

Minutes of the board of studies held on 9/02/19

Agenda:

1. Minutes of the previous board of studies meeting
2. Evaluation of the current UG/PG/M.Phil syllabi
3. Project work/Internship training Programme
4. SBE/NME/EVS Courses.
5. Certificate/Diploma Courses & Extra credit Courses for UG/PG.
6. Any other matter.

The following members were present

1. Dr. M. B. Vishwanathan - Bharathidasan University, Tiruchy **ABSENT**
Professor
2. Dr. D. Kandavel - Periyar EVR College (Autonomous), Tiruchy **ABSENT**
Associate Professor
3. Dr. S. Saravana Gandhi, - Rani Anna Government College, Tirunelveli ~~9/2/19~~
Associate Professor
4. Dr. T. Sekar - Pachaiyappa's College, Chennai **ABSENT**
Associate Professor
5. Dr. D. Patric Raja D. Patric Raja
6. Dr. S. Beschi Antony Rajan **ABSENT**
7. Dr. G. Sahaya Antony Xavier Sahaya
8. Dr. V. Induvaraj V. Induvaraj
9. Dr. M. Johnson M. Johnson
09/02/19
- 10) Dr. J. John Peter Paul John Peter Paul
11. Rev. Dr. L. John Peter Anulanandham Anulanandham
12. Dr. T. Leon Stephen Raj Leon Stephen Raj
09/02/19
13. Dr. M. Joe Virgin Lorgia M. Joe Virgin Lorgia

14. Dr. A Vinith ~~17/01/2019~~

16. E. Fredrick Raju (17/01/2019)

7/1

15. Dr. L. Jothi Michael Raj

17. M. Manimala (15/01/11) H.M. - jul

17/11/19

- 1) The Minutes of the Previous board of Studies has been approved.
- 2) The following changes are recommended for PG syllabus
- Cell biology & Genetics (Core paper) and Anatomy Embryology & Morphogenesis (Core paper) have combined practicals since it is too heavy the question paper for the Practical exam can be revised.
 - Plant tissue Culture (Elective paper) can be replaced by a new paper in the next revision. For the upcoming semester, the elective paper that will be dealt is 'Biodiversity and Conservation'.
 - In Molecular Biology and genetic engineering (Core paper) under unit - III 'DNA Sequencing' is not the title.
 - In Research techniques (Elective paper). Order of the components of unit I was shuffled.

Manuscript preparation - Journal format, Preparation of full paper - Short notes - Review - Research Communication - Drafting - Submission - Proof reading - Thesis writing - format - Components. Bibliography - Citation - h-index, Google scholar citation, Web of science.

In Unit - III delete pH meter

Add FT-IR, Mass Spectroscopy, MALDI-TOF

on unit V is replaced with

Pharmacognosy - Phytochemical analysis of plant drug. Extraction techniques, - Percolation, - Cold extraction, hot extraction, Soxhlet methods, Ultrasonification. Extraction of Volatile oils, Steam distillation.

3) The following changes are recommended for UG syllabus

- I. B.Sc Plant diversity - I Paper, add in practical Sargassum Fungi for practicals Cercospora, Puccinia.

For PG Plant diversity - I Paper, Algae, add Stachyspermium, For Bryophytes - Reboulia and Funaria and Anthoceros.

~~For B.Sc~~ Combine

If appropriate man power is provided, Project may be given as a Case instead of E.C.C. This can be considered for the next revision.

The Revised Syllabus for Taxonomy of Angiosperms and Plant Physiology (Theory and Practical for II B-sc Zoology is attached).

All the Corrections proposed in Previous board of Studies are carried out

TAXONOMY OF ANGIOSPERMS AND PLANT PHYSIOLOGY
(SUB. CODE: 18UBOTA41)
SEMESTER - IV CORE SUPPORTIVE - 2 HOURS - 4 CREDITS - 4

OBJECTIVES:

1. To study the basic morphology of plants such as leaf, Flower Fruit etc.
2. To understand the Principles of Classification and Nomenclature
3. To study Taxonomic features of Families

EXPECTED OUTCOME:

1. To understand the principles of biosystematics, classification and nomenclature of plants
2. To know the modern trends in plant Taxonomy
3. To understand the functions of plants
4. To realize the importance of water and minerals in the life of plants
5. To understand the role of light in the plants life

