



# BEJOY NARAYAN MAHAVIDYALAYA

(GOVT. SPONSORED)  
NAAC ACCREDITED

P.O. ITACHUNA, DIST. HOOGHLY, PIN - 712147

website : www.bnmv.ac.in ★ e.mail ID : bnmv2012@yahoo.in

Ref. No. ....

Date. 01.09.2022

## Certificate of Achievement

This is to certify that a total of 1719 students of Bejoy Narayan Mahavidyalaya (BNMV) actively participated in various project works as per the curriculum requirements during the academic session 2021-2022. The projects were undertaken in different Semesters and Subjects as outlined below :

### 1. Environmental Studies AECC-1 :

All the 1<sup>st</sup> Semester were bound to prepare a project report.  
Number of Students : 1628.

### 2. Nutrition Department :

Semester-VI - DSE-VI – Project is mandatory.

Number of Students : 08.

Semester-IV – CC-9 – Project is mandatory.

Number of Students : 14.

Semester – II – CC-4 – Project is mandatory.

Number of Students : 14.

### 3. Chemistry Department :

Semester – VI – DSE-IV – Project is mandatory.

Number of Students : 12.

### 4. Botany Department :

Semester – VI – Project works are compulsory for paper DSE – III.

Number of Students : 08.

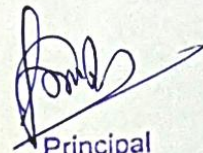
### 5. History Department :

Semester – III – Project works are mandatory for SEC-I.

Number of Students : 35

Undersigned appreciates the commitment and dedication shown by the students in completing their respective projects.





Principal

Bejoy Narayan Mahavidyalaya  
P.O.- Itachuna, Dist.- Hooghly.

# **THE UNIVERSITY OF BURDWAN**



**RAJBATI, BURDWAN- 713104**

-----  
Office of the Secretary, Council for U.G. Studies in Arts, Sc., Comm. etc.

No.- UG/Sem./( all Principals)/

Date: 05.05.2017

To,  
The Principals/ Teachers-in- Charge  
of all Degree Colleges affiliated to  
the University of Burdwan.

Sir/ Madam,

I am directed to state that as per decision, taken by the Executive Council, B.U., at its meeting held on 28.12.2016, Semester with CBCS at Under- graduate level will be introduced from the academic year 2017-2018. Guidelines regarding implementation of Semester with CBCS at Under- graduate level is available on the university website ( [www.buruniv.ac.in](http://www.buruniv.ac.in)).

This is for your kind information and necessary action.

Thanking you,

Yours faithfully,

Sd/-

Secretary,

UG Council, B.U.

No.- UG/Sem./( all Principals)/

Date: 05.05.2017

Copy forwarded for information to the

1. P.A. to Vice-chancellor, B.U.
2. Secretary to Pro Vice-chancellor, B.U.
3. P.A. to Registrar

Sd/-

Secretary,

UG Council, B.U.

# THE UNIVERSITY OF BURDWAN



## **DRAFT OUTLINE OF THE SEMESTER WISE COURSE STRUCTURES OF B.A. /B.Sc. / B.Com. UNDER THE CHOICE BASED CREDIT SYSTEM ( CBCS )**

Under the CBCS there are broadly **two** course structures- i) **Honours** Course and ii) **Regular/ General** Course. The main components of the courses are as follows:

**1. Core Course** : A course, that should compulsorily be studied by a candidate as a core requirement, is termed as a core course.

**2. Elective Course** : Generally a course, which can chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/ subject/ domain or nurtures the candidate's proficiency/ skill, is called an Elective Course.

**2.1 Discipline Specific Elective (DSE) Course** : A course, which may be offered by the main discipline/ subject of study, is referred to as Discipline Specific Elective.

**2.2 Generic Elective (GE) Course** : An elective course, chosen generally from an unrelated discipline/ subject of study with an intention to seek an exposure, is called a Generic Course.

**N.B.-** A **Core Course**, offered in a discipline/ subject, may be treated as an elective by other discipline/ subject and vice- versa and such electives may also be referred to as **Generic Elective**.

**2.3 Dissertation/ Project** : An elective course, designed to acquire special/ advanced knowledge, is termed as dissertation/ project. This is considered as a special course involving application of knowledge in solving/ analyzing / exploring a real life situation/ difficult problem. A dissertation/ project work will be of 6 credits. A dissertation/ project work may be given in lieu of a Discipline Specific Elective.

**3. Ability Enhancement Courses (AEC)** : The Ability Enhancement (AE) Courses may be of two kinds- Ability Enhancement Compulsory Courses (AECC) and Skill Enhancement Courses (SEC).

**3.1 AECC** : These are the courses based on the contents that lead to knowledge enhancement and consist of Environmental Studies & English/ MIL Communication. These are mandatory for all disciplines.

**3.2 SEC :** SEC are value- based and/ or skill- based and are aimed at providing hand-on-training, competency, skill etc. It will be minimum 2 for Honours Courses and 4 for General Courses. These may be chosen from a pool of courses designed to provide value- based and/ or skill- based knowledge would contain both theory and lab./ hands-on-training/ field work. The main purpose of these courses is to provide the students life-skill in hands-on-mode so as to increase their employability.

# # **Practical/ Tutorial** : One each with every Core, Discipline Specific and Generic Elective Paper.

# **Course Structure ( Honours & General)**

Course Components	B.Sc.		B.A.		B.Com.	
	Honours	General	Honours	General	Honours	General
<b>Core Course (CC)</b>	14	12	14	12	14	12
<b>Discipline Specific Elective (DSE) Course</b>	4	6	4	4	4	4
<b>Generic Elective ( GE) Course</b>	4	----	4	2	4	2
<b>Ability Enhancement Compulsory Course ( AECC )</b>	2	2	2	2	2	2
<b>Skill Enhancement Course ( SEC )</b>	2	4	2	4	2	4

**Details of Courses of B.A./ B.Sc./ B.Com.( Honours ) under CBCS**

<u>Course</u>	<u>Credit</u>	
	<u>Theory + Practical</u>	<u>Theory + Tutorial</u>
1. <u>Core Course</u> ( 14 papers) Core Course ( Practical / Tutorial)* ( 14 papers)	14x4 = 56 14x2 = 28	14x5 = 70 14x1 = 14
2. <u>Elective Courses</u> (8 papers)		
A. DSE (4 papers) DSE ( Practical / Tutorial)* (4 papers)	4x4 = 16 4x2 = 8	4x5 = 20 4x1 = 4
B. GE ( Interdisciplinary) (4 papers) GE ( Practical / Tutorial)* (4 papers)	4x4 = 16 4x2 = 8	4x5 = 20 4x1 = 4

# **Optional Dissertation/ Project Work in place of one DSE paper (6 credits) in 6<sup>th</sup> semester.**

3. <u>Ability Enhancement Courses</u>		
A. AECC	2x2 = 4	2x2 = 4



(2 papers of 2 credits each)		
ENVS, English Communication / MIL		
B. SEC	2x2 = 4	2x2 = 4
(2 papers of 2 credits each)	-----	-----
<b>Total Credit:</b>	<b>140</b>	<b>140</b>

An Under-graduate Honours Degree in a discipline may be awarded if a student completes 14 core papers in that discipline, 4 papers each from a list of DSE and GE respectively, 2 papers in AECC and minimum 2 papers in SEC.

