



Digras Vibhagiya Shikshan Prasarak Mandal's
**Bapuraoji Butle Arts, Narayanrao Bhat Commerce &
Bapusaheb Patil Science College, DIGRAS DIST. YAVATMAL.**

Affiliated to Sant Gadge Baba Amravati University,
Amravati Maharashtra.

[NAAC Re-accredited 'A' (CGPA. 3.16)]

College Code : (Sr.) 405

College Code : (Jr.)

Pay Unit – 146

Board – 08.04.002

Website : www.bbnbbpcollege.org

E-Mail : principal.bnbcollege@gmail.com

1.3.2 Number of courses that include experiential learning through project work/field work/internship during the year.

Minutes of the Boards of Studies/ Academic Council meetings with approvals for these courses



[Signature]

Principal

B.B.Arts,N.B.Com.& B.P.Science
College,DIGRAS-445203

M.Sc. Sem-I to IV
(Botany)

Prospectus No. 2017126

संत गाडगे बाबा अमरावती विद्यापीठ

SANT GADGE BABA AMRAVATI UNIVERSITY

विज्ञान विद्याशाखा
(FACULTY OF SCIENCE)

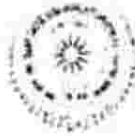
अभ्यासक्रमिका
विज्ञान पारंगत परिक्षा (वनस्पतीशास्त्र)
सत्र- १ ते ४

PROSPECTUS
OF
MASTER OF SCIENCE EXAMINATION
IN
BOTANY

Semester - I & III, Winter 2016
Semester - II & IV, Summer 2017,

Continued for Semester-I, III
Winter-2018,
Semester-II, IV - Summer-2019
(As it is)

Continued for Semester-I & III
Winter-2017
Semester II & IV-Summer-2018
(along with Notification No.56/2017) 2016
Visit at www.sghat.ac.in



Continued for Semester-I, III
Winter-2019
Semester-II, IV Summer 2020
(As it is)

Price Rs. 40



Signature

B.A., B.Com., B.Sc., B.P.Sc., B.P.Ed., B.L., B.Arch., B.Des., B.F.A., B.F.D., B.F.T., B.F.T., B.F.T., B.F.T.

APPENDIX-A
SCHEME OF EXAMINATION FOR M.Sc. PART-I & II
(FOR ALL SUBJECTS)

i) M.Sc. Part-I	Paper-I	-	50 Marks	Practical-I	-	40 Marks
Semester-I	Paper-II	-	50 Marks	Internal Assessment	-	10 Marks
	Paper-III	-	50 Marks	Practical-II	-	40 Marks
	Paper-IV	-	50 Marks	Internal Assessment	-	10 Marks
M.Sc. Part-I	Paper-V	-	50 Marks	Practical-III	-	40 Marks
Semester-II	Paper-VI	-	50 Marks	Internal Assessment	-	10 Marks
	Paper-VII	-	50 Marks	Practical-IV	-	40 Marks
	Paper-VIII	-	50 Marks	Internal Assessment	-	10 Marks
M.Sc. Part-II	Paper-IX	-	50 Marks	Practical-V	-	40 Marks
Semester-III	Paper-X	-	50 Marks	Internal Assessment	-	10 Marks
	Paper-XI	-	50 Marks	Practical-VI	-	40 Marks
	Paper-XII	-	50 Marks	Internal Assessment	-	10 Marks
M.Sc. Part-II	Paper-XIII	-	50 Marks	Practical-VII	-	40 Marks
Semester-IV	Paper-XIV	-	50 Marks	Internal Assessment	-	10 Marks
	Paper-XV	-	50 Marks	Project Work	-	40 Marks
	Paper-XVI	-	50 Marks	Internal Assessment	-	10 Marks

ii) For the subject Mathematics, there shall be five theory papers of sixty marks for each semester.

- Notes:-**(1) Minimum pass marks for theory and practical examination including internal assessment shall be 36% separately.
- (2) (a) Topic of project work shall be given by concerned supervisor with prior approval of Head of Department.
 There shall be no duplication of the topic of the project work. Project shall be based on research in the laboratory and / or field work. Project work shall be allotted at the beginning of third semester and the student shall have to submit it atleast 15 days before commencement of practical examination of the fourth semester. Project work will be evaluated by external and internal examiners.
- (b) There should be atleast 2 to 3 external examiner for a batch of 10 students or 3 to 5 external examiner for a batch more than 10 students.
- (3) There shall be separate exemption in theory and / or practical on getting minimum pass marks.
- (4) Internal Assessment marks for all semesters shall be granted on the basis of - performance of students in any of the following activities:-
 (i) Study tour, (ii) Seminar, (iii) field visits, (iv) Industrial visits, (v) visit to research institute / organisation.
 (vi) Assignments, (vii) Unit test and any other co-curricular activities.
- (5) The concerned Department or College shall have to maintain the record of award of internal assessment marks.



[Signature]
Officiating Principal
B.B. Arts, N.B. Commerce &
B.P. Science College, Digra

PRACTICAL-VII: PLANT ECOLOGY, ENVIRONMENTAL ECOLOGY, BIOTECHNOLOGY AND GENETIC ENGINEERING

PRACTICAL SCHEDULE

Time : 8 hrs.

Time : 8 hrs.

— 08 Marks

Q2. Setting and working of major Experiment on

— 0.02 M of sodium

Q.3. Working of major experiment on Environmental

07 November

Q.4. Major Experiment on Genetic Engineering

Q.5. Comment on one minor Experiment on genetic Engineering/

—05 Marks

Q.6. Viva-Voce

Important note: -

One long and two short Botanical Excursions and visits to Scientific Laboratories/Institutions/Universities/Botanical Gardens/Forests within and out of state are compulsory for students of M.Sc. Botany.

PRACTICAL-VIII:

Project to the students will be distributed at the beginning of third Semester with the consent of HOD and shall be examined during the period of practical examination in IV Semester

40 marks

10 Marks

Int. Assessment

000000


Officiating Principal
B.A.T.S., N.B. Commerce &
Science College, Digras

डॉ. प्र. शं. नारखेडे

पोस्ट डी.

सहसचिव



नं. अधिसूचित - २८ अणी

संत गाडगे बाबा

अमरावती विद्यापीठ

अमरावती-४४४ ६०२

(महाराष्ट्र)

क्र.आव/६-उ/ए-१७७/२००५

दिनांक : ७ जून, २००५

प्रति,

प्राचार्य

सर्व संलग्नित महाविद्यालये, आणि

विभाग प्रमुख,

रासायनिक तंत्रशास्त्र शैक्षणिक विभाग,

संत गाडगे बाबा अमरावती विद्यापीठ

विषय : शैक्षणिक वर्ष २००५-२००६ पासून पदवी स्तरावर पर्यावरणात्मक अभ्यास हा विषय अनिवार्य रूपात नेमण्याबाबत

महोदय,

- १) सहसचिव विद्यापीठ अनुदान आयोग, नवी दिल्ली यांनी त्यांच्या दि.३१.०७.२००३ च्या पत्राद्वारे माननीय सर्वोच्च न्यायालयाने दिलेल्या निर्देशानुसार पर्यावरणात्मक अभ्यास हा विषय पदवीपूर्व अभ्यासक्रमांमध्ये विद्यापीठ आणि विद्यापीठाशी संलग्नित महाविद्यालयांमधील राजी विद्याशाखांमध्ये समाविष्ट करण्याबाबत कळविले होते आणि याच पत्रासोबत सदर विषयाचा नमुना अभ्यासक्रम सुद्धा विद्यापीठाला पाठविला होता.
- २) अवर सचिव, उच्च व तंत्र शिक्षण विभाग, मंत्रालय, मुंबई यांनी त्यांच्या दिनांक १४.१०.२००३ च्या पत्राद्वारे असे सूचित केले होते की मा.सर्वोच्च न्यायालयाने याचिका क्रमांक ४६०/१९९२ मध्ये दिनांक २२.११.१९९२ रोजी दिलेल्या निर्णयान्वये पर्यावरणात्मक अभ्यास हा विषय महाविद्यालयांच्या अभ्यासक्रमात समाविष्ट करून तो सक्तीचा करता येईल किंवा कसे? याची पडताळणी करून योग्य तो निर्णय घेऊन सदर निर्णय कळविण्याबाबत सूचित केले होते.
- ३) विद्यापीठाच्या विद्वत परिषदेने दि.२४.८.२००३ रोजी भरलेल्या बैठकीत मुद्दा क्र.४६ अंतर्गत पर्यावरणात्मक अभ्यास हा विषय शैक्षणिक वर्ष २००५-०६ पासून अनिवार्य रूपात सुरु करण्याबाबत निर्णय घेतला होता. या निर्णयाच्या अनुषंगाने सदर विषय अनिवार्य रूपात खाली नमूद असलेल्या पदवी अभ्यासक्रमांसाठी नमूद असलेल्या वर्षाला/सत्रांना लागू करण्यासाठी क्र.४२/२००५ हा अध्यादेश व्यवस्थापन परिषदेने मान्य केला आहे तसेच मा.कुलगुरुंनी सदर अभ्यासक्रमासाठी नियमित विद्यार्थ्यांकडून वसूल करावयाच्या अतिरिक्त शुल्काबाबत क्रमांक ५/२००५ हा निदेश प्रसारीत केला आहे.

1) Bachelor of Arts

(Second Year)

2) Bachelor of Performing Arts

(Second Year)

दुरध्वनी & कार्यालय- ०७२९-२६६२५७३, २६६०३४८ निवास- ०७२९-२६६२२०८

फॅक्स क्र. ०७२९-२६६०९४९, २६६२५३५ ग्राम : अमुनि

Website : www.amtuni.com E-Mail : reguni@amtuni.com

S.P. Baidark



Officiating Principal
B.B.Arts,N.E.Commerce &
B.P.Science College,Digras

ORDINANCE NO. 42 OF 2005

Examination in Environmental Studies leading to Bachelor Degree, Ordinance, 2005

Whereas it is expedient to frame an Ordinance relating to Examination in Environmental Studies leading to Bachelor Degree level, hereinafter appearing, the Management Council is hereby pleased to make the following Ordinance:

1. This Ordinance may be called "Examination in Environmental Studies leading to Bachelor Degree Ordinance, 2005."
2. This Ordinance shall come into force from the Academic session 2005-06.
3. In this Ordinance and in other ordinances relating to the examination, unless there is anything repugnant in the subject or context :-

- (i) "Academic session" means a session commencing on such date and ending with such date of the year following as may be appointed by the Management Council.
- (ii) "Admission to an examination" means the issuance of an admission card to a candidate in token of his having complied with all the conditions laid down in the relevant ordinance, by a competent officer of the University.
- (iii) "Applicant" means a person who has submitted an application to the University in the form prescribed for admission to an examination.
- (iv) "Candidate" means a person who has been admitted to an examination by the University.
- (v) "Regular Candidate" means an applicant who has applied for admission to a University examination through an affiliated college, Department or Institute in which he/she has prosecuting a regular course of study.
- (vi) "Examinee" means a person who present himself/herself for an examination to which he/she has been admitted.
- (vii) "Examination" means an examination prescribed by the University under the relevant Ordinance.
- (viii) "External Candidate" means a candidate who is allowed to take a University examination in accordance with the provision of Original Ordinance No. 151.
- (ix) "Non-Collegiate Candidate" means a candidate who is not a collegiate candidate.
- (x) An "Ex-student" is a person who having once been admitted to an examination of this University, is again required to take the same examination by reason of his failure or absence thereat and shall include a student who may have joined a college, Department or Institute again in the same class.
- (xi) "Bachelor Degree Examination" means a examination leading to Bachelor Degree of the University.
- (xii) "Previous Year" means a year following by final year of Bachelor Degree.

