crop Management Studies, Tamil Nadu Agricultural University, Coimbatore.
2. Nair, M. R. G. K. 1986. Insects and Mites of Crops in India. Indian Council of Agricultural Research, New Delhi.
3. Joshi, M., Setty, T.K.P. and Prabhakarasetty (2006). Sustainability through Organic farming. 1st Edition. Kalyani Publishers, Ludhiana, India.
4. Atwal, A. S. 1991. Agricultural Pests of India and South – East Asia. Kalyani Publishers, New Delhi.

REFERENCES

1. Kristensen, P., Taji, A. and Reganold, J. (2006). Organic Agriculture: A Global Perspective. CSIRO Press, Victoria, Australia.
2. Altieri, M. (1990). Agroecology: The Science of Sustainable Agriculture. Westview Press, Boulder, CO.
3. Bavec, F. and Bavec, M. (2007). Organic Production and Use of Alternative Crops. CRC Press, Boca Raton, FL.
4. David, B. V. 2001. Elements of Economic Entomology. Popular Book Depot, Madras.
5. Ghosh, S. K. Durbey, S. L. 2003. Integrated Management of Stored Grain Pests. International Book Distributing Company.
6. Nair, M. R. G. K. 1986. Insects and Mites of Crops in India. Indian Council of Agricultural Research, New Delhi.
7. Pradhan, S. 1983. Agricultural Entomology and Pest Control. Indian Council of Agricultural Research, New Delhi.
8. Rao, P. A., Mathur, K. C and Pasalu. L. C. 1987. Rice Storage and Insect Pest Management. B.R publishers. New Delhi.
9. Lampkin Nicolas. 1990. Organic Farming. The University of Wisconsin – Madison. Farming Press.
10. Altieri Miguel. 1987. Agroecology: The Scientific Basis of Alternative Agriculture. Westview Press. Boulder, CO.
11. Soule, Judith D. and Piper, Jon K. 1992. Farming in Nature's Image: An Ecological Approach to Agriculture. Island Press, Washington, D. C.

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B.Sc., BOTANY

Choice Based Credit System

(For the candidates admitted from 2017-2018 onwards)

NON-MAJOR ELECTIVE COURSE –II- 17UNME2

ORGANIC FARMING

Time: 3 hrs

Max: 75 marks

PART –A (10X2=20)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 50 words.

1. Organic matter.
2. Soil fertility.
3. Name any two plants used as green manure.
4. Farm Yard Manure (FYM).
5. Vermiculture.
6. Nutrient status of vermicompost.
7. Blue Green Algae (BGA).
8. *Azolla*.
9. Biopesticides.
10. Crop rotation

PART – B: (5X5=25)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 300 words.

11. a) Give an account on concept of organic farming.
(or)
b) Briefly explain organic products certification.
12. a) What is green manure? How is it used in agriculture?
(or)
b) What are the advantages of using composts?

13. a) Explain the nutrient status and application of vermicompost to different crops.
(or)
b) Write an account on different species of earthworms used in vermicomposting.
14. a) Give an account on mycorrhiza.
(or)
b) Write short notes on phosphate solubilizing microorganisms.
15. a) Discuss the benefits of crop rotation in sub-tropical climate.
(or)
b) What is panchakaavya? How is it used in agriculture?

PART –C (3X10=30)

Answer any three questions
All question carry equal marks
Each answer should not exceed 1000 words.

16. Write an essay on ‘chemical fertilizers’ vs ‘organic farming’.
17. Discuss about different methods of compost production.
18. What are the raw materials required for vermicompost production? Give a detailed account on the method of vermicompost production.
19. How will you isolate *Rhizobium* from root nodules? Explain its mass cultivation in detail.
20. Explain biopesticides. Give an outline of the various microbes, which are used as biopesticides.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018)

Under CBCS Pattern

SKILL BASED ELECTIVE COURSE –II- 17UBYS2

MICROTECHNIQUE

Objectives

To understand and impart knowledge on scientific slide making and to facilitate self employment.

Unit I: Microscopy- Principles and Parts, Types- Simple, Compound and Electron Microscopy, Fluorescent Microscopy Uses and Handling.

Unit II: Microtechnical Process: Fixation, staining, negative staining, Staining equipment.

Unit III: Special techniques: Smearing, Squashing, Maceration and Whole mounts

Unit IV:Sectioning, Microtome Types -Rocking, Rotary, Sledge Microtomes and their Uses

Unit V: Microscopic preparations: Temporary, Semi permanent and Permanent slides.

Imaging and photographic techniques of Tissues and Specimens.

Text Books

1. Sas. Joe E. 1964. Botanical Microtechnique Oxford and IBH.
2. Purvis M.J.et al 1966.Laboratory Techniques in Botany, Butter Worths, London.

Reference Books

1. Johanson D.A. 1940.Plant Microtechnique.Mac - Graw Hill, New Delhi.
2. Duggington C.L. 1960. Practical Microscopy Pitman, London.
3. Allen Peack H. 1966. Elementary Microtechnique, Edward Arnold Publisher Ltd.,
4. Pearse AGE. 1980. Histochemistry, Theoretical and Applied ChurchilLivington.
5. Grey P. 1964. Handbook of Basic microtechnique Mc. Graw Hill.
6. Mc. Clung, C.E. 1961.Handbook of Microscopical Technique, Hafner, New York.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018)

Under CBCS Pattern

SKILL BASED ELECTIVE COURSE –II- 17UBYS2

MICRO TECHNIQUE

Time: 3 Hrs

Max. Marks: 75

Part A (10x2=20)

Answer All the questions

Draw diagrams wherever necessary

Each answer should not exceed 100 Words

1. Parts of Microscope
2. Types of Electron Microscope
3. Fixatives
4. Coupling jar
5. Special techniques
6. Squashing
7. Microtome knife
8. Paraffin wax
9. Safranin
10. Photography

Part B (5x5=25)

Answer All the questions

Draw diagrams wherever necessary

Each answer should not exceed 300 Words

- 11a. Describe the working principle of compound microscope. (OR)
b. Discuss on safety handling of microscope.
- 12a. Write short notes on fixatives and its importance. (OR)
b. Briefly explain the types of stains.
- 13a. Bring out the steps involved in whole mounts. (OR)
b. What do you mean by smearing? Explain its process.
- 14a. Write short notes on types of knife used in microtome sectioning. (OR)
b. Comment on blocks used in sectioning.
- 15a. Discuss the things needed for making a good microscopic preparation? (OR)
b. Write the importance of photographic techniques in biology.

Part C (3x10=30)

Answer Any THREE questions

Draw diagrams wherever necessary

Each answer should not exceed 1000 Words

16. Write an essay on fluorescent microscope with its uses.
17. Describe the various phases involved in double staining process.
18. Discuss about the special technique involved in onion root observation.
19. Describe the different types of microtome used in sectioning process.
20. Explain in detail on process involved in permanent slide making.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

MAJOR PAPER –V- 17UBY05

MORPHOLOGY AND TAXONOMY

Objectives

1. To observe the variations among plants, especially angiosperms.
2. To understand the way of description of a plant.
3. To study the floral characters with an aim to identify the taxa authentically.
4. To understand the economical values of the plants

UNIT I

Parts of a plant. Root types and modifications. Stem –types- aerial and underground.

Stem modifications. Leaf Morphology – Types, Venation, Phyllotaxy

UNIT II

Inflorescence: Racemose types - Cymose types - Special types.

Morphology of flower- floral parts - their arrangement, relative position, symmetry, aestivation and placentation types- Floral diagram and Floral formula.

Fruits: Types and classification

UNIT III

Aim, Scope and Significance of taxonomy, Systems of Classification- Artificial (Linnaeus), Natural system (Bentham and Hooker) and Phylogenetic (Engler and Prantl), Modern system of classification (Cronquist). Only outline of Classification with merits and Demerits.

Plant nomenclature- Binomial, ICBN - Principles- author citation. Herbarium technique- Preparation of herbarium, their preservation. Important ; herbaria, Flora and uses.

UNIT IV

Detailed study of families: Study the following families of Bentham and Hooker's System with special reference to their morphological and floral characters. Special attention should be given to common and economically important plants within the families, Annonaceae, Capparidaceae , Rutaceae, Leguminosae (Mimosaceae, Caesalpinaceae and Fabaceae), Myrtaceae, Cucurbitaceae and Apiaceae,

UNIT V

Detailed study of families: Study the following families of Bentham and Hooker's System with special reference to their morphological and floral characters. Special attention should be given to common and economically important plants within the families: Apocynaceae, Asclepiadaceae, Verbenaceae, Lamiaceae, Euphorbiaceae, Orchidaceae, Liliaceae, Poaceae.