*\* Wherever there is a practical, there will be no tutorial and vice- versa.*

### **Details of Courses of B.A./ B.Sc./ B.Com.( General ) under CBCS**

<u>Course</u>	<u>Credit</u>	
	<u><b>Theory + Practical</b></u>	<u><b>Theory + Tutorial</b></u>
1. <u>Core Course</u>	12x4 = 48	12x5 = 60
( 12 papers)		
4 core papers each in 3 disciplines of choice		
Core Course ( Practical / Tutorial)*	12x2 = 24	12x1 = 12
( 12 papers)		
2. <u>Elective Courses</u>		
(6 papers)		
A. DSE	6x4 = 24	4x5 = 20
(6 papers for B.Sc./ 4 papers for B.A. and B.Com.)		
DSE ( Practical / Tutorial)*	6x2 = 12	4x1 = 4
(6 papers for B.Sc./ 4 papers for B.A. and B.Com.)		
B. GE ( Interdisciplinary)	-----	2x5 = 10
(2 papers for B.A. and B.Com.)		
GE ( Practical / Tutorial)*	-----	2x1 = 2
(2 papers for B.A. and B.Com.)		

**# Optional Dissertation/ Project Work in place of one DSE paper (6 credits) in 6<sup>th</sup> semester.**

3. <u>Ability Enhancement Courses</u>		
A. AECC	2x2 = 4	2x2 = 4
(2 papers of 2 credits each)		
ENVS, English Communication/ MIL		
B. SEC	4x2 = 8	4x2 = 8
(4 papers of 2 credits each)	-----	-----
<b>Total Credit:</b>	<b>120</b>	<b>120</b>

An Under-graduate General Degree in Science may be awarded if a student completes 4 core papers each in three disciplines of choice, 2 papers each from a list of DSEs based on the three disciplines of choice selected above, 2 papers in AECC and minimum 4 papers in SEC.

An Under-graduate General Degree in Humanities/ Social Sciences/ Commerce may be awarded if a student completes 4 core papers each in two disciplines of choice along with 2 core papers each in two Languages from English, Bengali and

Hindi respectively, 2 papers each from a list of DSEs based on the two disciplines of choice selected above and 2 papers from the list of GEs, 2 papers in AECC and minimum 4 papers in SEC.

***\* Wherever there is a practical, there will be no tutorial and vice- versa.***

The evaluation of the candidates shall be based on continuous assessment. The structure of evaluation shall be as follows:

- i) Each semester- assessment shall be divided into three (3) discrete components, viz.  $C_1$ ,  $C_2$  and  $C_3$ . The students will be informed about the modalities of continuous assessment activities well in advance. The first component ( $C_1$ ) of assessment shall be of **10%** of the total marks of each course of a semester and will be based on class attendance, class test or assignment or seminar. During the first two months of each semester, 1/3 of the syllabus will be completed. The continuous assessment and  $C_1$  will be consolidated during the 8<sup>th</sup> week of the concerned semester. The second component ( $C_2$ ) of assessment shall be of **10%** of the total marks of each course of a semester and will be based on class attendance, class test or assignment or seminar. During the second two months of each semester, 2/3 of the syllabus will be completed. The continuous assessment and  $C_2$  will be consolidated during the 16<sup>th</sup> week of the concerned semester. Appearance in  $C_1$  &  $C_2$  is mandatory.
- ii) During the 21<sup>st</sup> – 23<sup>rd</sup> weeks of a semester, a Semester- end Examination shall be conducted for each course and the proportion of  $C_3$  will be **80%** of the total marks each course of the semester.
- iii) The result of each course in a semester shall be based on the values of  $C_1$ ,  $C_2$  &  $C_3$  and shall be awarded in form of grade point.

### **Mechanism of computation of work-load per week:**

- i) 1 Credit = 1 Theoretical class of 1- hour duration
- ii) 1 Credit = 1 Tutorial class of 1- hour duration
- iii) 1 Credit = 1 Practical class of 2- hour duration

## **SEMESTER WISE DISTRIBUTION OF COURSES AND CREDITS**

### **B.A./ B.Sc./ B.Com. Honours**

Courses/ (Credits)	Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Total No. of Courses	Total Credit
CC (6)	2	2	3	3	2	2	14	84
DSE (6)					2	2	04	24
GE (6)	1	1	1	1			04	24
AECC (2)	1	1					02	04
SEC (2)			1	1			02	04
Total No. of Courses per Sem.	4	4	5	5	4	4	26	-----
Total Credit per Semester	20	20	26	26	24	24	-----	140

## **SEMESTER WISE DISTRIBUTION OF COURSES AND CREDITS**

### **B.A./ B.Com. General**

Courses/ (Credits)	Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Total No. of Courses	Total Credit
CC - 1,2 (6)	2 (1A, 2A)	2 (1B, 2B)	2 (1C, 2C)	2 (1D, 2D)			8	48
Language CC- 1,2 (6)	1 (L <sub>1</sub> -1)	1 (L <sub>2</sub> -1)	1 (L <sub>1</sub> -2)	1 (L <sub>2</sub> -2)			4	24
DSE- 1,2 (6)					2 (1A, 2A)	2 (1B, 2B)	4	24
GE (6)					1 (GE-1)	1 (GE-2)	2	12

<b>AECC (2)</b>	1	1					2	04
<b>SEC (2)</b>			1	1	1	1	4	08
Total No. of Courses per Sem.	4	4	4	4	4	4	24	-----
Total Credit per Sem.	20	20	20	20	20	20	-----	120

## **SEMESTER WISE DISTRIBUTION OF COURSES AND CREDITS**

### **B.Sc. General**

Courses/ (Credits)	Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Total No. of Courses	Total Credit
CC - 1,2,3 (6)	3 (1A, 2A, 3A)	3 (1B, 2B, 3B)	3 (1C, 2C, 3C)	3 (1D, 2D, 3D)			12	72
DSE- 1,2,3 (6)					3 (1A, 2A, 3A)	3 (1B, 2B, 3B)	6	36
GE (6)	-----	-----	-----	-----	-----	-----	-----	-----
<b>AECC (2)</b>	1	1					2	04
<b>SEC (2)</b>			1	1	1	1	4	08
Total No. of Courses per Sem.	4	4	4	4	4	4	24	-----
Total Credit per Sem.	20	20	20	20	20	20	-----	120

### **Full marks of a course, having 6 credits/ 2credits, along with distribution of marks:**

1. Full marks of each course of B.A./ B.Sc./ B.Com. ( Hons. & Gen. ), carrying 6 credits, be **75**
2. Full marks of each course of B.A./ B.Sc./ B.Com. ( Hons. & Gen. ), carrying 2 credits, be **50**
3. For **B.A. & B.Com.** ( Hons. & Gen. ) Courses , having no practical , distribution of 75 marks be as follows:

i) Class Attendance cum Internal Assessment : 20% of 75 marks = 15 marks of which 5 marks be reserved for class attendance ( both theoretical + tutorial ) in the following manner:

Attendance 50% & above but below 60% - 2 marks

Attendance 60% & above but below 75% - 3 marks

Attendance 75% & above but below 90% - 4 marks

Attendance 90% & above - 5 marks

and 10 marks be reserved for class test/ assignment/ seminar ( theoretical- 5 & tutorial - 5 ). Minimum 15 classes be allotted for tutorial portion.