Save as otherwise specifically provided, the conditions prescribed for admission to the examination under this Ordinance shall apply to all persons who wish to take the examination to the Degrees of the University mentioned in para 5 below.

The conditions prescribed for admission to examination under this Ordinance shall apply to following degrees of the University :-

- | | |
|--|---|
| 1) Bachelor of Arts | 2) Bachelor of Performing Arts |
| 3) Bachelor of Fine Arts | 4) Bachelor of Mass Communication |
| 5) Bachelor of Social Work | 6) Bachelor of Commerce |
| 7) Bachelor of Business Administration | 8) Bachelor of Science |
| 9) Bachelor of Computer Science | 10) Bachelor of Computer Applications |
| 11) Bachelor of Pharmacy | 12) Bachelor of Science (Home Science) |
| 13) Bachelor of Technology (Cosmetics) | 14) Bachelor of Engineering |
| 15) Bachelor of Engineering (Part Time) (Civil) | 16) Bachelor of Textile |
| 17) Bachelor of Technology (Chemical Technology) | 18) Bachelor of Technology (Chemical Engg.) |
| 19) Bachelor of Architecture, and | 20) Bachelor of Laws (Five Year Course) |



S. M. M. M.
Officializing Principal
B.A. Arts, N.D. Commerce &
S.A. Science College, Delhi

6. i) Environmental Studies shall be a compulsory subject for a previous year examination of the following Bachelor Degrees of the University.

- | | |
|--|---|
| 1) Bachelor of Arts | 7) Bachelor of Performing Arts |
| 3) Bachelor of Fine Arts | 4) Bachelor of Mass Communication |
| 5) Bachelor of Social Work | ✓ 6) Bachelor of Commerce |
| 7) Bachelor of Business Administration | 8) Bachelor of Science |
| 9) Bachelor of Computer Science | 10) Bachelor of Computer Applications |
| 11) Bachelor of Pharmacy | 12) Bachelor of Science (Home Science) |
| 13) Bachelor of Technology (Cosmetics) | 14) Bachelor of Engineering (Part Time) (Civil) |

ii) Environmental Studies shall be a compulsory subject for IIIrd & IVth Semester of the following Bachelor Degrees of the University.

- | | |
|---|--|
| 1) Bachelor of Engineering | 2) Bachelor of Textile |
| 3) Bachelor of Technology (Chemical Technology) | 4) Bachelor of Technology (Chemical Engineering) |
| 5) Bachelor of Architecture, and | |

iii) Environmental Studies shall be a compulsory subject for Vth & VIth Semester of the Degree of Bachelor of Laws (Five Year Course)

7. Examination leading to Environmental Studies at above mentioned Bachelor Degree courses shall be held once in Academic session i.e. in Summer only, at such places and on such date as may be appointed by the Board of Examinations.

Explanation :- Examination to be held in Summer shall be conducted on the basis of one common question paper for all Bachelor Degree courses irrespective of annual or semester pattern.

8. Scope of the subject for annual pattern examination and or semester pattern examination shall be as provided under the syllabus.
9. Common question paper for all courses covered under this Ordinance alongwith answer books shall be supplied by the University to the Colleges, Departments and Institutes for conducting the examination of the subject.
10. Valuation of the answer books relating to this subject shall be done at College/Department/Institution level only. Remuneration for valuation of answer books shall not be paid by the University.
11. It shall be obligatory on the part of the College/Department/Institute to submit candidate wise following information to the University on or before the date as may be prescribed by the University :-

Sr. No.	Grade/Category	Marks secured
1.	"A"	- 60 and above
2.	"B"	- 45 to 59
3.	"C"	- 35 to 44
4.	"D"	- 25 to 34
5.	"Fail"	- 1 and below
6.	"Absent"	

12. For the purposes of teaching, learning and examination, the Committee consisting of three teachers shall be appointed by the Principal/ Head of the Department/In-charge of the Institution under his/her Chairmanship/Chairpersonship. While appointing three teachers on the said committee, the Principal shall take care that the teachers to be appointed on the committee, if necessary, shall be from different faculty.

13. i) Duration of theory examination of this subject shall be three hour.
ii) For all Bachelor Degree examinations, common question paper of 100 marks shall be provided by the University.
iii) Distribution of these 100 marks shall be as follows:-
- | | |
|---|----------|
| a) Part-A, Short Answer Pattern | 25 Marks |
| b) Part-B, Essay type with inbuilt choice | 50 Marks |
| c) Part-C, Essay on Field Work | 25 Marks |
14. Medium of instruction shall be English or Marathi or Hindi. Question paper shall be supplied in English and Marathi and Hindi. A candidate shall have option to write answers in English or Marathi or Hindi.
15. Examination of this subject shall be compulsory for external candidate also.
16. For teaching of the subject, there shall be atleast two hour per week. For teaching the subject to the regular candidates, a full time approved teacher of the University, and or a person having Postgraduate Degree in any faculty with second class shall be considered eligible.
17. For teaching of the subject, additional fee to be charged to regular candidate shall be as prescribed by the University.
18. Fees for examination to be paid to the University shall be as prescribed by the University from time to time.
- ✓ 19. The Grade secured by an examinee in the examination of this subject shall not be considered for providing the facility of A.T.K.T. in next higher class.
20. The provisions of Ordinance No. 18/2001 shall not be applicable for securing a grade or higher grade in the examination of this subject.
21. Result of the Final Year of the respective Degree shall not be declared of an examinee unless he/she secures any one of the grade in the examination of subject.
Provided an examinee admitted to Five Year L.L.B. course desiring not to continue his/her education beyond Sixth Semester of the said course shall have to secure any one of the grade in the examination of the subject otherwise his/her result of Sixth Semester for awarding B.A. degree shall not be declared.
22. Grade secured by an examinee in the examination of the subject shall be shown in the statement of marks of Final Year/Last Semester examination.



[Signature]
Officiating Principal
B.Arts, N.B. Commerce &
P.Science College, Digra

DIRECTION

No.5/2005.

Date : 3/6/2005

Subject : Fees to be charged to the students of the subject Environmental Studies as a compulsory subject at Bachelor Degree level

Whereas the Academic Council in its meeting held on 24/8/2003, vide Item No. 65, considered the letter received from Dr. Narendra Jain, Joint Secretary, University Grants Commission, New Delhi, dtd. 31st July, 2003, alongwith a copy of "Six month module Syllabus for Environmental Studies for Undergraduate courses" of all branches of Higher Education and resolved to refer the letter alongwith module Syllabus to all faculties for their considerations and recommendations thereon. The Council further resolved that the said recommendations be placed before the joint meeting of the Deans for further recommendations to the Academic Council.

AND

Whereas the joint meeting of Deans of faculties under the Chairmanship of Hon'ble Vice-Chancellor held on 16th July, 2004 has considered the recommendations of the faculties in the University regarding "Six month module Syllabus for Environmental Studies for Undergraduate courses" and resolved to recommend the decisions taken by it in respect of the subject Environmental Studies to the Academic Council.

AND

Whereas Academic Council in its meeting held on 16-08-2004 on considering Item No. 46 on the Agenda, resolved to accept the minutes of the joint meeting of Deans of the faculties in the University.

AND

Whereas as per decision of the Academic Council, the subject Environmental Studies is to be appointed as a compulsory subject for the previous year of the Bachelor Degree from the Academic session 2005-2006 excluding the Bachelor Degrees in the faculty of Education and LL.B. Three Year Course.

AND

Whereas the Management Council in its meeting held on 21/05/2005, vide Item No. 167 has accepted fees to be charged to the students of the subject Environmental Studies as a compulsory subject at Bachelor Degree level.

AND

Whereas the matter is required to be regulated by an Ordinance and making amendment in the existing Ordinance is time consuming process.

Now, therefore, I, Dr. S.N. Patil, Vice-Chancellor of Sant Gadge Baba Amravati University in exercise of powers conferred upon me under sub section (8) of Section 14 of the Maharashtra Universities Act, 1994, do hereby issue the following direction :-

- 1) This direction shall be called "Examination in Environmental Studies leading to Bachelor Degree, Direction, 2005"
- 2) This direction shall come into force from the date of its issuance
- 3) Every College / University Teaching Department shall charge additional fee of Rs. 100/- to every student of the subject Environmental Studies. Out of this Rs. 100/-, the College / University Teaching Department shall have to pay Rs. 25/- to the University as an examination fee of each candidate for the subject Environmental Studies.
- 4) Answer books of external examinee shall be evaluated at the examination centre where the examinee has been examined for the subject Environmental Studies. Each examination centre shall be paid prescribed evaluation fee for evaluation of each answer book of external examinee appeared from that examination centre.

Amravati
Date : 03/06/2005.

Sd/-
(Dr. S.N. Patil)
Vice-Chancellor

SANT GADGE BABA AMRAVATI UNIVERSITY GAZETTE



Official Publication of Sant Gadge Baba Amravati University.

PART-TWO

FRIDAY, THE 3RD JUNE, 2005
(EXTRA - ORDINARY)
NOTIFICATION

No. 121/2005.

Date : 03/06/2005.

Subject : Syllabus for the subject Environmental Studies as a compulsory subject for twenty Bachelor Degree courses of the University

1. It is notified for information of all concerned that the University authority has accepted that the subject Environmental Studies is to be appointed as a compulsory subject for the previous year of the following twenty Bachelor Degree courses from the Academic session 2005-2006 excluding the Bachelor Degree courses in the faculty of Education and LL.B. Three Year Degree Course.