PRACTICAL 3Hrs /Week

1. Describe the plant parts with suitable plants-habit, habitat form...types of leaves, and phyllotaxy. Study the Types and modification of root and stem with suitable example.
2. Identify the following inflorescence and fruits:
 - (a) Inflorescence - Simple raceme, Spike, Corymb, Head, Simple Cyme, Cyathium and Hypanthodium.
 - (b) Fruits - Simple: - (Fleshy) – Berry, Drupe, Pepo, Hesperidium. (Indehiscent) – Nut. Dry- Legume, Capsule (loculicidal) and Aggregate.
3. Floral formula from floral description.
4. Identify the families mentioned in the syllabus by noting their vegetative and floral characters.
5. Students must describe the floral parts, draw the L.S., floral diagram and write the floral formula of at least one flower from each family.
6. Study the products of plants mentioned in the syllabus of economic botany with Special reference to the morphology, botanical name and family.
7. Prepare **herbarium of 20 plants** with field notes (internal assessment).
8. Field Visit

Text Book

1. Lawrence, GHM. (1995). The Taxonomy of vascular Plants (Vol I-IV), Central Book, Dept., Allahabad
2. Heywood VH. (1967). Plant Taxonomy, Edward Arnold , London
3. Jeffery C. (1982). An introduction to Plant Taxonomy, J& A Churchill Ltd., London
4. Mathew, K.M. (1983). The Flora of Tamil Nadu Carnatic, The Rapinat Herbarium, Trichy
5. Sivaraajan ,V.V.(1989). Introduction to Principle of Plant Taxonomy, Oxford and IBH, New Delhi.
6. Pandey, B.P.(1997).Taxonomy of Angiosperms , S.Chand & Co., New Delhi.
7. Singh, V. & Jain, K.K. (1989). Taxonomy of Angiosperms – Rastogi, Meerut
8. Vashista, P.C. (1990). Taxonomy of Angiosperms – S.Chand & Co., New Delhi
- 9.Sharma, O.P. (1996). Plant Taxonomy. TATA McGraw Hill, New Delhi

Reference books

- 1) Hutchinson, J. (1973). The Families of Flowering plants, Oxford University press, London
- 2) Gamble,J.S , Fisher,L.E.F .(1967). The Flora of The presidency of Madras (Vol-III) BSI, Calcutta
- 3) Davis , P.H and Heywood ,V.M. (1965). Principles of Angiosperm Taxonomy, Oliver and Boyd Edinburgh
4. Simpson M.G.(2006). Plant systematics, Elsevier Academic Press,USA
5. Takhtajan, A.L. (1969). Flowering Plants – Origin and dispersal – Oliver & Boyd
6. Gangulee H.C ., Das ,K.S and Datta C.T (1964) college Botany –Vol I , basant Panchami ,Calcutta

7. Narayanaswamy R.V and Rao ,K.N (1976). Oultlines of Botany . S .Viswanthan printer and publisher, Chennai
- 8.Heywood V.H. 1967. Plant Taxonomy. London: Edward Arnold.
9. Hill A.F. 1982. Economic Botany.: Mc Graw Hill ,New York.
10. Jain S.K. and Rao R.R. 1976. A hand book of field and herbarium technique. Today and tomorrow's Publishers, New Delhi.
11. Jeffery C. (1968) An Introduction to Plant Taxonomy, J and A Churchill. London.
12. Naik V.N. (1984) Taxonomy of angiosperms. Tata Mc Graw- Hill Publishing Company, New Delhi.
- 13.Sambamurthy A..S.S. 2005;Taxonomy of Angiosperms, International Pvt. Ltd,New Delhi.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-636007
For candidates admitted from 2017-18 onwards under CBCS pattern
SEMESTER –V
CORE COURSE – V - MORPHOLOGY AND TAXONOMY –
COURSE CODE –17UBY05

Time: 3 hrs.

Max. Marks: 75

Part A - (10X2=20)

Answer all the questions

Each answer should not exceed 50 words

1. What is phyllotaxy.
2. Petiole
3. Herbarium
4. Nomenclature
5. Tendril of cucurbitaceae
6. Fruit of leguminosae
7. Pollinium
8. Head inflorescence
9. Binomial of any two pulses
10. Gynoecium of Apocyanaceae

Part- B (5X5=25)

Answer all the questions

Each answer should not exceed 300 words

Draw diagram wherever necessary

11. A. Give account of aerial roots
(or)
B. Write briefly notes on floral parts
12. A. Give the merits and demerit of Linnaeus.
(or)
B. Give account on importance of Taxonomy.
13. A. Write briefly on the floral characters of Annonaceae
(or)
B. Describe in floral character of the Fabaceae
14. A. Describe salient factors of Orchidaceae
(or)
B. Briefly explain floral character of Poaceae
15. A. General characters of Apiaceae
(or)
B. General characters of Myrtaceae

Part C – (3X10=30)

Answer any three questions

Each answer should not exceed 1000 words

Draw diagram wherever necessary

16. Write an essay on leaf modifications.
17. Out line the classification of Bentham and Hooker's.
18. Give the diagnostic characters of Caesalpinaceae.
19. Compare the characters of of Acantheseae and Asclepiadaceae
20. Economic importance of Fabaceae

GOVT. ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards Under CBCS Pattern)

MAJOR PAPER-VI- 17UBY06
BIOCHEMISTRY AND BIOPHYSICS

Objectives

1. To understand the structure and properties of the biomolecules
2. To know the reactions performed by the biological macromolecules
3. To understand the principles of thermodynamics

UNIT-I

A brief account of Solutions, Colloids - Enzymes - Nomenclature - Chemical nature, Properties - Classification - mode of action - factors affecting enzyme activity.

UNIT-II

Carbohydrates -classification and properties of monosaccharides, oligosaccharides and polysaccharides -structural analysis of starch and glucose -A brief account of carbohydrates present in plant cell wall -Biological significance of carbohydrates.

UNIT-III

Proteins -chemical structure -physical configuration -primary, secondary, tertiary and quaternary structure -properties of protein -determination of Amino acid sequence of protein - Biological significance.

UNIT-IV

Lipids -simple, compound and derived lipids -phospholipids -fat metabolism -Biological significance of lipids.

UNIT-V

Thermodynamic principles -First Law of Thermodynamic -isolated system, closed system and open system -Enthalpy -second Law of Thermodynamics -Entropy -Living systems and Entropy -Free energy -Living systems and equilibrium state.

PRACTICALS

1. Estimation of pH using pH meter and pH paper of suitable soil or water samples.
2. Identification different kinds of carbohydrates of different plant materials with suitable stains.
3. Using suitable stains identify the proteins of different kinds of plant materials.
4. Identification of different kinds of lipids with suitable stains of the given plant materials.

REFERENCES AND TEXT BOOKS

1. Appa, 1982 Plant Biochemistry. ELBS.
2. Arumugam, N. 1990. Elements of Biochemistry, Saras Publications.
3. Borner F.J. Plant Biochemistry, Academic Press, New York.
4. Conn and Stumpf, 2000. Outlines of Biochemistry. 5th edition. John Wiley & Sons, Singapore.
5. Goodwin & Mercer 1986 introduction to Plant Biochemistry. Pergamon Press.
6. Jain, J.J Fundamentals of Biochemistry, S.Chand & Co, New Delhi.
7. Srivastava, H.S. Elements of Biochemistry Rastigi Publications, Meerut.
8. Dr. S.Thiravia Raj, Biophysics Saras Publications.

GOVT. ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards Under CBCS Pattern)

B.Sc., Degree Examination

MAJOR PAPER-VI- 17UBY06

BIOCHEMISTRY AND BIOPHYSICS

Time : 3 hrs

Max: 75 marks

PART - A: (10x2=20)

Answer all the questions.

All questions carry equal marks

Draw diagrams wherever necessary

Each answer should not exceed 100 words

1. Colloids
2. Enzymes
3. Oligosaccharides
4. Esterification
5. Polypeptide chain
6. Hydrolysis of Proteins
7. Phospholipids.
8. Waxes.
9. Living system.
10. First Law of Thermodynamics

PART - B: (5x5=25)

Answer all the questions.

All questions carry equal marks

Draw diagrams wherever necessary

Each answer should not exceed 300 words

11. a) Give a brief account on solutions.
(or)
b) Discuss the chemical nature of enzymes
12. a) Give a brief account on monosaccharide
(or)
b) Explain the Biological importance of Polysaccharides.
13. a) Discuss the chemical nature of proteins.
(or)
b) Explain the Biological significance of proteins.

14. a) Write notes on simple lipids
(or)
b) Write briefly on phospholipids
15. a) With suitable example explain Enthalpy.
(or)
b) Write briefly on concept of free energy.

PART - C: (3x10=30)

Answer any three questions.

All questions carry equal marks

Each answer should not exceed 1000 words

16. Write an essay on factors affecting enzyme activity.
17. Write an account on physical and chemical properties of carbohydrates.
18. Discuss various steps in determination of amino acid sequence in protein.
19. Write about chemical nature of lipids.
20. Analyze the application of Law of thermodynamics to the living system.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

MAJOR PAPER –VII- 17UBY07

PLANT ECOLOGY AND PLANT GEOGRAPHY

Objectives

1. To learn the underlying principles of plant environment and Ecosystem
2. To study the various types of vegetations and its distribution

Plant Ecology

UNIT –I

Approaches to the study of ecology (Autecology and Synecology). Plant environment: climatic and edaphic factors.