ii) In the Semester-end- Examination of each course, Question Paper be set for 60 marks, distribution of which may be as under:

a) Answer 10 questions out of 15 carrying 02 marks each =  $10 \times 02 = 20$

b) Answer 04 questions out of 06 carrying 05 marks each =  $04 \times 05 = 20$

c) Answer 02 questions out of 04 carrying 10 marks each =  $02 \times 10 = 20$

**However, questions, carrying 05 or 10 marks, need not necessarily to be a single question.**

**4. For B.Sc. ( Hons. & Gen. ) Courses, having practical, distribution of 75 marks be as follows:**

i) Class Attendance cum Internal Assessment : 20% of 75 marks = 15 marks of which 5 marks be reserved for theoretical class attendance in the following manner:

Attendance 50% & above but below 60% - 2 marks

Attendance 60% & above but below 75% - 3 marks

Attendance 75% & above but below 90% - 4 marks

Attendance 90% & above - 5 marks

and 10 marks be reserved for class test/ assignment/ seminar ( theoretical -5 & practical -5 ).

ii) 20 marks be allotted for Semester-end- Practical Examination of each course, distribution of which may be as under:

a) Lab. Note Book : 05 Marks

b) Viva- voce : 05 Marks

c) Experiment : 10 marks

Or, as may be decided by the concerned Board of Studies.

iii) 40 marks be allotted for Semester-end-Theoretical Examination of each course, distribution of which may be as under:

a) Answer 05 questions out of 08 carrying 02 marks each =  $05 \times 02 = 10$

b) Answer 02 questions out of 04 carrying 05 marks each =  $02 \times 05 = 10$

c) Answer 02 questions out of 04 carrying 10 marks each =  $02 \times 10 = 20$

**However, questions, carrying 5 or 10 marks, need not necessarily to be a single question.**

**5. For B.A. & B.Com. ( Hons. & Gen. ) Courses , having practical, distribution of 75 marks be as under:**



a) i) In case of '**Fully Practical**' based course, Class Attendance cum Internal Assessment : 20% of 75 marks = 15 marks of which 5 marks be reserved for practical class attendance in the following manner:

Attendance 50% & above but below 60% - 2 marks

Attendance 60% & above but below 75% - 3 marks

Attendance 75% & above but below 90% - 4 marks

Attendance 90% & above - 5 marks

and 10 marks be reserved for class test/ assignment.

ii) 60 marks be allotted for Semester-end- Practical Examination of each course, distribution of which may be as under:

Viva- voce : 10 Marks, Experiment : 50 marks

b) i) In case of a course, **containing theory and practical**, Class Attendance cum Internal Assessment : 20% of 75 marks = 15 marks of which 5 marks be reserved for theoretical class attendance in the following manner:

Attendance 50% & above but below 60% - 2 marks

Attendance 60% & above but below 75% - 3 marks

Attendance 75% & above but below 90% - 4 marks

Attendance 90% & above - 5 marks

and 10 marks be reserved for class test/ assignment/ seminar ( theoretical -5 & practical -5 ).

ii) 20 marks be allotted for Semester-end- Practical Examination of each course, distribution of which may be as under:

Viva- voce : 05 Marks , Experiment : 15 marks

iii) 40 marks be allotted for Semester-end-Theoretical Examination of each course, distribution of which may be as under:

a) Answer 05 questions out of 08 carrying 02 marks each =  $05 \times 02 = 10$

b) Answer 02 questions out of 04 carrying 05 marks each =  $02 \times 05 = 10$

c) Answer 02 questions out of 04 carrying 10 marks each =  $02 \times 10 = 20$

**However, questions, carrying 5 or 10 marks, need not necessarily to be a single question.**

6. **For B.Sc. ( Hons. & Gen. ) Courses , having no practical, distribution of 75 marks, be same as (3) above.**

7. In the Semester-end- Examination of **AECC** of B.A./ B.Sc./ B.Com, carrying 2 credits (ie. full marks 50), MCQ be set and OMR sheet be used. Under AECC, **ENVS** be taught in the 1<sup>st</sup> Semester and communicative Eng./ MIL be taught in the 2<sup>nd</sup> Semester.

8. **For B.A., B.Sc. & B.Com. ( Hons. & Gen. ) Courses , distribution of 50 marks ( for each SEC) be as follows:**

i) Internal Assessment : 20% of 50 marks = 10 marks be reserved for class test/ assignment/ seminar.

ii) 40 marks be allotted for Semester-end-Theoretical Examination of each course, distribution of which may be as under:

a) Answer 05 questions out of 08 carrying 02 marks each =  $5 \times 2 = 10$

b) Answer 02 questions out of 04 carrying 05 marks each =  $2 \times 5 = 10$

c) Answer 02 questions out of 04 carrying 10 marks each =  $2 \times 10 = 20$   
However, questions, carrying 5 or 10 marks, need not necessarily to be a single question.

**Distribution of total marks (1850), equivalent to 140 credits, of all courses to be studied by a student of B.A./ B.Sc./ B.Com. Hons.**

CC	:	75 x 14	=	1050
DSE	:	75 x 4	=	300
GE	:	75 x 4	=	300
AECC	:	50 x 2	=	100
SEC	:	50 x 2	=	100

**Distribution of total marks (1650), equivalent to 120 credits, of all courses to be studied by a student of B.A./ B.Sc./ B.Com. Gen.**

**B.A. & B.Com. (Gen.)**

CC	:	75 x 12	=	900
DSE	:	75 x 4	=	300
GE	:	75 x 2	=	150
AECC	:	50 x 2	=	100
SEC	:	50 x 4	=	200

**B.Sc. (Gen.)**

CC	:	75 x 12	=	900
DSE	:	75 x 6	=	450
AECC	:	50 x 2	=	100
SEC	:	50 x 4	=	200

## **ENVIRONMENTAL STUDIES**

**Credits: 4**

**Course Code: AEECC1**

**COURSE TITLE: FUNDAMENTALS OF ENVIRONMENTAL STUDIES**

**Lectures – 80**

### **Unit 1: Basic of Environmental Studies (06)**

Definition, Nature, Scope and Importance; Components of environment: Environmental education

### **Unit 2: Natural Resources: Renewable & Non-renewable Resources (15)**

Nature and natural resources their conservation and associated problems:

- Forest resources: Uses, types and importance, Joint Forest Management & Tribal population, Deforestation and its effects
- Water resources: Distribution of water on Earth; Use, over exploitation of surface and ground water; Dams: Benefits and problems; Flood and Drought
- Mineral resources: Mineral resources in India; Use and exploitation, Social impacts of mining
- Food resources: World food problems and food insecurities.
- Energy resources: Renewable and Non-renewable energy sources; Use of alternate energy sources - Case studies
- Land resources: Land as a resource; Land degradation, landslides, soil erosion, desertification
- Use of resources for sustainable development

### **Unit 3: Ecology & Ecosystems (12)**

Concept of ecology, Population ecology, Community ecology

- Concept of an ecosystem, different types of ecosystem
- Food chains, food webs and ecological succession
- Energy flow in the ecosystem and energy flow models

### **Unit 4: Biodiversity & Conservation (12)**

- Biodiversity: Levels of biological diversity
- Values of biodiversity
- Hot-Spots of biodiversity, Mega-biodiversity countries
- Threat to biodiversity
- Threatened and endemic species of India
- Conservation of biodiversity (*In-situ* and *Ex-situ*)
- Ecosystem services: Ecological, Economical, Social, Ethical, Aesthetical and Informational values

## Unit 5: Environmental Pollution & Management

(12)

(a) Nature, Causes, Effects and Control measures of –

- (i) Air pollution
- (ii) Water pollution
- (iii) Soil pollution
- (iv) Noise pollution
- v) Nuclear hazards