2. i) Environmental Studies shall be a compulsory subject for a previous year examination (i.e. Second Year or Third Year as the case may be) of the following Bachelor Degree courses of the University :-

- | | |
|---|-----------------|
| ✓ 1) Bachelor of Arts | (Second Year) |
| 2) Bachelor of Performing Arts | (Second Year) |
| 3) Bachelor of Fine Arts | (Third Year) |
| 4) Bachelor of Mass Communication | |
| 5) Bachelor of Social Work | (Second Year) |
| ✓ 6) Bachelor of Commerce | (Second Year) ✓ |
| 7) Bachelor of Business Administration | (Second Year) |
| ✓ 8) Bachelor of Science | (Second Year) |
| ✓ 9) Bachelor of Computer Science | (Second Year) |
| 10) Bachelor of Computer Applications | (Second Year) |
| 11) Bachelor of Pharmacy | (Third Year) |
| 12) Bachelor of Science (Home Science) | (Second Year) |
| 13) Bachelor of Technology (Cosmetics) | (Third Year) |
| 14) Bachelor of Engineering (Part Time) (Civil) | (Third Year) |

ii) Environmental Studies shall be a compulsory subject for IIIrd & IVth Semesters of the following Bachelor Degree courses of the University :-

- 1) Bachelor of Engineering
- 2) Bachelor of Textile
- 3) Bachelor of Technology (Chemical Technology)
- 4) Bachelor of Technology (Chemical Engineering)
- 5) Bachelor of Architecture, and

iii) Environmental Studies shall be a compulsory subject for Vth & VIth Semester for the Degree of Bachelor of Laws (Five Year Course).

3. Syllabus for the subject Environmental Studies as a compulsory subject for the above mentioned twenty Bachelor Degree courses shall be as provided under "Appendix-A" appended with this notification

Sd/-

(Dr.P.S.Narkhede)

Registrar,

Sant Gadge Baba Amravati University.

SANT GADGE BABA AMRAVATI UNIVERSITY GAZETTE - 2005 - PART TWO - 171



[Signature]
Officiating Principal
B.E. Arts, N.D. Commerce &
B.P. Science College, Digras

(Refer para 3 of Notification No. 121 of 2005, dated 03/06/2005)

**SYLLABUS FOR
ENVIRONMENTAL STUDIES
AT BACHELOR DEGREE LEVEL**

Total Marks : 100

PART-A

SHORT ANSWER PATTERN

25 Marks

1. **The Multi-disciplinary nature of environmental studies**
 - Definition, scope and importance
 - Need for public awareness. (2 lecture hours)
2. **Social Issues and the Environment**
 - From Unsustainable to Sustainable development
 - Urban problems related to energy
 - Water conservation, rain water harvesting, watershed management
 - Resettlement and rehabilitation of people; its problems and concerns. Case studies.
 - Environmental ethics : Issues and possible solutions.
 - Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
 - Wasteland reclamation.
 - Consumerism and waste products.
 - Environment Protection Act.
 - Air (Prevention and Control of Pollution) Act.
 - Water (Prevention and Control of Pollution) Act.
 - Wildlife Protection Act.
 - Forest Conservation Act.
 - Issues involved in enforcement of environmental legislation.
 - Public awareness. (7 lecture hours)
3. **Human Population and the Environment**
 - Population growth, variation among nations.
 - Population explosion - Family Welfare Programme.
 - Environment and human health.
 - Human Rights.
 - Value Education.
 - HIV / AIDS.
 - Women and Child Welfare.
 - Role of Information Technology in Environment and human health.
 - Case Studies. (6 lecture hours)

PART-B

ESSAY TYPE WITH INBUILT CHOICE

50 Marks

4. **Natural resources :**
 - **Renewable and non-renewable resources :**
 - Natural resources and associated problems.
 - Forest resources : Use and over exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
 - Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
 - Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
 - Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer - pesticide problems, water logging, salinity, case studies.

- Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources, Case studies.
- Land resources : Land as a resource, Land degradation, man induced landslides, soil erosion and desertification.
- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles. (8 lecture hours) + 7 = 17

5. **Ecosystems**

- Concept of an ecosystem.
 - Structure and function of an ecosystem.
 - Producers, consumers and decomposers.
 - Energy flow in the ecosystem.
 - Ecological succession.
 - Food chains, food webs and ecological pyramids.
 - Introduction, types, characteristic features, structure and function of the following ecosystem :-
 - Forest ecosystem -
 - Grassland ecosystem -
 - Desert ecosystem -
 - Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) -
- (6 lecture hours) + 17 = 23

6. **Biodiversity and its conservation**

- Introduction - Definition : genetic, species and ecosystem diversity.
- Biogeographical classification of India.
- Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation.
- Hot-spots of biodiversity.
- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India.
- Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity. (8 lecture hours) + 23 = 31

7. **Environmental Pollution**

- Definition
 - Causes, effects and control measures of -
 - Air pollution
 - Water pollution
 - Soil pollution
 - Marine pollution
 - Noise pollution
 - Thermal pollution
 - Nuclear hazards
- Solid Waste Management : Causes, effects and control measures of
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster management : floods, earthquake, cyclone and landslides. (8 lecture hours) + 21 = 34

PART-C

ESSAY ON FIELD WORK

25 Marks

8. **Field work**

- Visit to a local area to document environmental assets - river / forest / grass land / hill / mountain
- Visit to a local polluted site - Urban / Rural / Industrial / Agricultural



Shruti
 Officiating Principal
 B.B.Arts, B.B.Commerce &
 B.P.Science College, Digras

- Study of common plants, insects, birds.

- Study of simple ecosystems - pond, river, hill slopes, etc. (Leave notice) 4 39 = 44

- (Notes : i) Contents of the syllabys mentioned under paras 1 to 8 shall be for teaching for the examination based on Annual Pattern.
- ii) Contents of the syllabys mentioned under paras 1 to 4 shall be for teaching in the Semester commencing first, and
- iii) Contents of the syllabys mentioned under paras 5 to 8 shall be for teaching in the Semester commencing later.

LIST OF REFERENCES :-

- 1) Agarwal, K.C., 2001, Environmental Biology, Nidi Publ. Ltd., Bikaner.
- 2) Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad - 380 013, India, Email : mapin@icenet.net (R)
- 3) Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p.
- 4) Clark R.S., Marine Pollution, Clarendon Press Oxford (TB)
- 5) Cunningham, W.P.Cooper, T.H.Gorham, E & Hepworth, M.T., 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p.
- 6) De A.K., Environmental Chemistry, Wiley Eastern Ltd.
- 7) Down to Earth, Centre for Science and Environment (R)
- 8) Gleick, H.P. 1993, Water in Crisis, Pacific Institute for Studies in Dev., Environment & Security, Stockholm Env. Institute, Oxford Univ. Press. 473p.
- 9) Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Mumbai (R)
- 10) Heywood, V.H. & Watson, R.T. 1995, Global Biodiversity Assessment, Cambridge Univ. Press 1140p
- 11) Jadhav, H & Bhosale, V.M. 1995, Environmental Protection and Laws, Himalaya Pub. House, Delhi. 284 p.
- 12) McKinney, M.L. & Schoch, R.M. 1996, Environmental Science Systems & Solutions, Web Enhanced Edition. 639 p.
- 13) Mhaskar A.K., Matter Hazardous, Techno-Science Publications (TB)
- 14) Miller T.G. Jr., Environmental Science, Wadsworth Publishing Co. (TB)
- 15) Odum, E.P., 1971, Fundamentals of Ecology, W.B.Saunders Co., U.S.A., 574p.
- 16) Rao M.N. & Datta A.K., 1987, Waste Water Treatment, Oxford & IBH Publ. Co. Pvt. Ltd. 345 p
- 17) Sharma B.K., 2001, Environmental Chemistry, Goel Publ. House, Meerut.
- 18) Survey of the Environment, The Hindu (M)
- 19) Townsend C., Harper J., and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
- 20) Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media (R)
- 21) Trivedi R.K. and P.K. Goel, Introduction to Air Pollution, Techno-Science Publications (TB)
- 22) Wagner K.D., 1998, Environmental Management, W.B.Saunders Co., Philadelphia, 257p. 499p.

- (M) Magazine
(R) Reference
(TB) Textbook

B.B.Arts, N.B. Commerce & B.P. Science College, Digras

PROJECT- Visit to Bhavani Temple Hill

ENVIRONMENTAL STUDIES 2022-23 (Date-----)

Sr.No	Name	Signature of the Students
1	Aarti Dnyaneashwar Thakare	WATER POLLUTION
2	Aarti Ravi Lambe	WATER POLLUTION
3	Abhiraj Ravindra Kashid	WATER POLLUTION
4	Ajay Suresh Rathod	SOLID WASTE MANAGEMENT
5	Akhilesh Vijay Dhure	SOLID WASTE MANAGEMENT
6	Akshada Subhash Payar	POLLUTION
7	Akshita Shriharsh Tupsundare	POLLUTION
8	Amit Prakash Rathod	POLLUTION
9	Anjali Dinesh Kandhar	POLLUTION
10	Anjali Ulhas Ade	POLLUTION
11	Anuradha Devman Meshram	WATER POLLUTION
12	Ashish Gajanan Londhe	WATER POLLUTION
13	Asmita Pandurang Chavhan	WATER POLLUTION
14	Atul Ravi Chavhan	WATER POLLUTION
15	Avinash Shankar Jadhao	WATER POLLUTION
16	Babita Babulal Jadhao	SOLID WASTE MANAGEMENT
17	Bharti Prakash Madhe	SOLID WASTE MANAGEMENT
18	Chandan Ajay Jadhav	SOLID WASTE MANAGEMENT
19	Chetan Bhimrao Rathod	SOLID WASTE MANAGEMENT
20	Chetan Vinod Chavhan	WATER POLLUTION
21	Dhanashri Suresh Rathod	WATER POLLUTION
22	Dikshant Manohar Rathod	WATER POLLUTION
23	Dikshant Shravan Khandare	WATER POLLUTION
24	Dipak Pandurang Dawale	SOLID WASTE MANAGEMENT
25	Dipali Laxman Patre	POLLUTION
26	Durgadas Rohidas Chavhan	POLLUTION
27	Fiza Abdul Ghani	POLLUTION



28	Ganesh Vitthal Metkar	POLLUTION
29	Gauri Ramrao Thakare	POLLUTION
30	Gauri Umesh Bawane	WATER POLLUTION
31	Gayatri Ramesh Shinde	POLLUTION
32	Gopal Gajanan Waghmare	WATER POLLUTION
33	Gopal Uttam Ingale	POLLUTION
34	Harshad Ramdas Chavhan	SOLID WASTE MANAGEMENT
35	Ishwar Waman Rathod	SOLID WASTE MANAGEMENT
36	Jagdish Bhoju Jadhav	SOLID WASTE MANAGEMENT
37	Jivan Suresh Ade	POLLUTION
38	Kajal Sudhakar Kamble	POLLUTION
39	Kajal Suresh Khandare	POLLUTION
40	Kajal Umesh Rathod	POLLUTION
41	Kanchan Babarao Rathod	SOLID WASTE MANAGEMENT
42	Karan Raju Pardhi	WATER POLLUTION
43	Keshika Rajesh Salgar	WATER POLLUTION
44	Komal Prakash Bhanak	WATER POLLUTION
45	Kunal Dhansing Rathod	WATER POLLUTION
46	Kunal Shankar Jadhao	SOLID WASTE MANAGEMENT
47	Kunal Vishawambhar Kadis	SOLID WASTE MANAGEMENT
48	Lokesh Santosh Jadhav	SOLID WASTE MANAGEMENT
49	Madan Hiranman Metkar	SOLID WASTE MANAGEMENT
50	Manisha Ramesh Dongare	SOLID WASTE MANAGEMENT
51	Manjali Bhoiraj Shere	SOLID WASTE MANAGEMENT
52	Mukta Anandrao Kambale	POLLUTION
53	Naina Manoj Pawar	POLLUTION
54	Namrata Ramchandra Rathod	POLLUTION
55	Nandini Manohar Pawar	POLLUTION
56	Navnit Dipak Rathod	POLLUTION
57	Nazimoddin Naimoddin Sheikh	POLLUTION