UNIT –II

Ecosystem Concept: Components (Abiotic and Biotic), autotrophic producers and heterotrophic consumers. Ecological pyramids. Productivity: primary, secondary and gross, food chain, food web and energy flow. Pond ecosystem.

UNIT –III

Vegetation –Development of vegetation –migration, colonization. Plant succession: Hydrosere and Xerosere. Ecological classification of plants and their correlation to the habitat factors.

UNIT –IV

Applied Ecology: Pollution and its control, Atmospheric pollution: Air Pollution – Particulate matter, chemicals, acids rain.- Soil pollution: Industrial effluents, Agricultural pollution: plant residues, insecticides, pesticides, fungicides and herbicides.- Water pollution: domestic waste and sewage - noise pollution - radiation pollution

Phytogeography

UNIT –V

Approaches to phytogeography –vegetational types of Tamilnadu: Evergreen, deciduous, scrub and mangrove vegetation. Approaches to Biodiversity - conservation *in situ* and *ex situ* methods. Mega centers of Bio-diversity.

PRACTICALS

Study of the morphological and structural adaptation of locally available hydrophytes, Mesophytes, xerophytes, parasites and epiphytes to correlation to the particular habitat.

REFERENCE BOOKS

1. Ambash R.S.,1978. The book of Plant Ecology, Students friends Co.,.
2. Willings W.D.1964 Plants and Ecosystem, Wasworti Publishing Co.,.
3. Daubenmire R.F,1973 Plant and Environment. John willey.
4. Gopal, B and Bhardwaj, 1979 Elements of Ecology, Vikas Publishing House Pvt Ltd.
5. Kellman, CM, 1980 Plant Geography, Methuen.

TEXT BOOKS

1. Sharma, P.D 1990 Ecology and Environment, Rastogi Publications.
2. Shukla, R.S and Chande I.P.S Plant Ecology and Soil Science, S.Chand & Company Ltd.,
3. Vasishta, P.C,1979 Plant Ecology, Vishal Publication.
4. Verma, V.A 1981 Text book of Plant Ecology, Emkay Publication.
5. Sharma,J.P. 2004 Environmental Studies, Laxmi Publications (p) Ltd. New Delhi.

GOVT. ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

B.Sc., Degree Examination

MAJOR PAPER –VII- 17UBY07

PLANT ECOLOGY AND PLANT GEOGRAPHY

Time: 3 hrs

Max: 75 marks

PART – A (10X2=20)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 100 words.

1. Rainfall.
2. Autecology.
3. Food web
4. Ecosystem.
5. Migration.
6. Colonization.
7. Air Pollution.
8. Acid Rain.
9. Bio-diversity.
10. Scrub vegetation.

PART – B (5X5=25)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 300 words.

11. a) Write briefly about the effect of wind on plants.
(or)

b) Define thermoperiodism.

12. a) How grazing by animals influence vegetation?
(or)

b) Illustrate the pyramid of Biomass.

13. a) What are phylloclades? Mention their ecological importance.
(or)
b) What is aquatic plant community? Give three types of it.
14. a) Describe about noise pollution.
(or)
b) Describe about agricultural pollution.
15. a) What is evergreen forest? Give examples.
(or)
b) Explain any one theory describing plant distribution on earth.

PART – C (3X10=30)

Answer any THREE questions

All question carry equal marks

Each answer should not exceed 1000 words.

16. Give an account on the effects of temperature on plants.
17. Describe in details, the structure of a model ecosystem.
18. Explain the adaptations of Xerophytes.
19. Give an account on the causes and control measures of water pollution.
20. Write an essay about the Mangrove and scrub vegetation in Tamilnadu.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

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Under CBCS Pattern

MAJOR ELECTIVE COURSE – I - 17UBYE1

BIOTECHNOLOGY

Objectives

1. To understand the basics of plant tissue culture and its uses
2. To understand Genetic engineering
3. To understand the uses of biotechnology in industry and environment

Unit I

Biotechnology – Definition, scope and significance. Plant tissue culture – History, totipotency. Tissue culture laboratory setup, medium preparation (MS medium) and sterilization techniques. Explants preparation and inoculation. Callus induction, subculture and maintenance. Suspension culture.

Unit II

Micropropagation, Organogenesis, Somatic embryogenesis, Haploid culture- Anther and Ovule culture, Somaclonal variation. Artificial seed production. Protoplast isolation and culture. Applications of plant tissue culture.

Unit III

Microbial genetics and gene regulation (Lac Operon). Genetic engineering –enzymes- nucleases and ligases, cloning vectors, gene transfer methods, screening and selection of recombinants. Ti plasmid and *Agrobacterium* mediated gene transfer into plants. Applications of genetic engineering in agriculture and medicine.

Unit IV

Industrial biotechnology – uses of microbes in industry – alcohol fermentation, acetic acid fermentation, milk products (Cheese) and enzymes production using microbes. Microbes as single cell protein (SCP), Immobilization of microbial cells and enzymes.

Unit V

Environmental biotechnology- waste management-solid waste- biogas technology. Waste water treatment- nature of waste water (BOD, COD, suspended and dissolved solids), primary, secondary and tertiary treatment. Recycling of waste water. Monitoring of environmental pollution – Biosensors.

Text books

1. Ignacimuthu S., (1998), Basic biotechnology, Tata McGraw Hill Publishing Company Ltd., New Delhi.
2. Dubey R.C., (2001), A Text book Biotechnology, S. Chanad & Co. (P) Ltd., New Delhi, India.
3. Palaniyappan S., (1995), Biotechnology (in tamil), T.K. Publishing house, Chennai, India.

REFERENCE BOOKS

1. Trivedi, P.C. 2000 –Plant Biotechnology, Panima Publishing Corporation, New Delhi.
2. Lewin, B.2003 –Genes VI, Allied Publishers, Chennai.
3. Kalian Kumar.D. 1999 –An introduction to plant tissue culture, New Central Book Agency, Calcutta.

GOVT. ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

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Under CBCS Pattern

B.Sc., Degree Examination

MAJOR ELECTIVE COURSE – I- 17UBYE1

BIOTECHNOLOGY

Time: 3 hrs.

Max. Marks: 75

Part A

10X2=20

Answer all the questions

Each answer should not exceed 50 words

Draw diagram wherever necessary

1. Totipotency
2. MS medium
3. Synthetic seed
4. Cellulase
5. Define Biotechnology
6. Ti Plasmid
7. Immobilization
8. Acetobacter
9. Methanogenesis
10. Biosensor

Part B

5X5=25

Answer all the questions

Each answer should not exceed 300 words

Draw diagram wherever necessary

11. a. Write notes on explants preparation and inoculation
(or)
b. Give details on callus induction and subculture of callus
12. a. Explain Micropropagation
(or)
b. Write the applications of plant tissue culture

13. a. Write notes on Lac Operon

(or)

b. Brief the applications of Genetic engineering in Agriculture

14. a. Give notes on cheese production

(or)

b. Write about SCP

15. a. Explain Bio-gas technology

(or)

b. Write notes on recycling of waste water

Part C

3X10=30

Answer any three questions

Each answer should not exceed 1000 words

Draw diagram wherever necessary

16. Write about Suspension culture

17. Give details on protoplast culture

18. Write notes on screening and selection of genetic recombinants

19. Write the details of ethanol production using microbes

20. Write about waste water treatment

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7
B.Sc., BOTANY
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SKILL BASED ELECTIVE COURSE – III- 17UBYS3

HORTICULTURE

Objective

This course is designed to provide theoretical knowledge about the gardening to enable them to be self reliant and to facilitate self employment.

Unit I:

Fundamentals of horticulture: Definition, Branches, Importance and Scope. Classification of horticultural crops-fruits and vegetables. Gardening: Definition, objectives and scope-different types of gardening-Formal, Informal, Mixed and Kitchen garden.

Unit II:

Plant Propagation: Cutting, Layering, Budding and Grafting. Selection and significance of stock and scion. Role of plant growth regulators in horticulture. Induction of rooting, flowering, Fruit set, Fruit development.

Unit III:

Soil bed preparation, Potting, Repotting, weeding, Pruning, Topiary. Lawn making, Types of lawn grasses, maintenance of lawn, Hedge plant and its importance.

Unit IV:

Importance and scope of floriculture. Cultivation of commercial flowers such as Chrysanthemum, Rose and Jasmine. Production and packaging of cut flowers. Flower arrangement and Ikebana

Unit V:

A brief knowledge on annuals, biennials and perennials with respect to ornamental gardens, green house, water garden, rockery plants, Bonsai technique, hydroponics, storage of vegetables and fruits.