Unit I

Objectives of Systematic botany. Morphology: Leaf types, Inflorescence – racemose and cymose, Flower structure and fruit types. Herbarium Methodology: Definition, its utility in the study of plants; Procedure for Plant collection and preservation of plants, field book and field data. Nomenclature: Definition, importance of binomial nomenclature

Unit II

Taxonomic hierarchy, Systems of Classification: A detailed study of Bentham and Hooker's system - merits and demerits. Study of the following families with reference to the morphology, taxonomy and economic importance: *Fabaceae, Solanaceae, Euphorbiaceae, Poaceae*

Unit III

Economic importance of plants - food yielding, oil yielding, fibre yielding, dye yielding and timber yielding. Water potential. Absorption of water and minerals, ascent of sap – cohesion and tension theory. Transpiration: types, mechanism of stomatal movement – Stewart hypothesis. Factors affecting transpiration. Guttation.

Unit IV

Role of macro (N, P, K) and microelements (B, Mo, Zn) in plants. Plant growth regulators – auxins – gibberellins – cytokinins – ethylene – abscisic acid. Photoperiodism and Vernalization

Unit V

Photosynthesis: ultra structure of chloroplast, photosynthetic pigments, light reaction and dark reaction. Calvin cycle, C4 cycle. Factors affecting photosynthesis.

TAXONOMY OF ANGIOSPERMS AND PLANT PHYSIOLOGY - PRACTICALS
(SUB. CODE: 18UBOPA42)

SEMESTER - IV HOURS - 2 CREDITS - 1

1. Determination of DPD by Gravimetric method.
2. Determination of osmotic pressure by plasmolytic method.
3. Effect of temperature and detergent on membrane permeability.
4. Estimation of photosynthetic pigments.
5. Transpiration Index.
6. Demonstration of Clinostat, Ganong's light screen, Mohl's half leaf, Arc auxanometer.
7. Identification of commonly available Leaf, Inflorescence and Fruit types
8. Technical descriptions of plant parts, including floral parts (L. S. of flower, floral diagram and floral formula) with reference to the families prescribed in theory.
9. Submission of record work for valuation in the semester practical examination
10. Submission of Herbarium sheets of any five commonly available specimens in the practical examination

Minutes of the Board of Studies held on 8/02/2020.

Agenda:

- 1) Minutes of the previous board of Studies meeting
- 2) Evaluation of the current UG/PG/M.Phil syllabi.
- 3) Add on courses (Certificate/Diploma courses) for UG/PG.
- 4) Members for the next board of Studies (June 2020 - May 2023)
 - Two subject experts (External)
 - One Alumnus
 - One Representative from Industry/Corporate Sector/ Allied area relating to placement
 - One UG Student and One PG Student
- 5) Any other matter.

1. The minutes of the previous board of Studies meeting is approved.
2. The existing list of papers for the add-on courses are sufficient.
3. PG Syllabus

a Paper: Plant Physiology and Biochemistry (18PB07C33)

Owing to the importance of the subjects Plant Physiology and Biochemistry, they should be offered as separate papers, instead of offering them as a Combined paper.

b. The hours for Practical examinations can be increased for Combined Practicals.

H: UG Syllabus

Paper: Plant Breeding (18UB07EH1) - Elective

The titles, Male sterility and self incompatibility are repeated in Unit I & II.

5. The members of the next board of Studies meeting
 - Two subject experts
 - 1 Dr. S. Saravana Gandhi,
Associate Professor, Dept. of Botany
Rani Anna Government College
Pettai, Tirunelveli.

2. Dr. M. Reginald Appavoo
Associate Professor, Dept. of Botany
Scott Christian College
Nagercoil - 629 003

Industry expert

1. Dr. N. Ganapathy Sany
Manager, Agrotech-Agriculture,
Himalaya Drug company,
Bangalore
Karnataka.

One Alumnus

1. Dr. Sahaya Sathish
Associate Professor, Dept. of Botany,
St. Joseph's college (Autonomous)
Tiruchirappalli - 620 002.

UG Student

1. Ms. Revathi

PG Student

1. Devi Bhavani

Any other matter:

STAND: 1) The hours spent by the students in STAND is 5 hrs, but the credits offered is one. The no. of credits should be proportionately increased.

2) The Director of STAND should be an aided staff.