58	Nikita Babarao Gaurkar	POLLUTION
59	Nikita Babu Paratwagh	POLLUTION
60	Nikita Bhimdev Chavhan	POLLUTION
61	Nikita Raghvendra Padmawar	WATER POLLUTION
62	Pallavi Dnyaneshwar Parande	WATER POLLUTION
63	Pavan Dnyaneshwar Ingole	WATER POLLUTION
64	Payal Ulhas Rathod	WATER POLLUTION
65	Payal Vijay Jadhao	WATER POLLUTION
66	Prajita Kishor Kirtane	WATER POLLUTION
67	Prashant Anil Jangle	WATER POLLUTION
68	Prathmesh Vinod Pawar	WATER POLLUTION
69	Pratiksha Dharasing Chandel	WATER POLLUTION
70	Pratisad Sanjay Ade	SOLID WASTE MANAGEMENT
71	Priti Subhash Rathod	SOLID WASTE MANAGEMENT
72	Puja Santosh Jadhav	SOLID WASTE MANAGEMENT
73	Radha Uddal Sable	SOLID WASTE MANAGEMENT
74	Rahul Ram Gavhane	SOLID WASTE MANAGEMENT
75	Rani Shivaji Ade	SOLID WASTE MANAGEMENT
76	Ranjitkumar Ganesh Rathod	SOLID WASTE MANAGEMENT
77	Rashmi Raju Wankhade	SOLID WASTE MANAGEMENT
78	Rekha Dadarao Ghorpade	SOLID WASTE MANAGEMENT
79	Rohan Sadashiv Kudve	WATER POLLUTION
80	Roshani Vijay Rathod	WATER POLLUTION
81	Rushika Dinesh Dafade	WATER POLLUTION
82	Rushikesh Gajanan Mahalle	WATER POLLUTION
83	Rushita Civil Ghadge	WATER POLLUTION
84	Sachin Gajanan Salwe	WATER POLLUTION
85	Sahil Bhaskar Gughane	SOLID WASTE MANAGEMENT
86	Sakshi Ganesh Naitam	SOLID WASTE MANAGEMENT
87	Sakshi Ramesh Khandare	POLLUTION



88	Sakshi Shantaram Gaykward	POLLUTION
89	Sakshi Sunil Raut	POLLUTION
90	Samruddhi Ashok Chavhan	POLLUTION
91	Samruddhi Suresh Chavhan	POLLUTION
92	Sanjana Sanjay Gaikwad	POLLUTION
93	Sejal Gopal Rathod	POLLUTION
94	Shivam Subhash Kudwe	POLLUTION
95	Shivani Madhav Sonune	POLLUTION
96	Shruti Baben Thakare	POLLUTION
97	Shyankant Gajanan Maske	POLLUTION
98	Sohel Musa Balapure	POLLUTION
99	Sukanya Babarao Bodkhe	POLLUTION
100	Sunil Mahadeo Rathod	SOLID WASTE MANAGEMENT
101	Suraj Subhash Gawande	SOLID WASTE MANAGEMENT
102	Swapnil Uttam Pathade	SOLID WASTE MANAGEMENT
103	Thakur Gokul Pawar	SOLID WASTE MANAGEMENT
104	Trupti Dipak Gawande	SOLID WASTE MANAGEMENT
105	Trupti Ganesh Kale	SOLID WASTE MANAGEMENT
106	Ujama Naeem Beg	WATER POLLUTION
107	Urmila Dnyaneshwar Patmase	WATER POLLUTION
108	Vaibhav Ramesh Suroshe	WATER POLLUTION
109	Vaishnavi Subhash Chaure	WATER POLLUTION
110	Varsha Sudam Pawar	WATER POLLUTION
111	Vikki Dilip Rathod	WATER POLLUTION
112	Vilas Nagorao Lokhande	SOLID WASTE MANAGEMENT

Kup.D.Bhat



B.COM I (SEM II)

2022-2023

SUBJECT :- ENVIRONMENT STUDIES

Project Submission Record

ms. Ischek



20	21AC119551	KARUNA RAJ TUPSUNDARI	दिग्रस शहरातील जलपातळी दिवसेंदिवस कमी होण्याची कारणे - रात्र भर पाण्याचे	<u>Prashant</u>
21	21AC119552	KASHISH GAJANAN THORAT		
22	21AC119553	KIRAN PRASHANT KAMBLI	दिग्रस शहरातील साचलेले पाणी (माल्या नदी इ.म.नादी) पाण्याने भरलेले जल प्रदूषण	<u>K. Kamble</u>
23	21AC119554	KOMAL PUNDLIK MADEWAR	दिग्रस शहरातील माजी बाजारपेठेमुळे होणारे विविध प्रकारचे प्रदूषण व त्याचे विपरीत	<u>K.P. Madewar</u>
24	21AC119555	KOMAL SHIVAJI SALUNKI	जंगल तोडणे व जमिनीतील धूप यांचा संबंध व ते रोखण्याचे उपाय.	<u>K.S. Salunkhe</u>
25	21AC119556	KRISHNA VILAS SHINDE	दिग्रस शहरातील वायु प्रदूषण विषयी विविध समस्या व उपाय योजना	<u>K. Shinde</u>
26	21AC119557	KRUSHNA VASUDEV PATIL	सांडपाणी व्यवस्थापन	<u>K. Patil</u>
27	21AC119559	MANISHA SUNIL RATHOD	भवानी टेकडीवरील प्रदूषण	<u>M. Rathod</u>
28	21AC119560	MEGHANA SANJAY CHIRDE	दिग्रस शहरातील वीज प्रदूषण वाढण्याची कारणे व त्यावरचे उपाय	<u>M. Chirde</u>
29	21AC119562	NANDINI SHYAM UTALE	दिग्रस शहरातील माजी बाजारपेठे होणारे प्रदूषण	<u>N. Utale</u>
30	21AC119563	NEHA PARVEEN ABDUL QUADAR		
31	21AC119566	NIKITA LAXMAN BALHAI	दिग्रस शहरातील धनकपरा व प्रदूषणाचे उपाय.	<u>N. Balhai</u>
32	21AC119567	NIKITA PRAKASH RAGADI		
33	21AC119568	NITA BALAJI SASANE	सेवणादेवी परिसरातील धनकपरा वाढण्याची मुख्य कारणे व त्यावरील उपाय योजना - एक महत्वाचे	<u>N.B. Sasane</u>
34	21AC119569	NITESH TARASING RATHOD	कार्यालयामधून उत्पन्न होणाऱ्या विविध प्रदूषण (वायू, काळो व द्यावस्थेचे प्रदूषण)	<u>N. Rathod</u>
35	21AC119570	OMKAR SUBHASH MAHURKAR	विद्युत बिम्बिली वॉलमेट्रॉ जल प्रदूषण वाढ होणारी कारणे व जलचर हाताळणे	<u>O. Mahurkar</u>
36	21AC119572	PAYAL SANJAY RATHOD	दिग्रस शहरातील विविध वेळोवेळी येणाऱ्या आपत्ती व त्यावरचे आपत्ती व्यवस्थापन	<u>P. Rathod</u>
37	21AC119573	POOJA SANDIP BOREKAR	दिग्रस शहरातील प्रदूषण शनिमंदीर ने देवनागर येथील नगर परिषदेद्वारे उपाय	<u>P. Borekar</u>
38	21AC119574	PRANITA KAILAS SIRSAI		
39	21AC119575	PRASHANT SUDHIR KANSE	समुद्र प्रदूषण होण्याची कारणे व त्यावरचे उपाय योजना	<u>P. Kanse</u>
40	21AC119576	PRATHAMESH MAHESH PRASAD MISHRA	जल प्रदूषणामुळे समुद्री जलमत्पर होणारे विविध विपरीत परिणाम व यावरचे उपाय	<u>P. Mishra</u>
41	21AC119577	PRIYA YUVRAJ BHARANI		
42	21AC119578	PUJA SATISH CHAURE	जल प्रदूषण	<u>P.S. Chaure</u>