Text Books:

1. Kumar N., Introduction to Horticulture, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi, 2010, 7th edition.
2. Edmond Musser & Andres. Fundamentals of Horticulture, Mc Graw Hill Book Co., New Delhi, 1994.
3. Chadha K.L. Handbook of Horticulture, ICAR Publication, New Delhi, 2003

Reference Books:

1. Philip M., Plant Propagation, Mitchell Beazley Publishers Ltd., New York.1992.
2. Randhava, GS. Ornamental Horticulture in India. Today and Tomorrow Printers and Publishers, New Delhi, 1973.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

SKILL BASED ELECTIVE COURSE –III- 17UBYS3

HORTICULTURE

Time: 3 hrs

Max: 75 marks

PART –A (10X2=20)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 50 words.

1. Importance of Horticulture.
2. Kitchen garden.
3. Budding.
4. Cutting methods.
5. Topiary.
6. Weeding.
7. Cut flowers.
8. Ikebana.
9. Rockery.
10. Water garden.

PART – B (5X5=25)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 200 words.

11. a) Give an account about scope of Horticulture.
(or)

b) Classify Horticulture crops.

12. a) Briefly explain the methods of grafting.
(or)

b) Briefly explain the layering methods.

13. a) Write notes on Weeding.
(or)
b) Write notes on fungicide in ornamental plants.
14. a) How will you make dry flowers? Comment on its uses?
(or)
b) Discuss the maintenance of nursery.
15. a) Write notes on rockery.
(or)
b) Write notes on hydroponics.

PART – C (3X10=30)

Answer Any three questions

All questions carry equal marks

Each answer should not exceed 500 words.

16. What are the types of gardens? Critically discuss its designs.
17. Write an essay on the growth hormones and the applications of them in horticulture.
18. Give the details of various types of lawn and a note on their aesthetic values.
19. Describe the cultivation methods of commercial flowers with two examples.
20. Discuss the role, maintenance and use of vegetable and fruit crops.

GOVT. ARTS COLLEGE (AUTONOMOUS), SALEM-7

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Under CBCS Pattern

SKILL BASED ELECTIVE COURSE – IV- 17UBYS4

SEED TECHNOLOGY

Objectives

1. To gain the knowledge about the seed formation, sampling and viability
2. To facilitate self-employment

UNIT –I

Study of floral Biology –Types of Pollination, seed formation. Seed morphology and structural details of Dicot (Castor) and Monocot (Paddy) seeds- Roles and goals of seed technology - importance of quality seed in agriculture - characteristic of quality seed.

UNIT –II

Seed dormancy : causes and methods of breaking dormancy- Seed sampling –method of sampling –Seed Purity –Seed Germination –methods of Seed Germination using paper, Sand or Soil –Standard Germination Test.

UNIT –III

Seed viability –Topographical tetrazolium or TZ test, embryo excision method. Seed moisture –importance –methods of moisture determination basic methods.

UNIT –IV

Foundation and certified seed production of the following **Paddy, bean, groundnut and cotton.**

UNIT –V

Seed certification –Objectives –fundamental concepts of seed certification –sources and classes of seed: Breeder's seed, certified seed. Phases of certification –Verification of seed source -field inspection –seed analysis –tagging of seedlings –field standards.

REFERENCES

1. Agarwal, R.L. Seed Technology Oxford and IBH Publishing Co. Pvt. Ltd.,
2. Bewley J.D. and Black M (Edn) 1985 –Seed physiology of development and germination, Plenum Press, New York.
3. Kowalsky. Seed Biology, Vol. I, Vol. II. Academic Press, New York.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

SKILL BASED ELECTIVE COURSE –IV- 17UBYS4

SEED TECHNOLOGY

Time: 3 hrs

Max: 75 marks

PART – A (10X2=20)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 50 words.

1. Cross pollination.
2. Breeder's seed.
3. Seed Vigour.
4. Germination percentage
5. Foundation seed.
6. Seed yield.
7. Rouging.
8. Seed rate.
9. Supplementary pollination
10. Seed clearing

PART – B (5X5=25)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 200 words.

11. a) Mention the characters of self-pollinated crops.
(or)
b) Write short notes on isolation of seed crops.
12. a) What are the requirements for germination tests?
(or)
b) Give an account on seed viability:-
13. a) Give an account on hybrid seed production.
(or)
b) How would you test moisture content of a seed?

14. a) Briefly explain the Tetrazolium Test.

(or)

b) Write short notes on isolation of seed crops.

15. a) Explain the different methods of seed drying.

(or)

b) What are the classes of seeds?

PART –C (3X10=30)

Answer Any three questions

All questions carry equal marks

Each answer should not exceed 500 words.

16. Write an essay on the principles of seed production in self pollinated crops.

17. What is seed dormancy? Discuss in detail about techniques for breaking dormancy of seeds?

18. Briefly write about the certified seed production of cotton.

19. Give an account on the seed Vigour and its importance.

20. Write the procedure of field inspection on different stages of seed production of paddy.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

MAJOR PAPER –VIII- 17UBY08

PLANT PHYSIOLOGY

Objectives

1. To learn the underlying principles of the various physiological processes of plants
2. To study the various physicochemical and morphogenetic processes taking place during the various stages of plant growth

Unit I

Diffusion, gaseous exchange, osmosis, plasmolysis, absorption of water, ascent of sap (cohesion – tension theory), transpiration – types, mechanism of stomatal movements, factors affecting transpiration, guttation, mineral nutrients- role of micro and macro nutrients, passive and active transport of ions, translocation of organic solutes. Munch hypothesis.

Unit II

Photosynthetic pigments, action and absorption spectra, Red drop, Emerson enhancement effect, photosystem I and II, light reactions, cyclic and non cyclic photophosphorylation, dark reaction, C4 cycle, photorespiration(Brief study), factors affecting photosynthesis.

Unit III

Respiration- Aerobic and anaerobic respiration, Glycolysis, kreb's cycle, electron transport system, oxidative phosphorylation. Pentose phosphate pathway – factors affecting respiration.

Unit IV

Nitrogen fixation- *Legume-Rhizobium* symbiosis – nitrification and denitrification. Nitrate assimilation- synthesis of amino acids(outline)- reductive amination and transamination. Stress physiology- definition – water and salt stress.

Unit V

Plant growth regulators- types of plant hormones- auxins, gibberellins, cytokinins, abscisic acid, ethylene, photomorphogenesis- phytochrome – photoperiodism, Vernalization, senescence and Plant movements.

PRACTICALS

1. Determination of DPD using Rhoec leaf by Plasmolytic method.
2. Effect of chemicals and temperature on membrane permeability.
3. Study of relative rate of Transpiration by difference plants.
4. Separation of pigments by paper chromatography method.
5. Study of relative rates of photosynthesis under varying conditions of CO₂ Concentrations.
6. Study of rate of photosynthesis under different light intensities.
7. Measurement of rate of respiration in germinating seeds, flower bud using Respiroscope.

DEMONSTRATION EXPERIMENTS

1. Determination of RQ by using Respirometer.
2. Dilatometer.
3. Osmoscope.

Text books

1. Pandey, SN and Sinha, BK (2001). Plant physiology. Third revised edition, Vikas Publishing House Pvt. Ltd, New Delhi..
2. Jain, VK (2007). Fundamentals of Plant Physiology, S. Chand & company Ltd, New Delhi.
3. Verma, V (2008). Textbook of Plant Physiology, Ane's student edition, New Delhi.

Reference books

1. Noggle, GR and Fritz GJ (1976). Introductory Plant Physiology, Prentice-Hall, India.
2. Devlin, PM (1974). Plant Physiology, affiliated East West Press Pvt. Ltd.
3. Salisbury B and Ross F (2007). Plant Physiology, CBS Publishers and Distributors, New Delhi, 4th edition.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7 --

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

B.Sc., Degree Examination

MAJOR PAPER –VIII- 17UBY08

PLANT PHYSIOLOGY

Time: 3 hrs

Max: 75 marks

PART – A (10X2=20)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 100 words.

1. Osmosis.
2. Guttation.
3. Action spectrum.
4. Photorespiration.
5. RQ.
6. Fermentation.
7. Transamination.
8. Plastic Biological strain.
9. PGR.
10. Vernalization.

PART – B (5X5=25)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 300 words.

11. a) Briefly Explain Carrier hypothesis of salt uptake:-
(or)
b) Write notes on transpiration types:-
12. a) Explain the role of photosynthetic pigments in photosynthesis:-
(or)
b) Write briefly on the various factors affecting photosynthesis:-

13. a) Give an account on Pentose phosphate pathway:-
(or)
b) Explain the various factors affecting respiration:-
14. a) Explain the symbiotic relationship between Legume and Rhizobium:-
(or)
b) Explain the mechanism of salt tolerance in plants:-.
15. a) Plant movements – Discuss:-
(or)
b) Give an account on Vernalization.

PART –C (3X10=30)

Answer Any three questions

All question carry equal marks

Each answer should not exceed 1000 words.

16. Give an account on mechanism of ion transportation:-
17. C₄ cycle – Discuss in detail:-.
18. Explain the various steps of Glycolysis:-
19. Give an account on water stress:-
20. Discuss the role of gibberellins in plant growth.