The HOD Dr. Beschi Antony Rayan proposed the Vote of thanks.
The following members were present

- | | |
|--|--------|
| 1. Dr. H. B. Vishwanathan, Professor
Dept. of Botany, Bharathidasan University
Tiruchy | ABSENT |
| 2. Dr. D. Kandavel, Associate Professor
Dept. of Botany, Periyar E.V.R. College
Tiruchy. | ABSENT |

3. Dr. S. Saravana Gandhi, Associate Professor
Dept. of Botany, Rai' Ama Govt. College
Tirunelveli
4. Dr. T. Sekar, Associate Professor,
Dept. of Botany, Pachaiyappa's College
Chennai
5. Dr. S. Buschi Antony Rayan
6. Dr. G. Sahaya Antony Xavier
7. Dr. M. Johnson
8. Dr. J. John Peter Paul
9. Dr. T. Leon Stephen Raj
10. Rev. Dr. L. John Peter Anulandndam SJ
11. Dr. M. Joe Virgin Lorgia
12. Dr. A. Vinoth
13. Dr. L. Jocbi Michael Raj
14. Dr. M. Johnson Gritto
15. Dr. N. Maria Francis Jeffrey Bose

15/12/2022

ABSENT

Quilley

Madani

M. J. W.

Amte

Bhatia

Amley

ABSENT

d. V. V.

J. P. S. / 12/2022

NT

Jeffrey Bose

**MINUTES OF MEETING OF BOARD OF STUDIES OF BOTANY
HELD ON 06.02.2021 (SATURDAY) BETWEEN 11.15 AM AND 1.30 PM**

- Since the Alumnus member and the PG student representative of the Board were unable to attend the meeting due to their personal reasons, in the absentia of Dr. Sahaya Sathish (Alumnus member), Associate Professor and Dean, School of Biological Sciences, St. Joseph's College (Autonomous) College, Tiruchirapalli - 02; Dr. R. Murugan, Assistant Professor of Botany, Ayya Nadar Janaki Ammal College (Autonomous), Sivakasi - 626124.
- In the absentia of Ms. Devi Bhavani (II M.Sc. Student), Mr. Joice Johny (II M.Sc. Student) consented to attend the BoS meeting and were present. Due permission was obtained from the management.
- The minutes of the previous BoS meeting was presented by Dr. M. Johnson.
- It was observed by the members that the minutes of previous BoS related to STAND Programme was not presented in the academic council. The members insisted that it should not be repeated in future.
- General suggestions given by Experts on UG and PG syllabus
 - The typographical errors have to be checked.
 - The textbooks should be appropriately added wherever needed.
 - Old reference books can be replaced by recent editions.
- Mr. N. Ganapathisamy recommended special instructions to add contents related to medicinal plants and herbal industry which has gained a great boom after COVID.
- The following corrections were made in the UG syllabus.
 - Subject wise corrections and suggestions were given below.
Taxonomy of Angiosperms (18UBOT41)
 - UNIT I - Include 'root, stem and leaf modifications under morphology'
 - UNIT II - the name ICBN should be replaced as ICN
 - Include Principles of ICN and Rule of priority.**Floriculture (18UBOTE41)**
 - UNIT V - Include 'Cultivation and marketing of Crops'**PRACTICAL X - Molecular Biology, Genetic Engineering and Plant Biotechnology (18UBOP65)**

Corrections

- S. No. 2. Isolation and separation of proteins
- S. No. 10. Restriction Digestion Analysis Problems

Include (make following changes)

- S. No. 4. Isolation of Plant DNA
- S. No. 5. Isolation of Plasmid DNA
- S. No. 6. Quantification of DNA
- S. No. 7. PCR

Remove

- Forward PCR using primer BLAST and Reverse PCR using primer BLAST.

Plant Biotechnology

- Isolation and identification of AM fungi

ECC1 - Entrepreneurship Botany

- It can be offered in future as core paper due to its relevance to Job opportunities.

- As per UGC norms, three extra credit courses ECC7, 8 & 9 and one Add-on course ADD1 should be discussed first in the department level meeting and approved.
- If needed a special BoS can be conducted and included in the syllabi, otherwise it can be introduced in the next BoS
- **SBE 3:** Since the college has taken unanimous decision on introducing Professional English (SBE 3), which was replaced instead of the paper 'Horticulture'
- PG syllabus - There were no corrections in the PG syllabus. The experts felt that already the syllabus was up to date to the emerging trends of Botany.