10/2/2024



43	21AC119579	RAAVI SAKHARAM DEOGHARI	दिग्विजय शाहूजीतील विकासी होताना गावातील नागरिकांना विविध समस्या व उपाय	<u>Ravi</u>
44	21AC119580	RADHA MADHAV INGOLE	दिग्विजय शाहूजीतील नदी प्रदूषण विषयक विविध समस्या व उपाय	<u>Radha</u>
45	21AC119584	RANIKA SANTOSH JAWAKI		
46	21AC119585	RITESH SANDIP RODI	जमिनीची छपा होण्याची कारणे व त्यावर उपाययोजना	<u>R.R. Rode</u>
47	21AC119586	ROSHANI RAMESHWAR RATHOD	दिग्विजय शाहूजीतील भूगर्भकृतीसाठी होणारे विविध कार्ये व त्यामुळे होणारे प्रदूषण व त्यावर उपाययोजना	<u>R.R. Rathod</u>
48	21AC119588	RUTUJA RADHESHAM SOLANKI	दिग्विजय शाहूजीतील वनक्षेत्र पर्यटकांसाठी विविध उपाययोजना व त्यावर उपाययोजना	<u>Rutuja</u>
49	21AC119590	SAKSHI GOVARDHAN WANKHADE	कुचण्याचे विविध प्रकार त्यामुळे उत्पन्न होणाऱ्या समस्या व त्यावर उपाययोजना	<u>Sakshi</u>
50	21AC119591	SAKSHI RAVINDRA CHORE	रासायनिक शेती पद्धतीमुळे उत्पन्नावर होणाऱ्या विविध समस्या व त्यावर उपाययोजना	<u>Sakshi</u>
51	21AC119592	SANIYA SADAT FAKIR MOHAMMAD KHAN	दिग्विजय शाहूजीतील जलप्रदूषणाचे विविध कारणे व त्यावर उपाययोजना	<u>Saniya</u>
52	21AC119593	SANJIVAN UDAL JADHAO	नगरपालिका दिग्विजय शाहूजीतील प्रदूषण व त्यावर उपाययोजना व त्यावर उपाययोजना	<u>Sanjivan</u>
53	21AC119594	SANKET PRAKASH RAUT	प्रदूषणाचे प्रकार व त्यावर उपाययोजना	<u>Sanket</u>
54	21AC119599	SHITAL JIVAN RATHOD	मृदा व विविध प्राण्यांच्या मृत्युमुळे निर्माण होणाऱ्या विविध समस्या व त्यावर उपाययोजना	<u>Shital</u>
55	21AC119601	SHIVAM KAILAS RATHOD	रासायनिक शेतीमुळे उत्पन्न होणाऱ्या विविध समस्या व त्यावर उपाययोजना	<u>Shivam</u>
56	21AC119602	SHIVAM RAHUL RATHOD	दिग्विजय शाहूजीतील जलप्रदूषण व त्यावर उपाययोजना	<u>Shivam</u>
57	21AC119603	SHIVAM VINOD JADHAO	आपत्ती व्यवस्थापन व वंदक माहिती	<u>Shivam</u>
58	21AC119605	SHRIKANT AVINASH NIMBALKAR	भारतातील वायु प्रदूषणाबद्दल साक्षर माहिती	<u>Shrikant</u>
59	21AC119606	SHUBHAM SUBHASH SAWJI	वायु प्रदूषण होण्याची कारणे व उपाययोजना	<u>Shubham</u>
60	21AC119608	SIDDHARTI BHARAT CHAKRI	प्लास्टिक वरिल समस्या व उपाययोजना	<u>Siddhanti</u>
61	21AC119609	TANAYA ANILRAO WANKHADE	दिग्विजय शाहूजीतील जलप्रदूषणावर होणारी वाढ विविध प्रकारात व त्यावर उपाययोजना	<u>Tanaya</u>
62	21AC119610	TEJAS DEVIDAS CHAUDHARI	नगरपालिका क्षेत्रातील वायु प्रदूषण विविध उपाययोजना व त्यावर उपाययोजना	<u>Tejas</u>
63	21AC119611	TIJAS LAXMIKANT KANAWAR	पेठे गावरील पेठे गावरील होणारे प्रदूषण	<u>Tijas</u>
64	21AC119612	TRIVENI BHIIMRAO SHINDI	नगरपालिका क्षेत्रातील वायु प्रदूषण	<u>Triveni</u>
65	21AC119614	UDWALA SUDHAKAR SARKATE	दिग्विजय शाहूजीतील वायु प्रदूषण व त्यावर उपाययोजना	<u>Udwala</u>

Dr. S. S. S. S.

5	21AC119616	VAISHNAVI ONKAR NAGAPURI.	दिग्रस शहरातील नदी प्रदुषणविषयक विशेष समस्या व उपाय	<i>[Signature]</i>
57	21AC119617	VAISHNAVI PRAVIN CHAURI	आग्नीक विद्युत निर्मितीमुळे उत्पन्न होणारे प्रदुषण व त्यावरील उपाययोजना	<i>[Signature]</i>
68	21AC119618	VAISHNAVI RAJKUMAR USRETHA	दिग्रस शहरातील वनस्पतीचा अवस्थापन	<i>[Signature]</i>
69	21AC119619	VINAY CHANDRASHEKHAR SANGAJWAR	विद्युत कारखान्याकडून निर्गमित होणाऱ्या विशेष समस्या व उपायाचा एक चिकित्सा उद्देश	<i>[Signature]</i>
70	21AC270049	MANISHA ARUN DAFADI	दिग्रस शहरातील कापूस बाजारातील होणारे प्रदुषण व त्याची विपरीत परिणाम	<i>[Signature]</i>

[Signature]
Dinash S. S. Stone

[Signature]



Bapuraoji P. S. Naryanrao Bhata Commerce & Bapusaheb Patil Science College, Digras, Dist - A. Nanded
 Year: 2022-2023
 Subject: Environment (10 marks)
 Class: B.Sc. II
 30 Marks

Project:

- Visit to local area to document environmental assets-
 - 1) River
 - 2) Forest
 - 3) Grassland
 - 4) Hill
 - 5) Mountain
- Visit to local polluted sites-
 - 1) Urban
 - 2) Rural
 - 3) Industrial
 - 4) Agricultural
- Study of local
 - 1) Plants
 - 2) Insects
 - 3) Birds
- Study of local ecosystem -
 - 1) Pond
 - 2) Lake
 - 3) River
 - 4) Forest

S.N.	Name of Student	Project Topic	Date of Issue	Signature	Date of Submission	Signature
1	Aditya Ganesh Chale	Study of local (Forest)	6/4/23	A.G. Borade	16/4/23	A.G. Borade
2	Akash Sagar Chaudhan					
3	Amul Bhanu Khan	Study of local (Birds)	11/04/23	A.B. Khan	06/04/23	A.B. Khan
4	Aparna Nareesh Pawar					
5	Ashwini Uthas Jadhav	Study of local (Forest)	7/4/23	A.U. Jadhav	31/4/23	A.U. Jadhav
6	Ashwini Rajesh Rathod	Study of local plants	31-3-23	A.R. Rathod	08/04/23	A.R. Rathod



26	Maheshwari P. Abdul	Study of local (Plants)	03/04/23	Mahesh	10/04/23	Mahesh
27	Maheshwari P. Abdul	Study of local (forest)	01/04/23	Mahesh	01/04/23	Mahesh
28	Maheshwari P. Abdul	Study of local (forest)	06-04-23	Mahesh	17-04-23	Mahesh
29	Maheshwari P. Abdul	Study of local (forest)	08/04/23	Mahesh	08/04/23	Mahesh
30	Maheshwari P. Abdul	Study of local (forest)	31/03/23	Mahesh	08/04/23	Mahesh
31	Maheshwari P. Abdul	Study of local (forest)	31/03/23	Mahesh	06-04-23	Mahesh
32	Maheshwari P. Abdul	Study of local (forest)	31/03/23	Mahesh	10-04-23	Mahesh
33	Maheshwari P. Abdul	Study of local (Plants)	31/03/23	Mahesh		
34	Maheshwari P. Abdul	Study of local (Plants)	31/04/23	Mahesh	10/04/23	Mahesh
35	Maheshwari P. Abdul	Study of local (Plants)	31/03/23	Mahesh	08-04-23	Mahesh
36	Maheshwari P. Abdul	Study of local (Plants)	31/03/23	Mahesh	17/04/23	Mahesh
37	Maheshwari P. Abdul					
38	Maheshwari P. Abdul	Study of local (Plants)	05-04-23	Mahesh	08-04-23	Mahesh
39	Maheshwari P. Abdul	Study of local (Plants)	01/03/23	Mahesh	10/04/23	Mahesh
40	Maheshwari P. Abdul	Study of local (Plants)	31-03-23	Mahesh	07-04-2023	Mahesh
41	Maheshwari P. Abdul	Study of local (Insect)	01/04/23	Mahesh	08/04/23	Mahesh
42	Maheshwari P. Abdul	Study of local (Plant)	01/04/23	Mahesh	14/04/23	Mahesh
43	Maheshwari P. Abdul	Study of local (Birds)	01/03/23	Mahesh	05-04-23	Mahesh
44	Maheshwari P. Abdul					



45	Prabodhan V	Mohod	Study of local plant	10/4/2023	P.V. Murali	17.4.23	P.V. Murali
46	Prajwal Vsh	Prashant	Visit to local area (Polluted forest)	11/4/23	Prashant	6/4/23	Prashant
47	Pramt Rameshwar	Gawande	Study of local ecosystem (forest)	31/03/23	Prashant	7/04/23	Prashant
48	Praajali Premnagar	Kharade	Study of local (plant)	31/03/23	Prashant	10/04/23	Prashant
49	Pravin Sundarsing	Chaudhan					
50	Pritya Ravi	Burkande	Study of local ecosystem	1/4/23	Prashant	8/4/23	Prashant
51	Rahul Ashok	Pawar	Visit to local polluted sites (industrial)	1/4/23	Prashant	8/4/23	Prashant
52	Rajmandini Sanjay	Jagtap					
53	Ravina Raju	Pawar	Study of local (plant) plant	3/4/23	Prashant	6/4/23	Prashant
54	Rayan Habib	Syed	Study of local (Birds)	01/04/23	Prashant	6/4/23	Prashant
55	Rohit Vijay	Patil					
56	Rushikesh Gajanan	Chavde	Study of local (Plant)	21/03/23	Prashant	6/4/23	Prashant
57	Runk Manram	Chavde	Study of forest	31/03/23	Prashant	10/4/23	Prashant
58	Rutuja Shyam	Ingle	Study of local ecosystem (forest)	31/03/23	Prashant	08/4/23	Prashant
59	Sabirindos Taji	Mohar	Study of local ecosystem	2/04/23	Prashant	6/04/23	Prashant
60	Sakshi Chintaman	Budhke	Study of local (Plant)	21/03/23	Prashant	8/4/23	Prashant
61	Sakshi Dhananjay	Chopra	Study of Agriculture	03/04/23	Prashant	06/4/23	Prashant
62	Sakshi Sanjay	Godmale	Study of local (Plant)	31/03/23	Prashant	08/4/23	Prashant
63	Samir Jitli	Lange	Study of local (Plant)	03/04/23	Prashant	09/4/23	Prashant

64	Namrath Dhillip	study of local birds	3/4/23	18/4/23	Boadi
65	Sangita Bhavja	Study of local plants	4/4/23	4/4/23	Chavhan
66	Sanjay and Sanjay Chavhan	Study of local plants	1-4-23	8/4/23	Chavhan
67	Suresh Shriram Sahadeo	Study of Agriculture	3/4/23	6/4/23	Salade
68	Sayan Vijay Gaddekar				
69	Sayana Salim Mahas	Study of agriculture	1-04-23	06/04/23	Plimel
70	Shalwan Iqbal Syed	Study of local birds	1-4-23	10/04/23	Salwan
71	Shankar Dattasing Pawar	Study of ecosystem of forest	31-03-23	10-4-23	Shankar
72	Shifa Sabir Khan	Study of ecosystem of (river)	31-03-23	5-4-23	Shifa
73	Shital Sanish Bhat	Study of local plants	31-3-2023	7-4-23	Shital
74	Shravani Sanjay Vinhar	Study of Agricultural	03-4-23	06/4/23	Shravani
75	Shruti Surendra Dahi	Study of local plants	31-3-2023	08/04/23	Salze
76	Shubham Anil Rathod				
77	Shweta Ganesh Panchkar				
78	Shikhar V Jay Tapsundare	Study of local plants	31-3-2023	10/04/23	Shikhar
79	Smriti Shriram Rathod	Study of local plants	5/4/23	8/4/23	Smriti
80	Sonam Parmeshwar Durbate	Study of local birds	3-3-23	06/04/23	Shelwade
81	Soyel Samir Khan	Study of local plants	31-3-23	6/4/23	Shoyel
82	Sruji Shrikant Waskar	Study of Agricultural	21-03-23	21/4/23	Shruti