(b) Fireworks Pollution: Definition, Composition/Ingredients, effects, monitoring strategies

- Solid waste management: Causes, effects and disposal methods; Management of biomedical and municipal solid wastes
- Disaster management: Floods, Earthquake, Cyclone and Landslides

## Unit 6: Environmental Policies & Practices

(15)

- Constitutional Provisions for protecting environment- Articles 48(A), 51 A (g)
- Environmental Laws: The Environment (Protection) Act, 1986; The Air (Prevention and Control of Pollution) Act, 1981; The Water (Prevention and Control of Pollution) Act 1974; Forest (Conservation) Act, 1980
- The wildlife Protection Act, 1972
- Climate change, Global warming, ENSO, Acid rain, Ozone layer depletion; Montreal and Kyoto Protocols

## Unit 7: Human Communities & Environment

(08)

- Human population growth; Impacts on environment
- Population explosion – Family Welfare Programme
- Environment and human health: Concept of health and disease; Common communicable and Non- communicable diseases; Public awareness
- Environment movements in India: Chipko Movements, Silent Valley Movement, Movements in Karnataka

## Unit 8: **Field Work Report/Project Report/Term paper** (based on any one of the following topics and to be evaluated by internal teachers only)

- Environmental assets - River/Forest/Grassland/Hill/Mountain *etc.*
- Environmental pollution - Urban/Rural/Industrial/Agricultural
- Study of common Plants/Insect /Birds/Wild life *etc.*
- Study of simple ecosystems: Pond/River/Hill slope *etc.*
- Municipal solid waste management and handling.



# BEJOY NARAYAN MAHAVIDYALAYA

(GOVT. SPONSORED)  
NAAC ACCREDITED

P.O. ITACHUNA, DIST. HOOGHLY, PIN - 712147

website : [www.bnmv.ac.in](http://www.bnmv.ac.in) e.mail ID : [bnmv2012@yahoo.in](mailto:bnmv2012@yahoo.in)

Ref. No. ....

Date. ....

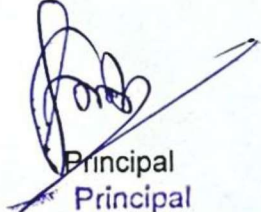
## NOTICE/15.09.2021

This notice is for the information of all concerned that for the ENVS projects, the following Professors are engaged as mentors/guides as shown:

1. All Science ((Honors) + Pass - Mr. Suwendu Saha and Mr. P. Kamilya.
2. All Bengali (Honors) - Mr. A. Kalam and Ms. Sucharita Bhattacharyya
3. All English (Honors) - Mr. Anjan Dasgupta and Mr. S. Dasgupta
4. All History (Honors) - Mr. Bani Patua and Mr. Pritwis Biswas
5. All Philosophy (Honors) – Ms. Khukumani Talukdar
6. All Political Science (Honors) – Ms. Ishita Aditya
7. All Sanskrit (Honors) – Mr. Subrata Sarkar

All concerned students are hereby asked to feel free to reach out to the respective mentors for any guidance or assistance regarding your ENVS Project.



  
Principal  
Principal  
Bejoy Narayan Mahavidyalaya  
P.O.- Itachuna, Dist.- Hooghly,





# BEJOY NARAYAN MAHAVIDYALAYA

(GOVT. SPONSORED)

NAAC ACCREDITED

P.O. ITACHUNA, DIST. HOOGHLY, PIN - 712147

website : [www.bnmv.ac.in](http://www.bnmv.ac.in) e.mail ID : [bnmv2012@yahoo.in](mailto:bnmv2012@yahoo.in)

Phone : (03213) 272 275


Ref. No. ....

Date. ...18.09.2021

## Allotment of Projects of ENVS (AECC-I) for Semester -I (2021-2022):

Course	Student details	Name of the Mentors/Guides	Project Title
B.Sc. Hons.	All Students	Mr. Suwendu Saha	Plant & Wild Life



  
Principal  
Bejoy Narayan Mahavidyalaya  
P.O.- Itachuna, Dist.- Hooghly.



# BEJOY NARAYAN MAHAVIDYALAYA

[GOVT. SPONSORED]

P.O.-ITACHUNA, DIST.-HOOGHLY, PIN-712147

Website: <http://www.bnmv.ac.in> email: [bnmv2012@yahoo.in](mailto:bnmv2012@yahoo.in)

## CERTIFICATE

This is to certify that the project entitled – ***“PLANTS & WILDLIFE”*** submitted by *Miss*  
**RIMLI SARKAR**, Roll No. **210340300049**, session **2021-2022**, in **SEM-I, AECC-I**  
**(ENVIRONMENTAL STUDIES)**, of BEJOY NARAYAN MAHAVIDYALAYA, ITACHUNA,  
HOOGHLY, WEST BENGAL, in the partial fulfillment of the requirement for the award of Bachelors Degree  
in Science (Honours/ ~~General~~) / Arts (~~Honours/ General~~) from THE UNIVERSITY OF BURDWAN, WEST  
BENGAL, is a record of the student's own work carried under my supervision and guidance. This report has not  
been submitted to any other University or Institution for the award of any degree.

Guide: Mr. Subhendu Saha

Date: 17. 12. 2021

Assistant/ ~~Associate~~ Professor

Department of Physics

Bejoy Narayan Mahavidyalaya,

Itachuna, Hooghly, West Bengal.

**BEJOY NARAYAN MAHAVIDYALAYA**  
**ESTD- 1950**



**ENVS PROJECT &  
ASSIGNMENT**

NAME : **RIMLI SARKAR**

CLASS: **B.Sc (BOTANY HONS.) 1<sup>ST</sup> SEMESTER**

STREAM: **SCIENCE**

SUBJECT: **ENVS**

PROJECT TOPIC: **PLANTS & WILD LIFE**

COLLEGE ROLL No:- **210340300049**

COLLEGE ID No:- **202101049858**

YEAR:- **2021-2022**

*[Signature]*  
03/12/2021



Why it is necessary to study the Environmental Science?

Or,

How much important to study the Environmental Science?

Earth our home is truly a unique place providing us not only what we all need to survive but also delivers the destructive forces with great fury.

History full of this events of Creation of destruction and man has been at the forefront of understanding this life drama since antiquity. The reason to study environmental Science as then has always been the same, Survival. - Of course today we have formalized the explanation, and ad-hoc approach of the past into a well crafted synthesis of the scientific finding and most importantly we have added the idea of Consequence management.

Environmental Science today covers, how living and non living things interact. It involves a lot of discipline and field of study as physics, biology, chemistry, geography and Oceanography etc.

Thus ENVS is very important because it study the

Connection and implication of seemingly disconnected phenomena, enlightening to the consequence of our action. Such the effect of technology on the destruction of the natural resources and the ecosystem, and what we can do to reverse some of this destructive forces and heal the environment, saving ourselves in the process.

In theory today we are more aware of our actions. Studying our environment in a scientific way documenting, codifying and developing elaborate computer models that highlight the impact of our activities, yet in spite of that we continue to be slow and profess self ignorance in name of development and the building of wealth. We are victims of the capitalist dogma.

Another importance of ENVs is communication and education of global issues, through journals, international conferences, and the media so that immediate solutions can be found and applied. These issues may range from dynamite fishing to global warming, forest denudation to mining. Because of development, more infrastructure had been built more transportation system had been created, and more rural areas had been urbanised.