The following members were present in the Board of Study Meeting

1. Subject Experts:

i) Dr. S. Saravana Gandhi,
Associate Professor,
Rani Anna Govt. College,
Pettai, Tirunelveli - 21.

- ABSENT
- W. Rajmohan
6/2/21

ii) Dr. M. Reginald Appavoo
Associate Professor of Botany
Scot Christian College (Autonomous)
Nagercoil - 03

2. Industry Expert:

Mr. N. Ganapathisamy
Herbal Consultant
Hosur, Krishnagiri (Dist.), Tamil Nadu - 635 103.

N. Ganapathisamy
06/02/2021

3. Alumnus

Dr. R. Murugan
Assistant Professor of Botany
Ayya Nadar Janaki Ammal College (Autonomous)

R. Murugan
06/02/21

4. Student Representatives:

Mr. Joice Johny (II M. Sc., Botany SXC)

J. Joice Johny
06/02/21

Ms. Revathi (III B. Sc., Botany, SXC)

J. Revathi

Signature of the faculty members present:

1. Dr. S. Beschi Antony Rayan,
2. Dr. G. Sahaya Antony Xavier
3. Dr. M. Johnsen
4. Dr. J. John Peter Paul
5. Dr. T. Leon Stephen Raj
6. Dr. M. Joe Virgin Largia
7. Dr. A. Vinoth
8. Dr. Y. Justin Koilpillai, Chairman and HOD
9. Dr. L. Joelri Michael Raj
10. Dr. M. Johnson Gritto
11. Dr. N. Maria Francis Jeffrey Bose

They Refused to sign.
16/02/21

J. Joice Johny
06/02/21

J. Revathi
06/02/21

Jeffrey Bose



DEPARTMENT OF BOTANY
ST. XAVIER'S COLLEGE (AUTONOMOUS), PALAYAMKOTTAI

MINUTES OF THE BOARD OF STUDIES MEETING HELD ON 23 APRIL 2022

Agenda

1. Minutes of Previous Board of Studies Meeting
2. Discussion on the UG / PG syllabi
3. Common evaluation pattern for SBE3 - Professional English Course
4. Scheme of evaluation for Practical examinations based on the recommendations of Awards Committee
5. Internship training programme for all Departments, Number of days, Possible months
6. MoU and Collaborative activities under MoU
7. Any other matter

HoD (i/c) initiated the meeting at 10.00 AM. The meeting started with silent prayer. The HoD (i/c) warmly welcomed the external experts and the members. All the external members and faculty were present except Mr. N. Ganapathisamy (Industrial representative).

Agenda 1: Minutes of Previous Board of Studies Meeting

Minutes of previous board of studies meeting was presented by Dr. M. Joe Virgin Largia before the members of the board.

Agenda 2: Discussion on the UG / PG syllabi

The HoD (i/c) read the essence of the two preparatory BoS held on 20/04/22 and 22/04/22 and the syllabus was reviewed one by one before the board. The following suggestions were made by members of board.

UG syllabus

It was recommended by staff members that mandatory practices of field visits in the core subjects for both UG and PG has to be excluded from syllabus due to practical difficulties in getting permission from forest officials and other reasons. But staff who handles the subject can put their own interest in making the arrangement for field visits. However, PG Student representative mentioned the need for field visits as mandatory.

Regarding submission of herbarium, digital herbarium was promoted by staff members, since collection of Plant material is restricted by the forest department. It was also suggested that during field visits it is better to observe the specimen in the local habitat without collection.

Allied – Chemistry I & II

Members of board felt that content of syllabus is heavy. They also suggested to give reference books and text books since there were no text books or reference books suggested. They also suggested having two units for organic chemistry and inorganic chemistry each and one for physical chemistry.

Allied – Animal Structure & Function

Members of board suggested the deletion of existing e-resources in the reference section and inclusion of one or two valued e-resources along with textbooks.

Taxonomy of Angiosperms

In Unit-IV Leguminosae is replaced by Papilionaceae, Caesalpinaceae and Mimosaceae.

Ecotourism

Textbooks were suggested to be added.