GOVT. ARTS COLLEGE (AUOTNOMOUS), SALEM -7

B.Sc., BOTANY

(For the candidates admitted from 2017 onwards)

Under CBCS Pattern

Core Course – VIII MAJOR PAPER – IX – 17UBY09

CYTOLOGY AND GENETICS

OBJECTIVES

1. To study the progress made in the field of cell, cell organelles and their functions.
2. To understand the principle, the hereditary mechanism, the structure and functions of genetic materials.

CYTOLOGY

UNIT -1

Ultra structure of a plant cell, cell wall, plasma membrane, cell organelles – endoplasmic reticulum, Golgi complex, chloroplast, mitochondria, nucleus, lysosome and ribosomes.

UNIT – II

Chromosomes – morphology, polytene, giant chromosomes, salivary gland and lampbrush chromosomes. Nucleic acids – DNA and RNA, DNA structure, replication, RNA structure and types. Cell division – amitosis, mitosis and meiosis

GENETICS

UNIT – III

Mendel's Law of inheritance – Incomplete dominance, lethal factor, complementary factor and epistasis, multiple factor hypothesis, multiple alleles – blood groups, Polygenic inheritance(ear length in maize).

UNIT – IV

Linkage and crossing over – three point crosses – construction of chromosomal map. Sex determination; Sex linked inheritance – eye colour in Drosophila and Colour blindness in humans. Extra chromosomal inheritance (plastid inheritance, male sterility in corn)

UNIT – V

Identification of DNA as genetic material (Griffith's, Avery et al , Hershey & Chase experiments), forms of DNA. Population genetics: Gene frequency and Gene pool – Hardy & Weinberg law.

PRACTICAL

1. Study of Plant cell organelles, Polytene and Giant chromosomes from electron micrographs and standard publications.
2. Study of mitosis by squash technique.
3. Simple problems of monohybrid, dihybrid ratios and factor interactions
4. Construction of chromosome map – three point test cross

TEXT BOOKS

1. Singh S.P. & Tomar B.S 1996 – Cell Biology – Rastogi Publication Meerut
2. Rastogi S.C. 1992 – Cell Biology – Tata McGraw Hill Publishing Company, New Delhi.
3. Gupta P.K 2000 – Genetics – Rastogi Publication Meerut
4. Meyyan R.P. 2000 Genetics – Saras Publications, Nagarkoel
5. Sambamurthy A.V.S.S. 2005 – Genetics, Narosa Publications New Delhi

REFERENCE BOOKS

1. Prescott. D.M – Cells , Jones and Bartlet Publishers
2. De Robertis E.D.P & De Robertis E.M.F., 1980 – Cell and Molecular Biology , Holtsauders International Editions, Philadelphia
3. Strickberger, M.W. 1976 – Genetics , Mac Millan Publishing Co. Inc., New York
4. Gardner, E. J. & Snusted, D.P 1984 – Principles of Genetics , John Wiley & Sons, New York
5. Winchester, A. M. 1958 – Genetics , Oxford & FBH Publishing house, New Delhi.

GOVT. ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

MAJOR PAPER –IX- 17UBY09

CYTOLOGY AND GENETICS

Time: 3 hrs

Max: 75 marks

PART –A (10X2=20)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 50 words.

1. Plasmodesmata
2. Cristae.
3. Components in a nucleotide
4. Synopsis.
5. Alleles.
6. Phenotype.
7. Crossing over.
8. Linkage.
9. Gene frequency.
10. Gene pool.

PART – B (5X5=25)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 300 words.

11. a) Explain the fluid mosaic model of plasma membrane:-
(or)
b) Describe the ultra structure of chloroplast:-
12. a) Write short notes on Polytene chromosome:-
(or)
b) Write a brief account on double helix structure of DNA:-

13. a) Describe the Mendel's Ist law:-
(or)
b) What do you know about epistasis?
14. a) What is crossing over? Explain its significance:-
(or)
b) Explain cytoplasmic inheritance with an example:-
15. a) DNA as genetic material - Justify.
(or)
b) Write short notes on the forms of DNA:-

PART –C (3X10=30)

Answer Any three questions

All questions carry equal marks

Each answer should not exceed 1000 words.

16. Write an account on the structure and function of nucleus:-
17. Describe the process of meiosis I:-
18. Discuss –Multiple alleles:-
19. What is gene map? Explain with an example:-
20. Write an account on Hardy Weinburg law:-.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

MAJOR PRACTICAL III- 17UBYP3

(For the Theory Papers V, VI & VII)

Time: 3 hrs

Max: 60 Marks

Practical: 50 Marks

Record: 5 Marks

Herbarium: 5 Marks

1. Refer 'A' and 'B' to their respective families point out the characters on which the identification is based at each level. (Diagram not necessary)
(14)
2. Describe 'C' in technical terms. Draw diagram of the floral parts only
Construct the floral diagram. Give the floral formula.
(6)
3. Based on the morphological and anatomical characters assign D and E to their respective probable habitats. Draw suitable diagrams. Submit slides for valuation.
(14)
4. Spot sight F and G (Name of the Genus and the family)
(4)
5. Write the name of the genus, species, family and morphology of the useful parts of H and I.
(8)
6. Write notes on J and K
(4)

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

MAJOR PRACTICAL - IV- 17UBYP4

(For the Theory Papers VIII & IX)

Time: 3 hrs

Max: 60 Marks

Practical: 50 Marks

Record: 10 Marks

1. Outline the procedure, apparatus and material required for investigating the physiological problem 'A' assigned. Set up the experiment. Tabulate the data obtained and report the results. Leave the set up for valuation.
(15)
2. Make Acetocarmine preparation of 'B' squash (Any one stage). Draw diagram.
(8)
3. Construct chromosome map with the data provided 'C'
(8)
4. Solve the given genetic problems D & E
(8)
5. Draw and comment on the set up 'F'
(5)
6. Write notes on G & H and I
(6)

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

MAJOR ELECTIVE COURSE – II -17UBYE2

AGRICULTURAL MICROBIOLOGY

OBJECTIVES

1. To discuss the role of microbes in agriculture.
2. To understand the microbial diseases in crop plants and its control measures.

UNIT –I

General characterization and classification of soils – soil microflora –Bacteria, fungi, actinomycetes, algae, protozoa. Rhizosphere and Non-Rhizosphere concept. Role of Rhizosphere microorganisms in improving soil fertility.

UNIT –II

Biological Nitrogen fixation – Symbiotic and Non – Symbiotic bacteria – *Rhizobium* and *Azospirillum*, Blue Green Algae and Phosphate solubilization by VAM.

UNIT –III

Bio-geochemical role of soil microbes – Carbon cycle –Nitrogen cycle - Phosphorous cycle and sulphur cycle. . Microorganisms in air –sources –types. Microbes in water – waste water treatment and recycling.

UNIT –IV

Decomposers –Role of microorganisms in the decomposition of organic matter –solid waste disposal –composting, biodegradation, bioremediation and Biopesticides.

UNIT –V

Microbial diseases in crop plants – Host, causal agent, symptoms, disease cycle and control measures of the following diseases. **Bacterial disease** : Wilt disease of potato, **Fungal disease** : powdery mildew of cereals, **Viral disease** : Tungro disease of Paddy .

TEXT BOOKS

1. Kumaresan, V. 2004-Biotechnology 2004 –Saras Publication, Nagercoil.
2. Rangaswami, G. & Bhagyaraj, D.J.1993. Agricultural Microbiology –Prentice Hall of India (P) Ltd., New Delhi.
3. Chandrasekaran. P. 1993 –Nunnuriyal (Tamil) T.K. Pathipagam, Pudukkottai.
4. Sharam, P. 1996 –Plant Pathology –Rastogi Publications, Meerut.
5. Rangaswami, G. & Mahadevan, A. 2002 –Diseases of crop plants in India - Prentice Hall of India (P) Ltd., New Delhi.

REFERENCE BOOKS

1. Pelzar M.J Chan, E.C.S.P. Kreig, N.P. 1993 Micro Biology Tata McGraw Hill Publishing Company Ltd., New Delhi.
2. Subbarao, N.S. 1999 –Microbiology –Oxford & IBH Publishing Co., (P) Ltd.,
3. Gunasekaran, 1995 –Laboratory manual in Microbiology –New Age International Publications, New Delhi, Bangalore, Madras.
4. Pandey B.P. 1999 –Plant Pathology (Pathogens & Plant disease) S. Chand & Co., New Delhi.
5. Chatterjee P.B. 1997 –Plant Protection Techniques –Bharathi Bhawan, Patna.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

MAJOR ELECTIVE COURSE – II -17UBYE2

AGRICULTURAL MICROBIOLOGY

Time : 3 hrs

Max: 75 marks

PART –A: (10X2=20)

Answer all the questions.

Explain briefly on the following in 1 and 2 sentences.