With this rapid changes, there is a need to study each step that may alter the environment so that the natural ecosystem may still be protected or place by a better one.

Environmental Science is important to save our world from destruction. Because of man's abusive action, the environment is not safe anymore. There are more calamities experienced such as flashfloods, hurricanes and droughts and climate change. If we do not study the environment, then there is a great danger that everything that we know at home with all that surround us, will lead to extinction, yes including the extinction of our species.

We need to study the environmental science to find solutions to different environmental issues so that children of tomorrow will still enjoy the healthy and productive environment we still have now. If man will only make use of the different discoveries through environmental science, then this world will definitely be a better place to be called home not only for us but for the next generation.

# INTRODUCTION

Plants are really important for the planet and for all living things. Plants absorb carbon dioxide and release oxygen from their leaves, which humans and other animals need to breathe. Living things need plants to live - they eat them and live in them. Plants provide our food materials for shelter, fuel to warm us and replenish the air we breathe. Plants provide food for animals and habitat for wildlife.

Wildlife helps in maintaining the eco-logical balance of nature. Killing of carnivores leads to an increase in the number of herbivores which in turn affect the forest vegetation, thus due to lack of food in the forest they come out from the forest to agriculture land and destroy our crops.

## □ WHY IS IT IMPORTANT TO STUDY WILDLIFE AND PLANTS?

By conserving wildlife and plants, we're ensuring that future generations can enjoy our natural world and the incredible species that live within it. To help protect wildlife and plants, it's important to understand how species interact within their ecosystems, and how they're affected by environmental and human influences.



Many Practical actions have been taken and Research implemented. The result are real and Concrete. In order to encourage and preserve the beauty of the landscape, the local way of life, the biological diversity, the development of tourism, industry and agriculture focused activities must continue, and synergies developed through collaborative activities with all stakeholders and partnerships developed with interested parties, especially community groups. For the present and the future, the main object could be.

- ✓ To improve current knowledge of local Fauna and flora
- ✓ To limit logging to some natural forests where the richness, the amount of commercial woods, the access and the local agreement are satisfactory; these forests represent 5-10% of the total forest surface and are found especially in the Northern Province (they can be used for in situ Conservation)
- ✓ To preserve the majority of the native forests
- ✓ To improve controls on hunting, fishing, pollution, erosion and fire
- ✓ To better regulate mining activities and damage to the higher altitude flora.
- ✓ To evaluate the dynamism and regeneration of the different forest types.
- ✓ To realize effective and participatory monitoring of the current conservation areas, parks and protected forests



# TULSI

SCIENTIFIC NAME:- *Ocimum tenuiflorum*





Scientific Name: Ocimum tenuiflorum

Tulsi is cultivated for religious and traditional medicine purposes, and also for its essential oil. It is widely used as a herbal tea, commonly used in Ayurveda, and has a place within the Vaishnava tradition of Hinduism, in which devotees perform worship involving holy plant of leaves.

The variety of Ocimum tenuiflorum used in Thai cuisine is referred to as Thai holy basil and is the key herb in that Kaphrao, a stir-fry dish, it is not the same as Thai basil, which is a variety of Ocimum basilicum. In Cambodia, it is known as moteahpro.

**☐ Morphology:** Holy basil is an erect, many-branched subshrub, 30-60 cm (12-24 in) tall with hairy stems. Leaves are green or purple; they are simple, Petioled, with an ovate blade up to 5 cm (2 in) long, which usually has a slightly toothed margin; they are strongly scented and have a decussate Phyllotaxy. The purplish flowers are placed in dense whorls on elongated racemes.

The three main morphotypes cultivated in India and Nepal are Ram tulsi, the less common purplish green leaved (Krishna or shyam tulsi) and the common wild vana tulsi;



**III Origin and distribution:** DNA barcodes of various biogeographical isolates of tursi from the indian Subcontinent are now available. In a large scale Phylogeographical study of this species conducted using Chloroplast genome sequences, a group researchers from Central University of Punjab, Bathinda have found that this plant originates from North-Central India.

This basil has now escaped from cultivation and has naturalised into a Cosmopolitan distribution.

**IV Uses:** Tursi has been used in Ayurveda and Siddha practices for its supposed treatment of diseases.

- **Insect Repellent:** For centuries, the dried leaves have been mixed with stored grains to repel insects.

- **Nematicidal:** The essential oil is found by Malik et al 1987 and Sangwan et al 1990 to be nematicidal against Tylenchulus Semipetrans, Meloidigyne javanica

- **Disinfection:** Water disinfection using O. tenuiflorum extracts was tested by Bhattacharjee et al 2013 and Sadul et al 2009. Both found an alcoholic extract to be more effective than the aqueous of leaf juice.

SCIENTIFIC NAME:- Aloe vera





## DISTRIBUTION :

Scientific Name : Aloe vera

**DESCRIPTION :** Aloe Vera is a stemless or very short-stemmed plant growing to 60-100 centimetres (24-39 inches) tall, Spreading by offsets. The leaves are thick and fleshy, green to gray green, with some varieties showing white flecks on their upper and lower stem surfaces. The margin of the leaf is serrated and has small white teeth. The flowers are produced in summer on a spike up to 90 cm (35 in) tall, each flower being pendulous, with a yellow tubular corolla 2-3 cm ( $\frac{3}{4}$ - $1\frac{1}{4}$  in) long. Like other Aloe species, Aloe vera forms arbuscular mycorrhiza, a symbiosis that allows the plant better access mineral nutrient in soil.

## USES :

Aloe vera leaves contain phytochemicals under study for possible bioactivity, such as acetylated mannans, polymannans, anthraquinone C-glycosides, anthrones and other anthraquinones, such as emodin and various lectins.

**□ DISTRIBUTION:** A. vera is considered to be native only to the south-east Arabian Peninsula in the Al Hajar Mountains in north-eastern Oman. However it has been widely cultivated around the world, and has become naturalized in North Africa, as well as Sudan and neighboring countries along with the Canary Islands, Cape Verde and Madeira Islands. It has also naturalized in the Algarve region of Portugal and in wild areas across Southern Spain, especially in the region of Murcia.

The species was introduced to China and various parts of Southern Europe in the 17<sup>th</sup> century. It is widely naturalized elsewhere occurring in arid, temperate, and tropical region of temperate countries. The current distribution may be the result of cultivation. ✓

**□ USES:** Two substances from Aloe vera - a clear gel and its yellow latex - are used to manufacture commercial products. Aloe gel typically is used to make topical medications for skin conditions, such as burn, wounds, frostbite, scratches, Psoriasis, Cold sores and dry skin. Aloe latex is used individually or manufactured as a product with other ingredients to be ingested for relief of constipation. ✓

□ Toxicity: Orally ingested non-decolorized aloe vera leaf extract was listed by the California Office of Environment Health Hazard Assessment among "chemicals known to the state to cause cancer or reproductive toxicity."

Use of topical aloe vera is not associated with significant side effects. Oral ingestion of aloe vera is potentially toxic, and may cause abdominal cramps and diarrhea which in turn can decrease the absorption of drugs.



# SANDALWOOD

SCIENTIFIC NAME:- *Santalum album*



☐ Scientific Name: Santalum album

● Distribution:- Santalum album is indigenous to the tropical belt of the peninsular India, eastern Indonesia and northern Australia. The India main distribution is in the drier tropical regions of India and the Indonesian island of Timor and Sumba. There is still debate as to whether S. album is native to Australia and India or was introduced by fisherman, traders or birds from Southeast Asia centuries ago.