Plant Breeding

In unit I, "Self incompatibly, male sterility" has been changed into "Self incompatibly, male sterility and its importance"

Content in Unit II – Self – compatibility, Male sterility and its importance has to be removed. Climate change and pollinators' population decline and its impact on the ecosystem and their productivity has to be added.

Molecular Biology & Genetic Engineering (Practical)

Three major practical - Paper electrophoresis of proteins, Isolation and separation of proteins & Designing a primer have to be excluded. Determination of molecular weight of unknown DNA & Determination of molecular weight of unknown protein have to be included. Restriction digestion analysis (problems removed).

Biochemistry and Biophysics

Textbooks were suggested to be added for Biophysics.

Microbiology and Plant Pathology

Textbooks were suggested to be added e.g. Microbiology by Pelczar *et al.*

Plant Physiology (Theory)

Unit II Calvin Cycle (C3cycle) should be added. In Unit V types of stresses is added.

Plant Physiology (Practical)

Measurement of leaf area index by leaf area meter has to be excluded. Estimation of IAA has to be included.

Plant Biotechnology (Practical)

The production of synthetic seeds is replaced by preparation of synthetic seeds.

Isolation and enumeration of leaf protoplast (Mechanical method) is added.
Isolation and identification of AM fungi is removed.

Elective – Biological techniques

In Unit IV GLC is replaced as LC. References were suggested to be added.

Elective – Biostatistics & Bioinformatics (Practical)

It is recommended to exclude internal practical part completely from syllabus. As two credits and two hours were allotted to Biostatistics & Bioinformatics (internal Practical) paper it could be transferred to Biostatistics & Bioinformatics (Theory) paper as 7 credits and 7 hours.

PG Syllabus

Cell biology and Genetics (Practical)

Exercise 3, 6 and 7 removed. Histochemical localization of primary metabolites and secondary metabolites is added.

Exercise number 4. Smear preparations – Smear preparations only for *Allium cepa*.
Others removed.

In Anatomy Embryology and Morphogenesis (Practical)

Pollen germination pollen tube growth is clubbed with exercise No:3. In Morphogenesis the Exercise No:2 is removed.

Molecular Biology and Genetic Engineering

The title DNA Sequencing is removed. PCR upto blotting techniques is removed.

It was suggested that synthetic biology can be included a separate unit in the major revision.

Molecular Biology and Genetic Engineering (Practical)

Exercise number 8 & 9. is removed.

Research techniques:

In Unit No: IV GC and LC is replaced instead of GLC. NMR principle instrumentation is removed and Applications of NMR, MS and MALDI-TOF is added.

Ecology and Phytogeography Practical

Under water Analysis Exercise No: 5,8 & 10 is removed. In Exercise: 6 Identification of pesticide residues in Plants by TLC method is added.

Plant breeding and Horticulture:

Unit V Lawns, Topiary and pergolas is removed, since they come under components of Gardening. Cultivation of Jasmine and Gladiolus is removed. CBD, WTO, GATT, TRIPS and their implications is removed.

Plant Physiology & Biochemistry (Practical)

Exercise number 11. Separation of amino acid using HPTLC and 12. Isolation of plumbagin / Tannin have to be excluded. Separation of phospholipids by TLC has to be included.

The term assay is replaced by Estimation in exercise 2 and 3

Estimation of protein in different leaf samples by age is added.

Estimation of proline in stress and Non stress plants is added.

Plant and animal Biotechnology (Practical)

Exercise number 8. Cell line culture, 11. Protoplast isolation, 13. Plasmid DNA isolation, 14. Bacterial DNA isolation and 15. Agrobacterium mediated gene transformation have to be excluded. Preparation of synthetic seeds is added. Experiments on localization of primary metabolites and secondary metabolites has to be separately added.

Plant and Animal Bio-technology (Theory & Practical)

Earlier this paper was concerned as interdisciplinary subject. Our staff members and students go for Zoology department and Staff members and students come for Botany department for learned. Now it has been unanimously proposed by staff members of as subject in Department of Botany. Staff members and students will not go to Department of Zoology for learning. It will be taught only by staff members of Department of Botany.

Microbiology & Plant Pathology Practical

Exercise number 5. Test for coliforms, 7. Screening and identification of VAM & 10. Spore ontogeny has to be excluded.

Taxonomy of Angiosperms (Theory)

APG is positioned under classifications systems.