(3) Vikas. Parande

(4) Tushar. Rathod

(5) Tanaya G. Masale

Study of ecosystem forest

Study of ecosystem forest
31-03-23
Study of forest Agriculture 31-03-23
08/04/23



96) Vedika D. Pawar - study of ^{forest} ~~Agiculture~~ ~~Agiculture~~ - Pawar
83) Subodhchandra m. Pawar - study of ~~Agiculture~~ ~~Agiculture~~ - Cave
8104/23
7-4-2023



PROJECT PRACTICAL

S.N.	NAME OF STUDENT	Project Topic
1	ALFIYA JAVED CHAVHAN	To study stomata and preparation of stomatal index of family Asteraceae
2	ARSHIYA AJMA KHIZAR AHMED SHEIKH	To study distribution and diversity of food and fodder resources in and around Digras tahsil
3	ATEEBA SAHER YASEEN SHEIKH	To study stomata and preparation of stomatal index of family Malvaceae
4	AVANTIKA SUNIL SHETE	To study different fruit types in and around Digras tahsil
5	BHAVANA SHAMRAO RATHOD	Scope of agroforestry in and around Digras tahsil
6	DISHA PRAVIN MEHTA	To study modification of root and stem found in and around Digras tahsil
7	DNYANESHWAR NAMDEO ADE	To study morphology and anatomy of hydrophytes in and around Digras tahsil
8	DURGA VIJAY VYAWHARE	To study climbers in and around Digras tahsil
9	HARISH SHEKHAR DURGE	To study economically important plants in and around Digras tahsil
10	MAYURI SURESH WARGAT	To study plant species found in Singad forest range
11	NIKITA KARTARSING RUDE	To study timber yielding plants in and around Digras tahsil
12	SALEHA TABASSUM ABDUL NOOR SHEIKH	To study Family Fabaceae in and around Digras tahsil
13	SANDESH UDDAL RATHOD	To study weeds in and around Digras tahsil
14	SANGITA BABULAL MESHAM	To study wild edible plants in and around Digras tahsil
15	SAYEMA SHABBIR KHAN	To study invasive plant species in and around Digras tahsil
16	SUKANYA SUDAM CHAVHAN	To study exotic plant in and around Digras tahsil
17	TUSHAR ANAND PAWAR	To study shrub diversity in and around Digras tahsil




 Principal,
 B.B.Arts, N.B. Commerce &
 B.P. Science College, DIGRAS

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Digras Vibhagiya Shikshan Prasarak Mandal's
**Bapuraoji Butle Arts, Narayanrao Bhat Commerce &
Bapusaheb Patil Science College, Digras
Dist. Yavatmal**

Affiliated to Sant Gadge Baba Amravati University, Amravati



**ASSIGNMENT / PROJECT ASSIGNMENT /
PRACTICAL ASSIGNMENT / SEMINAR**

Session - 2022 - 2023

Class : B.Sc. (I) year Semester : II

Subject : Zoology

Topic : Survey of migratory birds

Submitted By

Name : Durga Maroti Rajane

Roll No : 1008

Date : 6/04/2023

: Guided By Dr. N. M. Manwar

1. Prof. N. M. Manwar Sir.....

2. Prof.

Durga

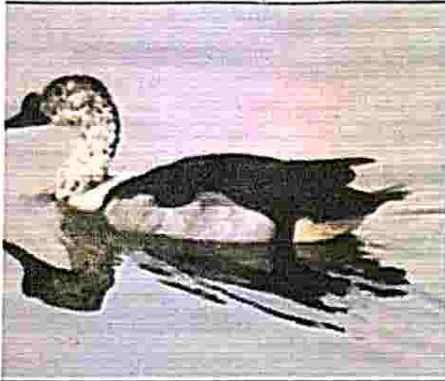
Survey of migratory birds

What is Bird Migration ?

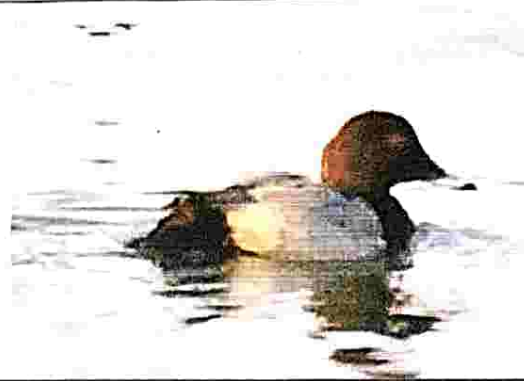
Bird Migration is the regular seasonal movement, often north and south, along a flyway, between breeding and wintering ground. Many species of bird migrate..

Migratory birds :-

Lesser whistling duck



Cotton teal



Comb duck



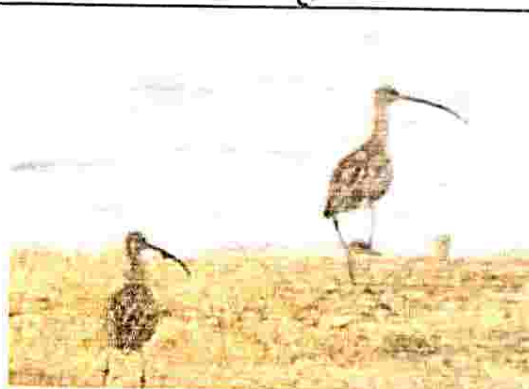
Red crested Pochard



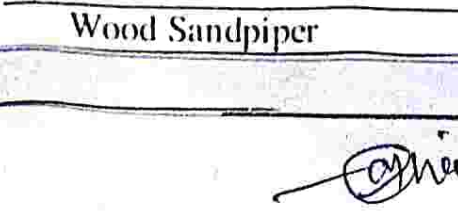
Yellow- watted Lapwing



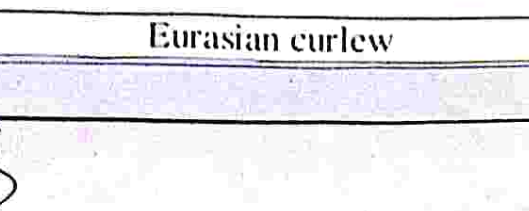
Black -winged Stilt



Wood Sandpiper



Eurasian curlew



cyber

* History behind bird Migration.

In the Pacific, traditional land finding techniques used by Micronesians and Polynesians suggest that bird migration was first observed and interpreted for more than 3,000 years. In Samcan tradition, for example, Tagaloca sent his only at the end of the 18th century was migration accepted as an explanation for the winter disappearance of birds from northern climes.



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* General patterns

Migration is the regular seasonal movement often north and south, undertaken by many species of birds. Bird movements include those made in response to change in food availability, habitat, or weather. Sometimes, journeys are not termed "true migration" because they are irregular (nomadism, invasions, irruptions) or in only one direction (dispersal, movement of young away from natal area).

Migration is marked by its annual seasonality. Non migratory birds are said to be resident or sedentary. Approximately 1,800 of the world's 10,000 bird species are long distance migrants.

Many birds populations long distances along a flyway. The most common pattern involves flying north in the spring to breed in the temperate or Arctic summer and returning in the autumn to wintering grounds in warmer regions or to the south. Of course, in the southern hemisphere, the direction are reversed, but there is less land area in the far south to support long-distance migration.

~~explan~~

★ Why do birds migrate?

Birds migrate to move from areas of low or decreasing resources of areas of high or increasing resources. The two primary resources being sought are food and nesting locations.



Birds that nest in the Northern Hemisphere tend to migrate northward in the spring to take advantage of northward of burgeoning insect population, budding plants and an abundance of nesting of nesting. As winter approaches and the availability of insects and other food drops, the birds move south again.

By [Signature]

Escaping the cold is motivating factor but many species, including hummingbirds, can withstand freezing temperatures as long as an adequate supply of food is available.



★ Types of Migration

The term migration describes periodic, large-scale movements of populations of animals. One way to look at migration is to consider the distance traveled.

All birds do not migrate, but all species are subject to periodical movement of varying extent. The birds which live in northern part of the hemisphere have greatest migratory birds.

(aynas)

1) Latitudinal Migration :-

The latitude migration usually the movement from north to south vice-versa. Most birds live in masses of the northern temperate Subarctic zones where they get for nesting and feeding during. They move towards south during

All opposite but lesser movement also occurs in the Southern Sphere when the seasons are reversed. Cuckoo breeds in India and the summer at South-east Africa thus covers a distance of about



@mug

Some tropical birds migrate during rainy season to the outer tropics or breed and return to the central tropics in dry season. Many marine birds also make considerable migration. Puffins (Great Shearwater) breeds on small islands and migrates as far as Greenland in May and returns after few months.

2) Longitudinal Migrations :-

The longitudinal migration occurs when the birds migrate from east to west and vice-versa. Starlings (*Sturnus vulgaris*), a resident of East Europe and West Asia migrate towards the Atlantic coast. California gulls, a resident and breed in Utah, migrate westward to winter in the Pacific coast.



River Lapwing



Spot-billed duck

Ques

iii) Altitudinal Migration :

The ~~at~~ altitudinal migration in mountainous regions. Many birds inhabiting the mountain peaks migrate to low lands during winter. Golden plover (Pluvialis) start from Arctic tundra & goes up to the plains of Argentina, covering a distance of 11250 km.

Birds migrate either in flocks or in pairs. Swallows and Storks migrate a distance of 9650 km from northern Europe to south and travels to Great Britain, Africa, India and Ceylon thus traveling a distance of 9650 kilometers.



Tan 1.1.8

iv) Partial Migration :-

All the members of a group of birds do not take part in migration. Only several members of a group take part in migration. Blue Jays of Canada and northern part of United States travel southwards to blend with the sedentary populations of U.S.A. Coots and spoon bills (Platalea) of our country may be example of partial migration.

v) Total Migration

When all the members of a species take part in the migration, it is called total migration.



Common Moorhen



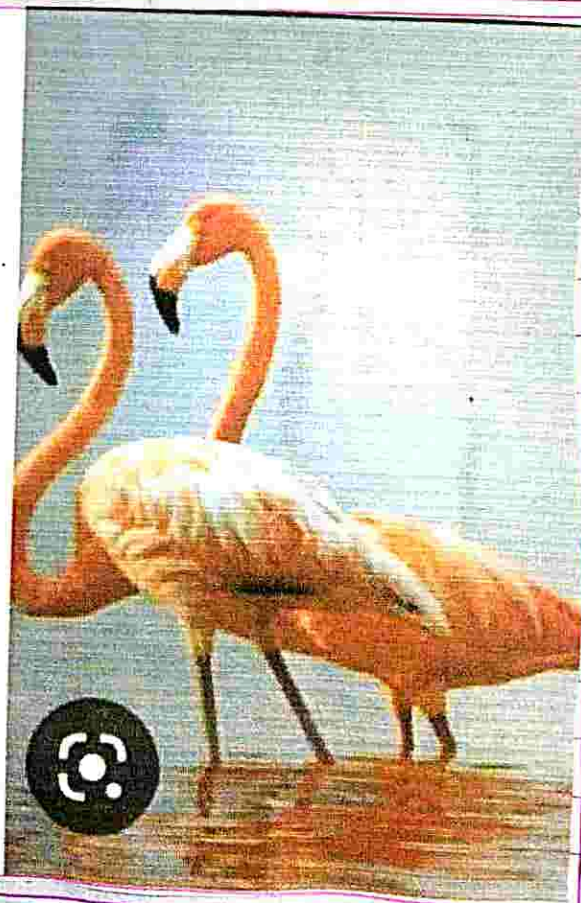
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vii) Vagrant or irregular migration.