Sandalwood is now cultivated in India, Sri Lanka, Indonesia, Malaysia, the Philippines and Northern Australia. ✓

● Habitat and growth:- Santalum album occurs from coastal dry forest up to 700 metres (2,300 ft) elevation. It normally grows in sandy or well drained stony oed soils, but a wide range of soil types are inhabited. This habitat has a temperature range from 0 to 38°C (100°F) and annual rainfall between 500 millimetres (20 in) and 3000 millimetres (120 in). S. album can grow up to 9.1 metres (30 ft) vertically. It should be planted in good sunlight. ✓



and does not require a lot of water. The tree starts to flower after 7 years. When the tree is still young the flowers are white and with age they turn red or orange. The trunk of the tree starts to develop its fragrance after about 10 years of growth.

### • Uses and Production:-

Santalum album has been the primary source of sandalwood and the derived oil. These often hold an important place within the societies of its naturalised distribution range. The central part of the tree, the heartwood, is the only part of the tree that is used for its fragrance. It is yellow brown in color, hard with an oily texture and due to its durability, is the perfect material for carving. The outer part of the tree, the sapwood is unscented. The sapwood is white or yellow in color and is used to make turnery items. The high value of sandalwood has led to attempts at cultivation, this has increased the distribution range of the plant. The ISO standard for the accepted characteristics of this essential oil is ISO 3518:2002.

Indian sandalwood has a high santalol content at about 90% compared with the other main source of the oil

Santalum Specatum (Australian Sandalwood), at around 39% and India to dominate production of Sandalwood oil world-wide, but the industry has been in decline in the 21st century.

India:- The use of S. album in India is noted in literature for over two thousand years. It has use as wood and oil in religious practices. It also features as a construction material in temples and elsewhere. The Indian government has banned the export of the species to reduce the threat by over harvesting. In the Southern Indian states of Karnataka, Andhra Pradesh and Tamil Nadu all trees of greater than a specified girth were the property of the state until 2001/2. Cutting of trees, even on private property were regulated by the Forest Department.

Australia:- The native species, Santalum Spicatum is more common and extensively grown in western Australia. but as of 2020 there are two Commercial Indian Sandalwood plantations in full operation based in Kununurra, it in the far north of western Australia: Quintil (formerly Tropical Forestry Services), which in 2017 controlled around 80 per cent of the world's supply of Indian Sandalwood, and Santamal.



# NAYANTARA

SCIENTIFIC NAME:- *Catharanthus roseus*





(11)

• Scientific Name - Catharanthus roseus

☐ Description:- Catharanthus roseus is an evergreen subshrub or herbaceous plant growing 1m (39 in) tall the leaves are oval to oblong, 2.5-9 cm (1.0-3.5 in) long and 1-3.5 cm (0.4-1.4 in) broad, glossy green hairless, with a pale midrib and a short petiole 1-1.8 cm (0.4-0.7 in) long; they are arranged in opposite pairs. The flowers are white to dark pink with a darker red centre, with a basal tube 2.5-3 cm (1.0-1.2 in) long and a corolla 2-5 cm (1.0-1.2 in) long and a corolla 2-5 cm (0.8-2.0 in) diameter with five Petal-like lobes. The fruit is a pair of follicles 2-4 cm (0.8-1.6 in) long and 3 mm (0.1 in) broad.

☐ Cultivation:- As an ornamental Plant, It is appreciated for its hardiness in dry and nutritionally deficient conditions, popular in subtropical gardens where temperatures never fall below 5-7°C (41-45°F) and as a warm season bedding plant in temperate period, throughout the year in

tropical conditions, and from Spring to late autumn, in warm temperate climates. Full sun and well-drained soil are preferred. Numerous cultivars have been selected, for variation in flower colour (white, mauve, peach, scarlet and reddish-orange), and also for tolerance of cooler growing conditions in temperate regions. Notable cultivars include 'Albus' (white flowers) Grape cooler (rose-pink; cool-tolerant), the Ocellatus Group (various colours) and 'peppermint cooler' (white with a red centre; cool tolerant). In the USA it often remains identified as "vinca" although botanists have shifted its identification and it often can be seen growing along roadsides in the south.

### Uses:-

Traditional:- The species has long been cultivated for herbal medicine, as it can be traced back to 2600 B.C.E Mesopotamia. In Ayurveda (Indian traditional medicine) the extracts of its roots and shoots, though poisonous are used against several diseases. In traditional Chinese medicine, extract from it have been used against numerous diseases, including diabetes, malaria



and Hodgkin's lymphoma. In the 1950s, vinca alkaloids including Vinblastine and Vincristine were isolated from *Catharanthus roseus* while screening for anti-diabetic drugs. The chance discovery led to increased research into the chemotherapeutic effect of vinblastine and Vincristine. Conflict between historical indigenous use, and recent patents on Catharanthus roseus derived drugs by western Pharmaceutical companies, without compensation, has led to accusation of biopiracy.

■ Medicinal:- Vinblastine and Vincristine, chemotherapy medications used to treat several types of cancers, are found in the plant and are biosynthesised from the coupling of the alkaloids Catharanthine and Vindoline. The newer semi-synthetic chemotherapeutic agent Vinorelbine, used in the treatment of non-small cell lung cancer, can be prepared either from vindoline and catharanthine or from the vinca alkaloid leurostine.

■ Research:- Despite the medical importance and wide use the desired alkaloids (vinblastine and vincristine) are naturally produced at very low yields. Additionally, it is complex and costly to synthesize the desired.



Products in a lab, resulting in difficulty satisfying the demand and a need for overproducing. Treatment of the plant with Phytohormones, such as salicylic acid and methyl jasmonate, have been shown to trigger defense mechanisms and overproduce downstream alkaloid. Studies utilizing this technique vary in growth condition, choice of Phytohormone, and growth conditions, choice of phyto-hormone and location of treatment. ✓

Concurrently, there are various efforts to map the biosynthetic pathway producing the alkaloid to find a direct path to overproduction via genetic engineering.

C. roseus is used in plant pathology as an experimental host for phytoplasmas. This is because it is easy to infect with a large majority of phytoplasmas, and also often has very distinctive symptoms such as Phyllody and significantly reduced leaf size. ✓



# MINT

SCIENTIFIC NAME:- *Mentha spicata*





Scientific Name - Mentha spicata (Spear-mint)  
Mentha Piperita (Peppermint)

▣ Description:- Mint are aromatic, almost exclusively perennial herbs. They have wide-spreading underground and overground stolons and erect, square, branched stems. The leaves are arranged in opposite pairs from oblong to lanceolate, often downy, and with a serrate margin. Leaf colors range from dark green and gray green to purple, blue and sometimes pale yellow.

The flowers are white to purple and produced in false whorls called verticillasters. The corolla is two-lipped with four subequal lobes, the upper lobe usually the largest. The fruit is a nutlet, containing one to four seeds.

▣ uses:-

• Culinary:- The leaf, fresh or dried, is the culinary source of mint. Fresh mint is usually preferred over dried mint when storage of the mint is not a problem.

The leaves have a warm, fresh, aromatic, sweet flavor with a cool aftertaste, and are used in teas.

beverages, jellies, syrups, candies, and ice creams. In Middle Eastern cuisine, mint is used in lamb dishes, while in British cuisine and American cuisine mint sauce and mint jelly are used, respectively. Mint (Pudina) is a staple in Indian cuisine, used for flavouring curries and other dishes.