1. Clay.
2. Soil microflora.
3. Non-symbiotic nitrogen fixing organisms.
4. VAM
5. BOD.
6. Denitrification.
7. Decomposers.
8. Bioremediation.
9. Wilt disease of potato.
10. Powdery mildew

PART – B: 5X5=25

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

11. a) Write an account on general characters of soil.
(or)
b) Explain the significance of soil fertility.
12. a) Write short notes on Non – symbiotic nitrogen fixation:-
(or)
b) Discuss the role of Cyanobacteria in soil fertility:-
13. a) Write briefly on carbon cycle:-
(or)
b) Discuss the role of microbes in waste – water treatment:-

14. a) Briefly explain on the composting:-
(or)
b) Write short notes on Biopesticides:-
15. a) Tungro disease - Discuss.
(or)
b) Give an account on powdery mildew disease of cereals.

PART –C (3X10=30)

Answer Any three questions
All question carry equal marks
Each answer should not exceed 1000 words.

16. Discuss the classification of soil.
17. Give a detailed account on Symbiotic nitrogen fixation:-
18. Write an essay on Nitrogen cycle:-
19. Role of Microbes in Biodegradation – Discuss:-
20. Write a detailed account on Wilt disease of Potato:-

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

MAJOR ELECTIVE COURSE – III -17UBYE3

MEDICINAL BOTANY

Objectives

1. To understand the various systems of Indian medicines
2. To know the cultivation of medicinal plants – curing neuro, cardio, vascular diseases.

UNIT –I

Brief history of medicinal plants. Indian systems of medicines –Siddha, Ayurvedha and Unani systems. Classification of crude drugs- Chemistry of drugs.

UNIT –II

Drugs from roots (*Catheranthus and Hemidesmus*). Drugs form bark (*Cinchona*). Drugs from stem of wood (*Santalum*).

UNIT –III

Drugs from leaves (*Aloe, Atropa, Eucalyptus, Ocimum, Datura and Cassia*). Drugs from flower (*Eugenia*). Drugs from fruits and seeds (*Woodapple, Coriander and Trigonella*). Underground stem (*Ginger*).

UNIT –I V

A brief account of drugs acting on the central nervous system, drugs used in disorders of gastrointestinal tract and cardio vascular drugs.

UNIT –V

Cultivation of medicinal plants in India. Breeding methods applied to medicinal herbs, plant tissue culture as source of biomedicine - Drug adulteration - Methods of drug evaluation.

REFERENCE BOOKS

1. Dhavan, B.N. 1986, Ayurvedic Research on Medicinal Plants in India INSA, New Delhi.
2. Gokhale, S.B.,M C.K. Kokate and A.P. Purohit. Pharmacognosy Nirali Praksahan.
3. S.K.Jain, 1987. A Manual of Ethnobotany. Scientific Publishers –Jodhpur.
4. S.S.Handa & V.K. Kapoor. Pharmacognosy.
5. Agarwal, 1985 Drug plants in India, Kalyani. Publishers, Ludhiyana.
6. S.K. Jain, 2001, Medicinal Plants —National Book Trust –New Delhi.

TEXT BOOKS

1. Arumugam. K.R and N. Muruges Text Book of Pharmacognosy, Sathya publishers.
2. Bhattacharjee, S.K., 1988. Hand Book of Medicinal Plants, Pointer publishers, Jaipur.
3. Purohit and vya, 2004. Medicinal plant cultivation, Agrobios publication. Jodhpur.
4. Wallis, T.E. Text Book of Pharmacognosy. C.B.S. Publishers and Distributors.
5. Muligai Maruthuvam (Tamil) 1995 Thirugnam. Selvi Pathipakam. Trichy.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

(For the candidates admitted from 2017-2018 onwards)

B.Sc., BOTANY

MAJOR ELECTIVE COURSE – III -17UBYE3

MEDICINAL BOTANY

Time : 3 hrs

Max: 75 marks

PART –A: (10X2=20)

Answer all the questions.

Explain briefly on the following in 1 and 2 sentences.

1. Siddha.
2. Ayurvedha.
3. Reserpine.
4. Ephedrine.
5. Ocimum.
6. Eucalyptus Oil.
7. Psychoactive drug.
8. Nux vomica.
9. Cardio vascular drugs.
10. Biomedicine.

PART – B:(5X5=25)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

11. a) Briefly discuss about Unani system of medicine.
(or)
b) Discuss the history of medicinal plants.
12. a) Discuss the drugs obtained from roots.
(or)
b) Discuss the drugs obtained from barks.
13. a) What are the medicinal uses of *Datura* plant.
(or)
b) Briefly explain the uses of *Aloe*.

14. a) What are the drugs used for central nervous system?
(or)
b) How will you cure the gastrointestinal disorders by using plant drugs?
15. a) Briefly explain breeding methods applied in medicinal herbs.
(or)
b) What are the drug adulterations?

PART –C (3X10=30)

Answer any three questions
All question carry equal marks
Each answer should not exceed 1000 words.

16. Explain the classification of crude of drugs and chemistry of drugs.
17. Briefly discuss the method of extraction of drugs from roots.
18. (i) Drugs from flower.
(ii) Drugs from Fruits and seeds.
19. Explain the drugs acting on the central nervous system.
20. Discuss the cultivation methods of medicinal plants in India.

GOVT. ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

SKILL BASED ELECTIVE COURSE – V -17UBYS5

BIOFERTILIZERS

OBJECTIVES

1. To understand the utilization of the microbes as fertilizers.
2. To facilitate self-employment.

UNIT –I

General account about the microbes used as Biofertilizer –*Rhizobium* –isolation, identification, mass cultivation, carrier based inoculants, Actinorrhizal symbiosis.

UNIT –II

Azospirillum, isolation and mass cultivation –carrier based inoculants, associative effect of different microorganisms.

Azotobacter –classification, characteristics –crop response to *Azotobacter* inoculums, maintenance and mass cultivation.

UNIT –III

Cyanobacteria (Blue green algae), *Azolla* and *Anabaena azollae* association, nitrogen fixation, factors affecting growth, blue green algae and *Azolla* in rice cultivation.

UNIT –IV

VAM- association, types of mycorrhizal association, taxonomy, occurrence and distribution, phosphorus nutrition, growth and yield –colonization of VAM –isolation and inoculum production of VAM, and its influence on growth and yield of crop plants.

UNIT –V

Organic farming –Green manuring and organic fertilizers, Recycling of Bio-degradable municipal, agricultural and industrial wastes –Biocompost making methods, types and method of vermicomposting –field Application.

TEXT BOOKS

1. Dubey, R.C., 2005 A text book of Biotechnology S.Chand & Co, New Delhi.
2. Kumaresan, V. 2005, Biotechnology, Saras Publications, New Delhi.
3. John Jothi Prakash, E. 2004. Outlines of Plant Biotechnology. Emkay Publication, New Delhi.

REFERENCE BOOKS

1. Sathe, T.V. 2004 Vermiculture and Organic Farming. Daya publishers.
2. Subba Rao, N.S. 2000, Soil Microbiology, Oxford & IBH Publishers, New Delhi.
3. Vayas, S.C, Vayas, S and Modi, H.A. 1998 Bio-fertilizers and organic Farming Akta Prakashan, Nadiad.

GOVT. ARTS COLLEGE, (AUTONOMOUS), SALEM-7

(For the candidates admitted from 2017-2018 onwards)

B.Sc., BOTANY

SKILL BASED ELECTIVE COURSE – V -17UBYS5

BIOFERTILIZERS

Time: 3 hrs

Max: 75 marks

PART –A (10X2=20)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 50 words.

1. Nitrogen fixing organism.
2. YEMA Medium.
3. Blending.
4. Mention any two species of *Azospirillum*.
5. BGA
6. *Azolla*.
7. VAM
8. Phosphate Mobilization.
9. Green manure
10. Vermicompost.

PART – B: (5X5=25)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 300 words.

11. a) Give an account on soil microorganisms.
(or)
b) Briefly explain nitrogen –fixing organism.
12. a) How will you isolate *Azospirillum* from paddy roots?
(or)
b) What are the carriers used for inoculum production of *Azospirillum*?

13. a) Explain the characteristics of Blue green algae.
(or)
b) Write an account on morphological characteristics of *Azolla*.
14. a) Give an account on Taxonomy of VAM fungi.
(or)
b) Write short notes on phosphate mobilization.
15. a) Write short notes on Green manuring and organic fertilizers:-
(or)
b) Briefly explain the recycling of biodegradable wastes:-

PART –C (3X10=30)

Answer any three questions
All question carry equal marks
Each answer should not exceed 1000 words.

16. Describe the isolation, identification and mass cultivation of *Rhizobium*.
17. Discuss the method of mass cultivation of *Azotobacter*:-
18. Give a detailed account on method of applications of BGA in rice field.
19. How will you isolate VAM fungi from Rhizosphere soils? Explain in detail.
20. Discuss about the methods of Biocompost making, types and method of Vermicomposting:-

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

Under CBCS Pattern

CORE COURSE –XIII : SBEC –VI -17UBYS6

PLANT PROTECTION

Objectives

1. To learn the symptoms, etiology and control measures of plant diseases in India
2. To protect the crops and enhance the yield production.