Rubiaceae is added in Unit V

Taxonomy of Angiosperms (Practical)

Since field visit was cancelled by members of staff, submission of herbaria from minimal number 15 to 50 has to be adopted.

Ranunculaceae is replaced by Rubiaceae.

Digital Herbarium is replaced by Digital flora

General suggestions:

The scheme of evaluation for Practicals were sought for all subjects in which it is missing, for which staff replied to verify the previous records.

The course outcomes should be revised according to Blooms taxonomy uniformly especially up to K4 for UG. Add textbooks/references and two standard e -resources appropriately wherever needed.

Agenda 2: Scheme of evaluation for practical examinations based on the recommendations of awards committee meeting.

Staff members suggested that since we are dealing biological Sciences, a common scheme of evaluation for all papers cannot be followed.

Agenda 3: Internship training programmes for all departments, number of days possible months

Regarding Internships, clarification on details of budget, work load adjustment, student's expenditure, staff remunerations and other aspects is needed.

Agenda 4: MoU and collaborative activities under MoU

HoD (i/c) will take initiative to make at least 2 MoUs in the next academic year.

Agenda 5: Common evaluation pattern for SBE-3 Professional English

It was suggested that HoD(i/c) ensure the current status of Professional English course in the University and it is recommended to replace it with Major elective as in the previous academic year. However the examination pattern for internal and external were discussed and approved. The evaluation Pattern is attached.

Agenda 6: Any other matter

It was recommended by the board that ^{from} in next academic year practical evaluation & project evaluation of all UG & PG course could be done by external examiners from other institutions.

The HOD should present all points resolved in the board in the academic council.

Dr. S. R. Senthilkumar, (University Nominee)

Associate Professor, Dept. of Botany

St. Joseph's College, Tiruchirappali – 620 002.

J. Senthil Kumar
23/4/22

Dr. S. Saravana Gandhi, (Subject Expert)

Associate Professor of Botany,

Rani Anna Government College, Pettai, Tirunelveli – 627 008.

S. Saravana Gandhi
23/4/22

Dr. Reginald Appavoo, (Subject Expert)

Assistant Professor of Botany, Scott Christian College, Nagercoil – 629 003.

Reginald Appavoo

Dr. R. Murugan, (Alumnus)

Assistant Professor of Botany,

Ayya Nadar Janaki Ammal College (Autonomous), Sivakasi – 626 123.

R. Murugan

Mr. N. Ganapathisamy, (Industrial Representative)
Herbal Consultant, Hosur, Krishnagiri - 635 103.

- ABSENT -

Faculty Members

1. Dr. S. Beschi Antony Rayan
2. Dr. G. Sahaya Anthony Xavier
3. Dr. M. Johnson
4. Dr. J. John Peter Paul
5. Dr. T. Leon Stephan Raj
6. Dr. M. Joe Virgin Largia
7. Dr. A. Vinoth
8. Dr. Y. Justin Koilpillai, *Prof.*
9. Dr. L. Joelri Michael Raj HOD (i/c) *Diodes 7.22/04 (CHAIRMAN)*
10. Dr. M. Johnson Gritto *MT 23/04/22*
11. Dr. N. Maria Francis Jeffrey Bose *Jyly Bose 23/04/22*

P.G. Swetha, (Student's Representative for UG)

Register Number: 20UBO141. *P.G. Swetha*

Sr. Swaroopa Arul Jothi (Student's Representative for PG)

Register Number: 21PBO01. *Swaroopa Jothi*



DEPARTMENT OF BOTANY
ST. XAVIER'S COLLEGE (AUTONOMOUS), PALAYAMKOTTAI

PROFESSIONAL ENGLISH FOR LIFE SCIENCES

SCHEME OF ASSESSMENT

CIA Tests (two CIA)

Theory - 35 Marks

Question Pattern

Time: 1 Hr

I. Part A 3 X 5 = 15 Marks (Answer all the questions)

II. Part - B 2 X 10 = 20 Marks (Out of three)

Note: The Internal 30 Marks to be awarded based on the following components.

Presentation - 15 Marks

Group Discussion - 15 Marks

Total - 30 Marks

Semester Examination

Theory - 50 Marks

Question Pattern

Time: 2.00 Hrs

I. Part - A 4 X 5 = 20 Marks (Answer all the questions)

II. Part - B 3 X 10 = 30 Marks (Out of 4 Questions)

Handwritten signature and date: 25/04