Mint is a necessary ingredient in Touareg tea, a popular tea in northern African and Arab countries. Tea in Arab countries is popular drunk this way. Alcoholic

drinks sometimes feature mint for flavor or garnish, such as the mint julep and the mojito. Creme de menthe is a mint flavoured liqueur used in drinks such as the grasshopper.

Mint are used as food plants by the larvae of some lepidoptera species, including buff ermine moth. It is also eaten by beetles such as Chrysolina coerulans (blue mint beetle).

- Traditional medicine and cosmetics :- The ancient Greeks rubbed mint on their arms, believing it would make them stronger. Mint was originally used as a medicinal herb to treat stomach ache and chest pain. There are several uses in traditional medicine and



preliminary research for possible use in treating irritable bowel syndrome.

Menthol from mint essential oil (40-90%) is a ingredient of many cosmetics and some perfumes. Menthol and mint essential oil are also used in aromatherapy which may have clinical use to alleviate post surgery nausea.

- Allergic reaction:- Although it is used in many consumer products, mint may cause allergic reactions in some people, including symptoms such as abdominal cramps, diarrhea, headaches, heartburn, tingling or numbing around the mouth, anaphylaxis or contact dermatitis.

- Insecticides:- Mint oil is also an environmentally friendly insecticide for its ability to kill some common pests such as wasps, hornets, ants and cockroaches.

- Room Scent and aromatherapy:- Known in Greek mythology as the herb of hospitality, One of mint's first known uses in Europe was as a room deodorizer. The herb was strewn across floors to cover the smell of the hard - packed soil.



# TURMERIC

SCIENTIFIC NAME:- *Curcuma longa*



• Scientific Name:- Curcuma longa

Origin and distribution :- The greatest diversity of *Curcuma* species by number alone is in India, at around 40 to 45 species. Thailand has a comparable 30 to 46 species. Other countries in tropical Asia also have numerous wild species of *Curcuma*. Recent studies have also shown that the taxonomy of *Curcuma longa* is problematic, with only the specimens from South India being identifiable as *C. longa*. The phylogeny, relationships, intraspecific and interspecific variation, and even identity of other species and cultivars in other parts of the world still need to be established and validated. Various species currently utilized and sold as "turmeric" in other parts of Asia have been shown to belong to several physically similar taxa, with overlapping local names.

Botanical description :- Turmeric is a Perennial herbaceous plant that reaches up to 1m (3ft 3in) tall. Highly branched yellow to orange, cylindrical, aromatic rhizomes are found.



The leaves are alternate and arranged in two rows. They are divided into leaf sheath, Petiole and leaf blade.

From the leaf sheaths, a false stem is formed. The petiole is 50 to 115 cm (20-45 in) long. The simple leaf blades are usually 76 to 115 cm (30-45 in) long and scarcely up to 230 cm (7 ft 7 in). They have a width of 38 to 45 cm (15 to 17 1/2 in) and are oblong to elliptical narrowing at the tip.

■ Inflorescence, flower and fruit:- At the top of the inflorescence, stem bracts are present on which on flowers occur; these are white to green and sometimes tinged reddish purple, and the upper ends are tapered.

The hermaphrodite flowers are zygomorphic and threefold. The three sepals are 0.8 to 1.2 cm (3/8 to 1/2 in) long, fused and white and have fluffy hairs; the three calyx teeth are unequal. The three bright-yellow petals are fused into a corolla tube up to 3 cm (1 1/4 in) long.

In East Asia, the flowering time is usually in August. Terminally on the false stem is an inflorescence stem, 12 to 20 cm (4 1/2 to 8 in) long, containing many flowers. The bracts are light green and ovate to oblong with a blunt upper end with a length of 3 to 5 cm (1 to 2 in).



▣ Uses :- Turmeric is one of the key ingredients in many Asian dishes, imparting a mustard-like, earthy aroma and pungent, slightly bitter flavor to foods. It is used mostly in savory dishes, but also is used in some sweet dishes, such as the cake stout. In India, turmeric leaf is used to prepare special sweet dishes. Patoleo, by layering rice flour and coconut-jaggery mixture on the leaf, then closing and steaming it in a special utensil (Chondro). Most turmeric is used in the form of rhizome powder to impart a golden yellow color. It is used in many products such as canned beverages, baked products, dairy products, ice cream, yogurt, yellow cake, orange juice, biscuits, popcorn color cereals, sauces, and gelatin. It is a principal ingredient in curry powders. Although typically used in its dried, powdered form, turmeric also is used fresh, alike ginger. It has numerous uses in East Asian recipes, such as a pickle that contains large chunks of fresh soft turmeric.

Turmeric is used widely as a spice in South Asian.

(21)

and Middle Eastern cooking. Various Iranian Khoresht recipes begin with onions caramelized in oil turmeric.

■ Dye :- The golden yellow color of turmeric is due to curcumin. It also contains a orange-colored volatile oil. Turmeric makes a poor fabric dye, as it is not light fast, but is commonly used in Indian clothing such as saris and Buddhist monks' robes. During the late Edo period (1603-1867), turmeric was used to dilute or substitute more expensive safflower dyestuff in the production of beni itajime Shibori.

Turmeric is approved for use as a food color, assigned the code E100. The oleoresin is used for oil-containing product.

In combination with annatto (E160b), turmeric has been used to color numerous food products. Turmeric is used to give a yellow color to some prepared mustards, canned chicken broths, and other food - often as a much cheaper replacement for saffron.

■ Traditional Uses :- In western and coastal India during weddings of Marathi and Kannada Brahmins, turmeric tubers are tied with string by the couple to their wrists during a ceremony, Kankana Bandhana.



# ROYAL BENGAL TIGER

SCIENTIFIC NAME:- *Panthera tigris tigris*





□ Scientific Name - Felis tigris (used by Carl Lin.)

Panthera tigris tigris (In Bengal)

▣ Characteristics:- The Bengal tiger's coat is yellow to light orange, with stripes ranging from dark brown to black; the belly and the interior parts of the limbs are white, and the tail is orange with black rings. The white tiger is a recessive mutant, which is reported in the wild from time to time in Assam, Bengal, Bihar and especially in the former state of Rewa. However, it is not an occurrence of albinism. In fact, there is only one fully authenticated case of a true albino tiger, and none of black tiger, with the possible exception of one dead specimen examined in Dittagong in 1846.

✓  
Males and females have an average total length of 270 to 310 cm (110 to 120 in) and 240 to 265 cm (94 to 104 in) respectively, including a tail 85 to 110 cm (33 to 43 in) long. They typically range 90 to 110 cm (35 to 43 in) in height at the shoulders. The standard weight of male ranges from 175 to 260 kg. The smallest recorded weights of Bengal tigers are from the Bangladesh Sundarbans, where adult females are 75 to 80 kg.



Distribution and habitat:- In 1982, a sub-fossil right middle phalanx was found in a prehistoric midden near Kurumita in Sri Lanka, which is dated to about 16,500 yBP and tentatively considered to be of a tiger. Tigers appear to have arrived in Sri Lanka during a period during which sea levels were depressed, evidently prior to the last glacial maximum about 20,000 year ago. The tiger probably arrived too late in southern India to colonise Sri Lanka, which earlier had been connected to India by a land bridge.

Result of a Phylogeographic study using 134 samples from tigers across the global range suggest that the historical northeastern distribution limit of the Bengal tiger is the g region in the Chittagong Hill and Brahmaputra River basin, bordering the historical range of the Indochinese tiger.