When some of the birds disperse to a short or long distance for safety and food, it is called Vagrant or irregular migration.

Heron's may be example of Vagrant or irregular migration. Other examples are black stork (*Ciconia nigra*), Glossy ibis (*Plegadis falcinellus*), Spotted eagle (*Aquila clanga*), and bee eater (*Merops apiaster*).

Some birds make daily journey from their nests by the influence of environmental factors such as temperature, light and humidity. Also, examples are crows, herons and starlings.



Amal

vii) Seasonal Migration :-

Some birds migrate at different seasons of the year for food or breeding, called seasonal migration, e.g. cuckoos, swifts, swallows etc. They migrate from the south to the north during summer. These birds are called summer visitors. Again there are some birds like snow bunting, red wing, shore lark, grey plover etc. which migrate from north to south during winter. They are called winter visitors.



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3. Causes of Migration :

Most species of birds migrate more or less on schedule and follow the routes in a regular fashion. The actual causative factors determining the course and direction of migration are not clearly known.

Birds migrate to other region due to following reasons.

- 1) Extreme weather condition
- 2) Abundant food in other region and lack of food like insects in the region which they originally belong to.
- 3) It causes water birds, complete drying up of waterbodies in their home region



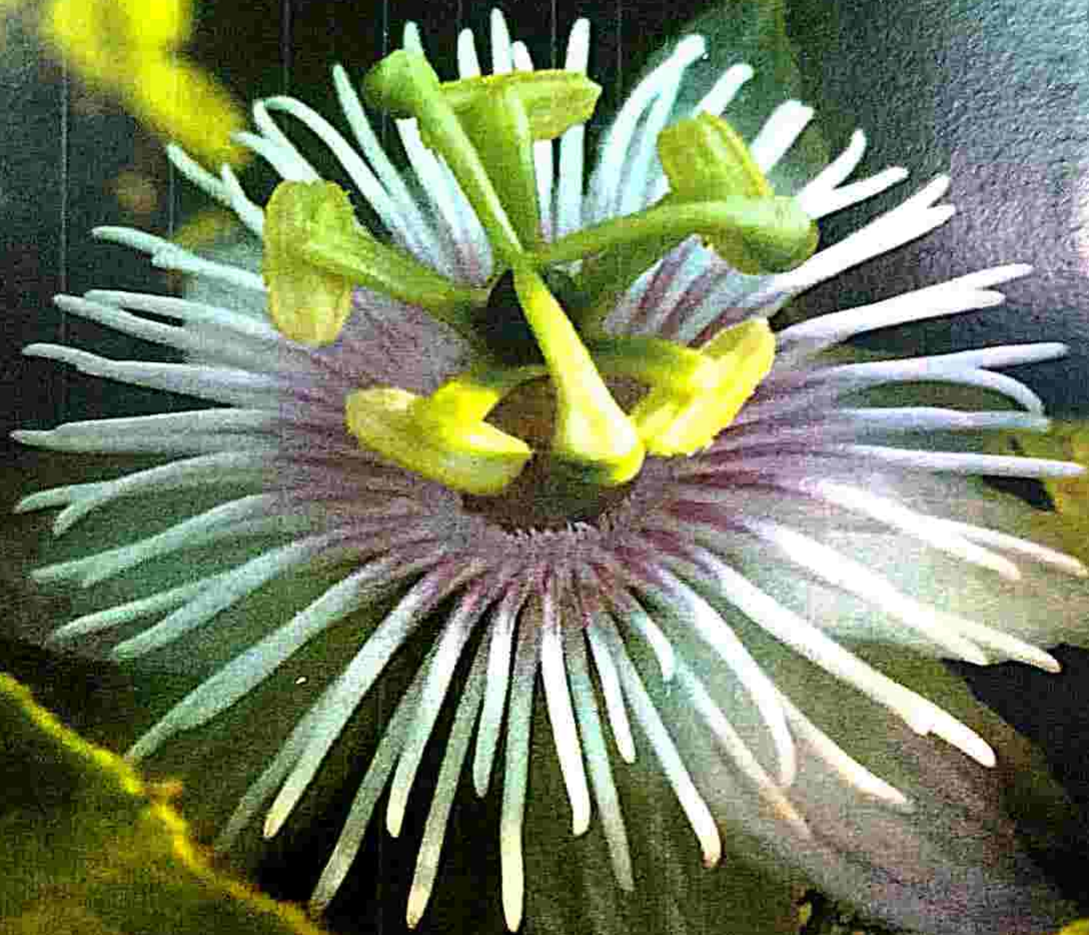
Common Coot



Purple Moorhen

amuel

**TO STUDY CLIMBERS
IN AND AROUND DIGRAS TAHSIL**



Guided By -
Dr. S.M. Deosthale

- Presented by -
Durga Vijay Vyawhare

DEPARTMENT OF BOTANY

Bapuraoji Butle Arts, Narayanrao Bhat Commerce &
Bapusaheb Patil Science College, Digras Dist. Yavatmal

2022 - 2023

To Study Climbers In And Around Digras Tahsil, Dist. Yavatmal

**Submitted In Partial Fulfillment For The Degree
Master of Science in Botany**



Presented By

Miss. Durga Vijay Vyawhare

Supervised By

Dr. M. M. Dhore
Dr. S.M. Deosthale
Assi.Prof. P.V. Gadkar
Dr. P.S. Lachure

DEPARTMENT OF BOTANY

**Bapuraoji Butle Arts, Narayanrao Bhat Commerce &
Bapusaheb Patil Science College, Digras.**

2022-23

B.B. ARTS, N.B. COMMERCE & B.P. SCIENCE COLLEGE, DIGRAS

POST GRADUATE

Department of Botany

DECLARATION

I hereby declare that the work presented in this project entitled "*To Study Climbers in and around Digras Tahsil Dist- Yavatmal*", submitted for the partial fulfillment of M.sc (Botany) is carried out by me under the guidance of Dr. S.M. Deosthale Associate Prof., Department of Botany, B.B. Arts, N.B. Commerce & B.P. Science College, Digras.

This is my original work has not formed the basis for award of any degree, associateship, fellowship or any other similar titles.



Miss. Durga Vijay Vyawhare

M.Sc. II Botany (Sem - IV)

2022-2023

B.B. ARTS N.B. COMMERCE B.P. SCIENCE COLLEGE, DIGRAS

POST GRADUATE

Department of Botany

CERTIFICATE

This is to certify that, the work of this project entitled "*To Study Climbers in and around Digras Tahsil Dist-Yavatmal*", was carried out by Miss **Durga Vijay Vyawhare** under our supervision and guidance in the academic session 2022-23.

We found the work fit for submission to Sant Gadge Baba Amravati University, Amravati for partial fulfillment of degree of Master of Science in Botany.

Date : 05/05/2023

Place : Digras

Supervisors,



Prof. Dr. S.M. Devosthale

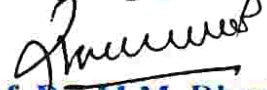


Assi. Prof. P.V. Gadkar



Prof. Dr. P.S. Lachure

Head of Department



Prof. Dr. M.M. Dhore

Department of Botany

B.B. Arts, N.B. Comm. & B.P.

Science College, Digras

Dist. Yavatmal

Dr. Mukund M. Dhore

Head Department Of Botany

**B.Arts,N.B.Commerce & B.P.Science
College,Digras Dist.Yavatmal**

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List of Plant

Sr. No.	Botanical name	Family	Common name	Mode of climbing
1.	<i>Basella rubra</i> L.	Basellaceae	Indian spinach	Twiner
2.	<i>Cayratia trifolia</i> (L.) Domin	Vitaceae	Bush grape	Root climber
3.	<i>Cissus quadrangularis</i> L.	Vitaceae	Veldt grape	Tendrill climber
4.	<i>Cardiospermum helicacabum</i> L.	Sapindaceae	Balloon vine	Hook climber
5.	<i>Abrus precatorius</i> L.	Papilionaceae	Chanothi, Gunj	Twiner
6.	<i>Clitoria ternata</i> L.	Papilionaceae	Butterfly pea	Twiner
7.	<i>Pisum sativum</i> L.	Leguminaceae	Pea plant	Tendrill climber
8.	<i>Rosa indica</i> L.	Roseaceae	Rose	Thorn climber
9.	<i>Quisqualis indica</i> L.	Combretaceae	Madhumalti, Rangoon vel	Twiner
10.	<i>Passiflora foetida</i> L.	Passifloraceae	Passion flower	Tendrill climber
11.	<i>Passiflora incarnata</i> L.	Passifloraceae	Purple Passion flower passion flower	Tendrill climber
12.	<i>Coccinia grandis</i> (L.) Voigt	Cucurbitaceae	Ivy, Gourd	Adesive
13.	<i>Cucurbita maxima</i> Duchesne	Cucurbitaceae	Pumpkin	Tendrill climber
14.	<i>Lagenaria siceraria</i> (Molina) Standl.	Cucurbitaceae	Bottle gourd	Tendrill climber
15.	<i>Luffa cylindrica</i> M. Roem.	Cucurbitaceae	Galka, Bath sponge gourd	Tendrill climber

16.	<i>Momocardica charantia</i> L.	Cucurbitaceae	Bitter gourd	Tendrill climber
17.	<i>Momocardica dioica</i>	Cucurbitaceae	Spine gourd	Tendrill climber
18.	<i>Pergularia daemia</i> (Forsk) Chiov	Asclepiadaceae	Chamber dudheli, Vitoran	Twiner
19.	<i>Ipomoea cairica</i> (L.) Sweet	Convolvulaceae	The railway creeper, Narva	Twiner
20.	<i>Ipomoea hederifolia</i> L.	Convolvulaceae	Scarlet morning glory, Ganesh vel	Twiner
21.	<i>Ipomoea obscura</i> (L.) Ker Gawl	Convolvulaceae	Small white morning glory	Twiner
22.	<i>Asystasia gangetica</i> L. T. Anderson	Acanthaceae	Chinese violet coromondel	Twiner
23.	<i>Bougainvillea spectabilis</i> Willd	Nyctaginaceae	Bougainvillea, paper flower	Thorn climber
24.	<i>Piper betle</i> L.	Piperaceae	Betel vine, Pan	Root climber
25.	<i>Epipremnum aureum</i> (Linden & Andre) G.S	Araceae	Money plant	Adesive

Acknowledgement

I take this opportunity to express my deep sence of gratitude to **Dr. A.R. Ladole Sir** Principle B.B Arts, N.B Commerce and B.P Science College Digras permitting me to do this project work.