UNIT I :

Damage to crops of India by insects, Nematodes , Rodents , Fungi , Bacteria and viruses a general outline.

UNIT II :

Types of plant diseases and causal agents. Insect transmission of bacteria and viruses. A general account of preventive measures of plant diseases including plant protection and quarantine measures. Legislations in plant protection, weed control. Plant protection appliances –Sprayers, dusters .

UNIT III :

Study of symptoms , etiology and control measures of the following diseases : damping off of seedling,bud rot of coconut , blast of paddy ,black rust of wheat , tikka disease

UNIT IV :

Soft rot of vegetables,bacterial blight of rice, canker disease of citrus, ring rot of potato.

UNIT V :

Nature of plant virus, causal organism, symptoms, control measures of viral diseases :- Tobacco mosaic ,Bunchy top of banana, Mosaic disease of lady's finger.

PRACTICAL :

1. A detailed study of diseased specimens included in the theory.
2. Identification of various plant protection application mentioned in the syllabus.

TEXT BOOKS :

1. Bap Reddy 1968, plant protection in India. Allied publishers.
2. Chandhury & Majid's 1954, Handbook of plant protection, department of agriculture assam.
3. Mukundan , T.K, plant protection , principles and practice , Asia publishing house, Bombay.
4. Pandey ,B.P A text book of plant pathology, s.chand and co, New Delhi.
5. P.Chandrasekar a textbook fungus , plant pathology, plant protection T.k.Publishers pudukootai.
6. Tmt. R.Indira The tamilnadu text books of plant viruses.

REFERENCE :

- 1.Mukurdan T.K Plant protection,principles and practice Asia publishing house.
- 2.Krishnamurthy (1963) control pests and disease on fruit culture in India. I.C and K.Monograph.
- 3.Rangaswami.G(1972) Disease of crop plant of India prentice hall India.
4. Rangaswami.G(1974) Bacterial plant disease of India asia publishing house , Bombay.
- 5.Singh ,R.S. disease of vegetable crops , oxford and IBH publishing company New Delhi.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

B.Sc., BOTANY

(For the candidates admitted from 2017-2018 onwards)

SBEC –VI -17UBYS6

PLANT PROTECTION

Time : 3 hrs

Max: 75 marks

PART –A (10X2=20)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 50 words.

1. Any two rodents name.
2. Indirect Pest.
3. Acquisition feeding period.
4. Pandemic.
5. *Glomerella tucumanensis*.
6. Alternate host.
7. Translucent spots.
8. Kresek stage.
9. Leaf puckering.
10. *Pentalonia nigronervosa*.

PART – B (5X5=25)

Answer all the questions.

All questions carry equal marks.

Draw diagrams wherever necessary.

Each answer should not exceed 300 words.

11. a) Any two disease caused by nematodes.
(or)
b) Insect damages to crops.
12. a) Insect transmission of bacteria.
(or)
b) Eradication.

13. a) Bud rot of coconut.
(or)
b) Maize smut.
14. a) Bacterial soft rot of vegetables.
(or)
b) Ring rot of potato
15. a) Bunchy top of Banana.
(or)
b) Bhendi mosaic.

PART –C (3X10=30)

Answer any three questions
All question carry equal marks
Each answer should not exceed 1000 words.

16. Give an account of the fungal damages to crop in India.
17. Give a brief account about preventive measures in plant diseases.
18. Write about the causal agent, disease spread, symptoms and control measures of paddy blast.
19. Explain citrus canker disease and its control measure.
20. Give an account of Tobacco mosaic disease.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

Choice Based Credit System

(For Candidates admitted from 2017- 2018 Onwards)

Allied Botany (17ABY01)

PAPER - I

Morphology, Taxonomy of Angiosperms, Cytology, Genetics, Anatomy and Embryology

Semester- I

Objectives:

To attain and impart knowledge on different aspects of botany like Taxonomy, cytology, genetics, anatomy and embryology.

Unit - I: Morphology: Phyllotaxy, Types of Leaf- Simple, Compound- Parts of flower, Inflorescence- Racemose, Cymose. Special Types – Head, Cyathium. Terminology and symbols with reference to flower and floral formula.

Unit - II: Taxonomy – Binomial Nomenclature, Bentham & Hookers Classification. A study of the following families with their economic importance- Annonaceae, Leguminosae, Cucurbitaceae, Rubiaceae, Asteraceae and Poaceae

Unit - III: Cytology and Genetics: Eukaryotic cells (Plant cell), Cell Wall, Plasma membrane, Cell Organelles - structure and function of Chloroplast, Mitochondrion and Nucleus. Cell division: Amitosis, Mitosis and Meiosis. Mendel's Monohybrid, dihybrid cross, Test and back cross.

Unit - IV: Anatomy: Simple Permanent Tissues- Parenchyma, Collenchyma and Sclerenchyma, Complex Permanent Tissues- Xylem and Phloem. Primary structure of Dicot and Monocot stem, dicot root and dicot leaf.

Unit V: Embryology: Structure of mature anther, pollen grain, development of male gametophyte, structure of mature ovule, development of female gametophyte (*Polygonum* type), fertilization and development of dicot embryo (*Capsella* type)

Text Books

Rao K.N. and Krishnamurthy K.V. 1976. Angiosperms.

Narayanasamy R.V. and Rao K.N. Outlines of Botany.

Pandey B.P. (1978). Plant Anatomy S. Chand & Co. Ltd., New Delhi.

Bhojwani, S.S. and Bhatnagar, S.P. (2000). *The Embryology of Angiosperms* (4th Edition). Vikas Publishing House (P) Ltd., UBS Publisher's Distributors, New Delhi.

Rogland, A. (2000). *Developmental Botany (Embryology of Angiosperms)*. Saras Publications, Nagercoil.

Vidyardhi RD and Tripathi SC. (2002). *A Text book of Botany*. S Chand & Co Ltd., New Delhi.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

Choice Based Credit System
(For Candidates admitted from 2017 Onwards)

Allied Botany (17ABY01)

Morphology, Taxonomy of Angiosperms, Cytology, Genetics, Anatomy and Embryology
Semester- I

Time: 3 Hrs

Max. Marks: 75

Part A (10x2=20)

Answer All the questions

Draw diagrams wherever necessary

Each answer should not exceed 100 Words

1. Parts of flower
2. Cyathium inflorescence
3. Binomial Nomenclature
4. Economic importance of Poaceae
5. Eukaryotic cell
6. Back cross
7. Aerenchyma cells
8. Vessels of xylem
9. Wall of anther
10. Capsella type embryo.

Part B (5x5=25)

Answer All the questions

Draw diagrams wherever necessary

Each answer should not exceed 300 Words

- 11a. Describe the special types of inflorescence.(OR)
- b. Write short note on terminology and symbols with reference to the floral formula.
- 12a. Explain the importance of binomial nomenclature in biology. (OR)
- b. Briefly explain the salient features of the family Cucurbitaceae.
- 13a. Discuss the components of plant cell wall.(OR)
- b. What do you mean by Dihybrid cross? Explain its cross with a neat checker board.
- 14a. What are complex tissues. Explain.(OR)
- b. With a neat sketch explain the dicot leaf with an example.
- 15a. Discuss the events involved in development of male gametophyte.(OR)
- b. Define fertilization and add note on the development of dicot embryo.

Part C (3x10=30)

Answer Any THREE questions

Draw diagrams wherever necessary

Each answer should not exceed 1000 Words

16. Write an essay on Phyllotaxy.
17. Describe technically on the family Rubiaceae and Poaceae.
18. What is cell division? Explain the reduction division with sketches.
19. Describe the different types of cells present in structure of dicot stem.
20. Explain in detail on structure of matured anther.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

Choice Based Credit System

(For Candidates admitted from 2017- 2018 Onwards)

Allied Botany – II (17ABY02)

Thallophytes, Bryophytes, Pteridophytes, Gymnosperms, Plant Physiology and Ecology

Semester- II

Unit – I

Thallophytes: Algae – general characters, study of the structure and life cycle of the following genera – *Oscillatoria*, *Oedogonium*, *Ectocarpus* and *polysiphonia*.

Unit – II

Fungi - general characters, study of the structure and life cycle of the following genera- *Albugo*, *Pencillium*, *Agaricus*. Elementary knowledge of Bacteria and Viruses. Economic importance of Fungi and Bacteria.

Unit – III

Bryophytes , Pteridophytes and Gymnosperms: Structure and life cycle of *Funaria*, *Lycopodium* and *Cycas*.

Unit – IV

Plant Physiology: Osmosis, Absorption of water, Photosynthesis – Light reaction, Calvin cycle. Respiration- Glycolysis, Krebs's cycle, Electron transport system, Nitrogen cycle, Hormones(Auxins only)

Unit - V

Plant Ecology: Factors affecting vegetation – climatic, Edaphic and Biotic. Morphological and Anatomical adaptations in Hydrophytes and Xerophytes.

Practical

To describe in technical terms of plants belonging to any of the families prescribed and identify the family.

To identify the plant family and morphology of the parts used for the following plant specimens.

Annona – Fruit

Arachis hypogea – Ground nut

Dolichos biflorus – Horse gram

Cicer arietinum – Bengal gram

Pisum sativum – Pea

Phaseolus mungo – Black gram

Phaseolus radiata – Green gram

Tamarindus indica – Fruit

Abrus precatorius – Seed

Acacia cocinna – Soapnut

Luffa aegyptiaca – Fibrous skeleton of the fruit

Cucumis sativus – Fruit

Coffea arabica – seeds

Eclipta alba - Plant

Reference Books

1. Fuller H.J and Trippo O, 1949, College Botany, Henry Holt & Co. Ganguly A.K, 1975. General Botany Vol – I (1971) & Vol – II , The New Book Stall, Calcutta.
2. Rao, K.N, Krishnamoorthy, K.V. and Rao, G.S, 1979, Ancillary Botany, S.Viswanathan Pvt. Ltd. Madras.
3. Palaniappan S. 1985, Thavaravial Thunaipaadam (Tamil), Mohan Padippagam, Channai.
4. Pandi, B.P, 1986, Text Book of Botany (College Botany) Vol I and II, S.Chand and Co. New Delhi.

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

Choice Based Credit System
(For Candidates admitted from 2017 Onwards)

Allied Botany (17ABY02)

Thallophytes, Bryophytes, Pteridophytes, Gymnosperms, Plant Physiology and Ecology
Semester- II

Time: 3 Hrs

Max. Marks: 75

Part A (10x2=20)

Answer All the questions

Draw diagrams wherever necessary

Each answer should not exceed 50 Words

1. Hormogone
2. Capcells
3. Capsomere
4. Basidiocarp of Agaricus
5. Protonema
6. Protocorm
7. Auxin
8. Osmosis
9. Commensalism
10. Symbiosis

Part B (5x5=25)

Answer All the questions

Draw diagrams wherever necessary

Each answer should not exceed 200 Words

11a. Explain the asexual reproduction in Oedogonium

(or)

b. Describe the vegetative reproduction in Oscillatoria.

12a. Economic importance of Fungi:-

(Or)

b. Asexual reproduction in Albugo:-

13a. Describe the structure of capsule in Funaria:-

(Or)

b. Explain the coralloid root of Cycas:-

14a. Describe the absorption of H₂O:-

(Or)

b. Explain Ammonification and Nitrification:-.

15a. Describe succulent Xerophytes:-

(Or)

b. Explain the effect of light on vegetation:-

Part C (3x10=30)

Answer Any THREE questions

Draw diagrams wherever necessary

Each answer should not exceed 500 Words

12. Give an account on alternation of generation in Ectocarpus:-
13. Describe the structure and reproduction in bacteria:-
14. Write an essay on the reproduction in Cycas:-
15. Describe Krebs's Cycle:-

16. Explain biotic factors:-

GOVT.ARTS COLLEGE, (AUTONOMOUS), SALEM-7

Choice Based Credit System

(For Candidates admitted from 2017- 2018 Onwards)

Allied Botany Practical (17UBYAP1)

Time : 3 hrs

Max marks : 60

Practical : 50

Record : 10

1. Refer A and B to their respective families by giving reasons. Diagrams not necessary
(2X5 = 10 marks)
2. Identify the plant, family and morphology of useful part in C, D, E,F and G
(5X3 =15 marks)
3. Cut transverse sections of H and I. Stain and mount in glycerine. Identify giving reasons.
Draw diagrams. Submit slides for valuation. (2X5=10 marks)
4. Write notes on J, K, L, M, N and O. Draw diagrams (6X2 =12 marks)
5. Comment on the set up P. (3 marks)

KEY

1. A & B – Taxonomy
2. C, D, E, F and G – Economic importance
3. H, I - Anatomy
4. J – Morphology
K – Cytology / Genetics
L – Anatomy / Embryology
M – Algae / Fungi / Bryophytes
N- Pteridophytes / Gymnosperms
O- Ecology
5. P- Physiology

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), SALEM – 636 007

OFFICE OF THE CONTROLLER OF EXAMINATIONS

B.Sc., Botany

| Part | Course Code | Title | Credits | I.A | S.E | Total |
|---------------------|--------------------|--|----------------|------------|------------|--------------|
| SEMSTER -I | | | | | | |
| I | 17FTL01 | Tamil Language Course –I | 3 | 25 | 75 | 100 |
| II | 17FEL01 | English Language Course – I | 3 | 25 | 75 | 100 |
| III | 17UBY01 | Core Course – I: Algae, Bryophytes | 5 | 25 | 75 | 100 |
| III | 17AZL01 | Allied Zoology Course – I | 3 | 25 | 75 | 100 |
| IV | 17UVABE | Common Course : Value Based Education | 2 | 25 | 75 | 100 |
| SEMSTER -II | | | | | | |
| I | 17FTL02 | Tamil Language Course – II | 3 | 25 | 75 | 100 |
| II | 17FEL02 | English Language Course – II | 3 | 25 | 75 | 100 |
| III | 17UBY02 | Core Course –II : Fungi, Bacteria, Virus and Lichens | 5 | 25 | 75 | 100 |
| III | 17UBYP1 | Core Practical – I | 3 | 40 | 60 | 100 |
| III | 17AZL02 | Allied Zoology Course –II | 3 | 25 | 75 | 100 |
| III | 17AZLP1 | Allied Zoology Practical – I | 4 | 40 | 60 | 100 |
| IV | 17UENST | Common Course : Environmental Studies | 2 | 25 | 75 | 100 |
| SEMSTER -III | | | | | | |
| I | 17FTL03 | Tamil Language Course – III | 3 | 25 | 75 | 100 |
| II | 17FEL03 | English Language Course – III | 3 | 25 | 75 | 100 |
| III | 17UBY03 | Core Course –III : Anatomy and Embryology of Angiosperms | 5 | 25 | 75 | 100 |
| III | 17ACH01 | Allied Chemistry Course – I | 3 | 25 | 75 | 100 |
| IV | 17UNME1 | Non – Major Elective – I : Mushroom Cultivation | 2 | 25 | 75 | 100 |
| IV | 17UBYS1 | Skill based Elective Course – I: Mushroom culture Technology | 2 | 25 | 75 | 100 |
| SEMSTER -IV | | | | | | |
| I | 17FTL04 | Tamil Language Course - IV | 3 | 25 | 75 | 100 |
| II | 17FEL04 | English Language Course - IV | 3 | 25 | 75 | 100 |
| III | 17UBY04 | Core Course –IV: Pteridophytes, Gymnosperms and Palaeobotany | 5 | 25 | 75 | 100 |
| III | 17UBYP2 | Core Practical –II | 4 | 40 | 60 | 100 |
| III | 17ACH02 | Allied Chemistry Course – II | 3 | 25 | 75 | 100 |
| III | 17ACHP1 | Allied Practical Course – I | 4 | 40 | 60 | 100 |
| III | 17UNME2 | Non Major Elective – II: Organic Farming | 2 | 25 | 75 | 100 |

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|--------------------|---------|--|---|----|----|-----|
| IV | 17UBYS2 | Skill based Elective Course – II: Microtechnique | 2 | 25 | 75 | 100 |
| V | 17UEXAT | Extension activities | 1 | | | |
| SEMSTER -V | | | | | | |
| III | 17UBY05 | Core Course V: Morphology and Taxonomy | 5 | 25 | 75 | 100 |
| III | 17UBY06 | Core Course VI: Biochemistry and Biophysics | 5 | 25 | 75 | 100 |
| III | 17UBY07 | Core Course VII: Plant Ecology and Phytogeography | 5 | 25 | 75 | 100 |
| III | 17UBYM1 | Major Based Elective Course I: Biotechnology | 5 | 25 | 75 | 100 |
| IV | 17UBYS3 | Skill Based Elective Course III: Horticulture | 2 | 25 | 75 | 100 |
| IV | 17UBYS4 | Skill Based Elective Course IV: Seed Technology | 2 | 25 | 75 | 100 |
| SEMSTER -VI | | | | | | |
| III | 17UBY08 | Core Course VIII: Plant Physiology | 5 | 25 | 75 | 100 |
| III | 17UBY09 | Core Course IX: Cytology and Genetics | 5 | 25 | 75 | 100 |
| III | 17UBYM2 | Major Based Elective Course II: Agricultural Microbiology | 5 | 25 | 75 | 100 |
| III | 17UBYM3 | Major Based Elective Course III: Medicinal Botany | 5 | 25 | 75 | 100 |
| III | 17UBYP3 | Core Practical III | 4 | 40 | 60 | 100 |
| III | 17UBYP4 | Core Practical IV | 4 | 40 | 60 | 100 |
| IV | 17UBYS5 | Skill Based Elective Course V: Biofertilizers | 2 | 25 | 75 | 100 |
| IV | 17UBYS6 | Skill Based Elective Course VI: Plant Protection | 2 | 25 | 75 | 100 |