I express my sincere gratitude to **Dr. M.M. Dhore Sir**, Head, Department of Botany for the constant encouragement, valuable advice throught the course of this work.

I am also thankful to **Dr. S.M. Devosthale Sir** for his continuous guidance.

My special thanks to **Dr. P.S. Lachure Sir** and **Asst.prof. P.V. Gadkar Sir** for providing me necessary information and his valuable suggestion and support.

I also thankful to Miss. S.B. Kote, Miss. V.U. Pardhi and Y.P. Thakare for their kind support.

I am also really grateful thank to department of library of our college for providing with all possible library facilities.

Finally, I fell deeply obliged to all those who helped me directly or indirectly in this venture, without their constant support I can't complete my work without my Parents, brother, sister and specially my friends.

Introduction

History of Botany:-

Botany as a subject developed out of the study of agriculture and medicine. It was from the 16th century that several attempts were made to systematize the knowledge of the plant kingdom by classifying plants on scientific lines. From the 18th century, classification began to take a definite shape. The 19th century was specially remarkable for the development of the science of botany.

Ancient History :-

In Greece, about 340 B.C., a considerable advance was made in the study of plants, particularly by Theophrastus (372 to 287 B.C.) a disciple of Aristotle (384 to 322 B.C.). In his book, History of Plants, Theophrastus described about 500 plants of food and medicinal value and other economic uses, with their morphological characteristics, particularly the habit of - herbs, shrubs, and trees, and annuals, biennials and perennials.

16th century -

Medical botany dominated the study of plants during the Renaissance period. Brunfels (1464-1534), a German botanist wrote his book on medicinal plants in three volumes in 1530.

17th century -

In 1620 and 1623, Bauhin published his life-long work in the form of two books, containing 6,000 species.

18th century -

A very prominent figure of this century was the Swedish botanist Carolus Linnaeus (1707-78), professor of botany at Uppsala. His monumental work on taxonomy and binomial nomenclature proved to be invaluable to future generations.

19th century -

Two great English botanists, Bentham (1800-84) and Hooker (1817-1911), come together and laid the foundation of a natural system of classification known as the Bentham and Hooker's system (1862-83) which is still widely followed.

Review of literature

- Climber show great variety in their mechanism of climbing (Bongers et al. 2005; Jongkind & Howthorne 2005). These include root climber, branch twiner, stem twiner, scramblers, tendrill climber and hook/thorn climbers. The most common in the forest edges are the tendrill climbers where the common support is through smaller thread like structures called tendrils, than in forest insides (Putz & Holbrook, 1991). on the other hand stem and branch twiners are more consistently spread in later staged successional forests (Dewalt et. al. 2000).
- Climbers and creepers are important components of plant diversity and are also valuable for their medicinal uses, nutrient recycling, etc. (Schnitzer and Bangers, 2002). The climber are rooted in soil but need for a support to their, weak stem (Richards 1952). Ex-situ conservation of climbing plants are very much needed with reference to their roles that they play.
- Climbers are weak stemmed plants (Dutta, 1689) showing variations from trees and shrubs which are self-supported plants. These are different in their mechanical characters (Isnard et al. 2009). well adopted to climb on any support like large trees, suitable, modifications for mechanical support viz, hooks, tendrils and hooks in modified form are found in these kind of plants.
- Climbers form an essential part of the diet of many animals in times of scarcity of flowers and fruits (Putz and Windsor, 1987).
- Climbers occur in all woody ecosystems of the world althrough a high abundance is considered to be characteristic of tropical and subtropical forests (Bongers et al, 2005). specially, in tropical forest, they comprise about 25-30% of species diversity (schnitzer and Bongers, 2002).
- Climbers play important ecological roles in the forest ecosystem dynamics and functioning (Nabe - Nielsen, 2001; Bongers et al. 2002).

Materials and Methods

The mention investigation was carried out in the year 2022-2023. This worked are based on collection 2022 to 2023 through planned exploration were well organized during the six to seven month. Regular field trips carried out during this work, during frequently visited different area of Digras Tahsil. During collection trips plants were collected in different stages and photographs were taken with the help of Digital camera. The collection of photograph of climbing plant is taken in some place of Digras Tahsil. Wild varieties are collected at Singad forest and some farm also. During field visit we visited Bhawani Tekdi which have variety of flora. Different characters such as habit, habitat, life form, growth form etc. were noted in the field dairy. Identification of plants was carried out with the help of plant taxonomists and with reference to relevant local Manuals and floras. The identified record plants were further verified with flora of Presidency of Bombay by T. Cooke Vol 1 and 2, flora of Maharashtra stat (BSI) Vol 1 and 2 by N.P Singh and S. Karthikeyan, flora of Yavatmal district (BSI) by S. Karthikeyan and Anand Kumar.

For convenience, according to Bentham & Hooker all the selected plants species are arranged and presented with colour photographs, scientific names, local names, families and morphology is given in the present work.

***Basella rubra* L.**

Family : Basellaceae

Common name : Indian Spinach, Poi, Velbendi

Introduction :

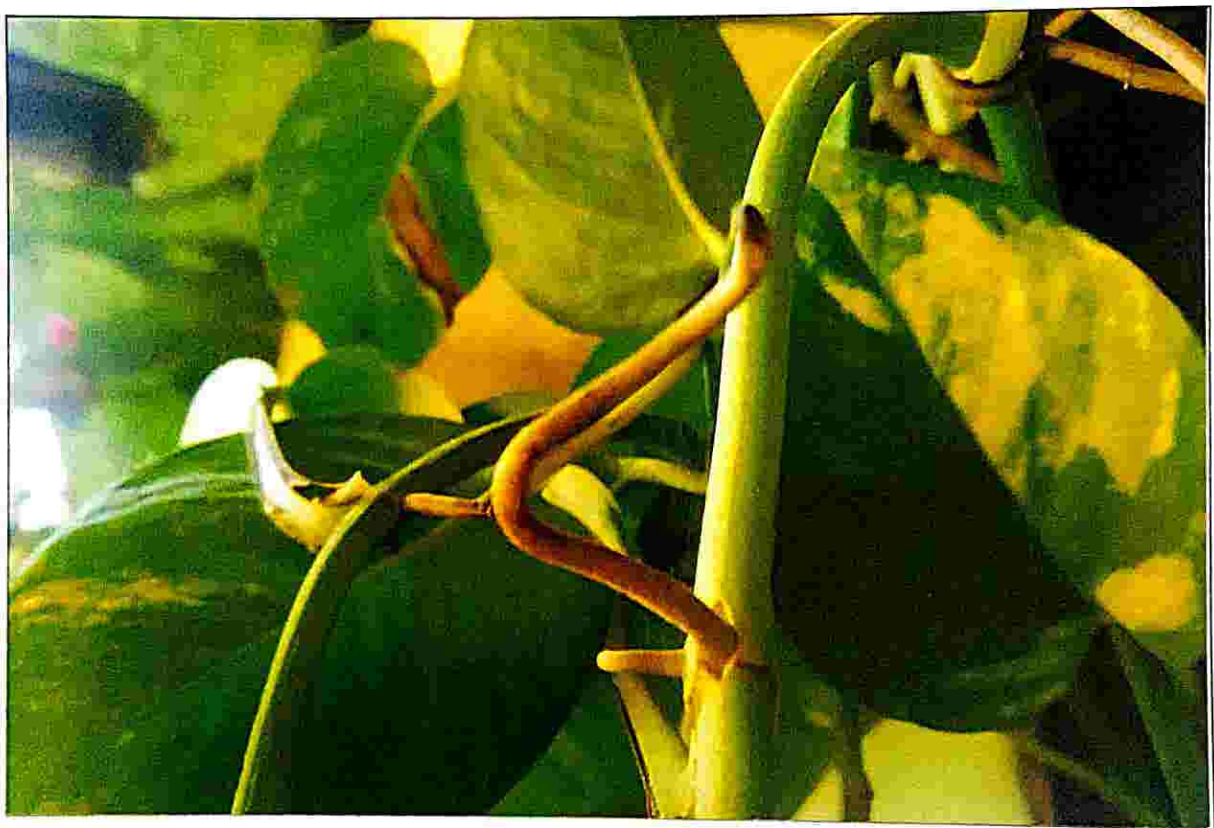
Basella rubra is an edible perennial vine in the family Basellaceae. It is found in tropical Asia and Africa where it is widely used as a leaf vegetable. It is native to the Indian subcontinent, Southeast Asia and New Guinea. It is naturalized in China, tropical Africa, Brazil, Belize, Colombia, Philippines, the West Indies, Fiji and French Polynesia.



Habit of *Basella rubra*

Discription :-

Epipremnum aureum is an evergreen vine growing to 20m (66ft) tall, with stems up to 4cm (2in) in diameter, climbing using aerial roots which adhere to surfaces. The leaves are alternate, heart-shaped entire on juvenile plants, but irregularly pinnatifid on mature plants up to 100 cm (39 in) long and 45 cm (18 in) broad; Juvenile leaves are much smaller, typically under 20cm (8 in) long. Flowers are in the form of spathe and spadix, with cream, boat-shaped spathe (large leaf-like bract) that surrounds the spadix (Flowering spike), carrying small flowers and fruits. Berries are formed in the spadix that turn orange to red when ripen.



Adesive root of *Epipremnum aureum*

Uses :

1. In temperate regions, it is a popular houseplant with numerous cultivars selected for leaves with white, yellow or light green variegation.
2. It is often used in decorative displays in shopping centers, offices and other public locations largely because it requires little care and is also attractively leafy.
3. In tropical countries, it is found in many paths and gardens and tends to grow naturally.

Conclusion

There are dense forest i.e. Singad forest found in Digras Tahsil. The list of species studied with systematic description of wild, cultivated and ornamental climber species of Digras Tahsil. All climber species differs from one another. They all have unique characteristics from the prehistoric time the species have been utilized, praised and worshiped by human beings.

This research work includes the description of near about 25 climber species. out of which some are wild and some cultivated but most of are ornamental.

Digras Tahsil contain a diversity of tree species with a great potential for people and environmental large for curing diseases. Many types of climbers present in Singad forest of Digras Tahsil are use by the human beings. While studying on my topic I found a conclusion that climber species plays important role in various fields such as in food, in medicine. and in decoration also.

My conclusion during the study time of climber species found in Digras Tahsil is that there are various important climbers are present, but some of them are on the way to become rare and endangered species, so we must need to conserve and save the trees for which plantation is necessary. Because of deforestation the problem of global warming arises. To stop the adverse effect of global warming the plantation of tree and save tree is very much important.

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