The tiger in the Sundarbans in India and Bangladesh are the only ones in the world inhabiting mangrove forests. The population in the Indian Sundarbans was estimated as 86-90 individual in 2018. ✓

#### ● INDIA ●

In the 20<sup>th</sup> century, Indian censuses of wild tigers relied on the individual identification of footprint known as Pug

marks - a method that has been criticised as deficient and inaccurate. Camera traps are now being used in many sites.

Good tiger habitat is subtropical and temperate forests include the Tiger Conservation units (TCUs) Manas - Nandapha.

TCUs in tropical dry forests include Hazaribag wildlife Sanctuary

Baghmara - Srisailem Tiger Reserve, Kanha Indravati

corridor, Orissa dry forests, Panna National Park, Melghat

Tiger Reserve and Ratapani Tiger Reserve. The TCUs in

tropical moist deciduous forest for probably some of the most productive habitats for tigers and their prey,

and include Kaziranga - Meghalaya, Kanha-Pench, Simlipal and Indravati - Meghalaya Tiger Reserves.

In the Bivalis - Gangetic flood plain landscape there are six populations with an estimated population size of 59 to 335 individuals in an area of 5,080 km<sup>2</sup>

(1,960 sq mi) of forested habitat, which are located in Rajaji and Corbett National park, in the connected

habitats of Dudhwa - Kheri - Pilibhit, in Sunderbans Tiger

Reserve. In Sohagi Barwa Sanctuary and Valmiki

National Park.



- In the Western Ghats landscape there are seven populations with an estimated population size of 336 to 487 individual in a forested area of  $21,435 \text{ km}^2$

(8,276 sq mi) in three major landscape units periyar-Kalakad - Mundathur, Bandipur - Parambikulam - Sathyamangalam - Madumalai - Anamalai Muzurthi and Anshi-Kudremukh - Dandeli ;

- In the Brahmaputra flood plains and northeastern hills tigers live in an area of  $4,236 \text{ km}^2$  (1,630 sq mi) in several patchy and fragmented forests.

- In the Sundarbans National Park tigers live in about  $1,586 \text{ km}^2$  (612 sq mi) of mangrove forest.

Ranthambore National Park hosts India's westernmost tiger population. The Dangs' forests in Southeastern Gujarat is potential tiger habitat.



# INDIAN RHINO

SCIENTIFIC NAME:- *Rhinoceros unicornis*





▣ Scientific Name:- Rhinoceros unicornis

Kingdom:- Animalia

Phylum:- Chordata

Class:- Mammalia

Order:- Perissodactyla

▣ Characteristics:- The Indian Rhino has a thick grey - brown skin with pinkish skin folds and one horn on its snout. Its upper legs and shoulders are covered in wart-like bumps. It has very little body hair, aside from eyelashes, ear fringes and tail brush. Males have huge neck folds. The skull is heavy with a basal length above 60 cm (24 in) and occiput above 19 cm (7.5 in). The nasal horn is slightly back curved with a base of about 18.5 cm (7.3 in) by 12 cm (4.7 in) that rapidly narrows until a smooth, even stem part begins about 55 mm (2.2 in) above base. In captive animals, the horn is frequently worn down to a thick knob.

The Indian rhino's single horn is present in both males and females, but not on newborn calves. The horn is pure keratin, like human fingernails and starts to show after about six years.

III Distribution and habitat :- India rhinos once ranged across the entire northern part of the India Subcontinent, along the Indus, Ganges and Brahmaputra River basins, from Pakistan to the Indian - Myanmar border including Bangladesh and the southern part of Nepal and Bhutan. They may have also occurred in Myanmar, Southern China and Indochina. They inhabit the alluvial grasslands of the Terai and Brahmaputra basin. As a result of habitat destruction and climatic changes its range has gradually been reduced so that by the 19th century, it only survived in the Terai grasslands of Southern Nepal, Northern Uttar Pradesh, Northern Bihar, Northern West Bengal and in the Brahmaputra Valley of Assam.



We should conserve wildlife and Plants. Forest Conservation support life on earth. It maintains quality of water and air, the basic essentials of existence of life. Stability in soil is possible by trees. enables the land based plants and animals to live.

From their biodiversity grows wealth in the form of food, medicines, essential for human health. It acts as Carbon Sinks absorbing carbon dioxide and keeps global warming at bay. Forests influence climate and reduce extreme of temperature. They conserve soil and regulate moisture and stream flow.

Forest also source of revenue to the Government in the form of royalty, from leases of forest products. It also provides employment to a large many people.

For protecting the huge variety of species (biodiversity) to maintain natural beauty some wildlife is necessary for the survival of animals. We also use wild life for research work.

## ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my ENVS teacher Suvendu Saha for their able guidance and support in completing my project.

I would also like to extend my gratitude to the Principle Gouram Bit. for providing me with all the facility that was required.

DATE:- 14.03.22

Rimli Sarkar  
B.Sc Botany (Hons)  
1 sem

~~03/12/2021~~







**THE UNIVERSITY OF BURDWAN**  
**THE LIST OF THE CANDIDATES FOR B.Sc. 3 YEAR DEGREE HONOURS (CBCS) SEMESTER - I EXAMINATION DECEMBER 2021**  
**DESCRIPTIVE ROLL**

1

COLLEGE CODE : 403

COLLEGE NAME : BEJOY NARAYAN MAHAVIDYALAYA

CATEGORY	ROLL NUMBER	REGISTRATION NUMBER	REGISTRATION YEAR	GENDER	CASTE	STUDENT'S NAME	FATHER'S NAME/ GUARDIAN'S NAME	HONOURS CC	SUBJECTS GE-1	AECC-1	REMARKS
2103	210340300012	201901040135	2019-20	Male	Unreserved	ARNAB MUKHERJEE	RAMMOHAN MUKHERJEE	BOTANY	CHEMISTRY	ENVIRONMENTAL STUDIES	
1903	190340300035	201901040160	2019-20	Female	OBC-B	PAROMITA MALLICK	PURNENDU MALLICK		CHEMISTRY		
2103	210340300030	201901041040	2019-20	Male	SC	MANISH SAHA	MANIK SAHA	ZOOLOGY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300001	202101049805	2021-22	Male	Unreserved	ADITYA KUMAR SINGH	BIRESHWAR SINGH	PHYSICS	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300002	202101049806	2021-22	Male	Unreserved	ADITYA ROY	SATYANARAYAN ROY	BOTANY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300003	202101049807	2021-22	Male	Unreserved	AKASH GHOSH	NIKHIL GHOSH	MATHEMATICS	PHYSICS	ENVIRONMENTAL STUDIES	
2103	210340300004	202101049808	2021-22	Male	SC	AMAN KUMAR PATRA	ANANDA PATRA	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300005	202101049809	2021-22	Female	Unreserved	ANANNYA NEOGI	ASHOK KUMAR NEOGI	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300006	202101049811	2021-22	Male	Unreserved	ANKUR DAS	NARAYAN CHANDRA DAS	PHYSICS	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300007	202101049812	2021-22	Female	Unreserved	ANTARA MUKHERJEE	SHYAMA SANKAR MUKHERJEE	PHYSICS	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300008	202101049813	2021-22	Male	Unreserved	ARGHA KUNDU	LATE KASHINATH KUNDU	PHYSICS	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300009	202101049814	2021-22	Male	OBC-B	ARITRA GHOSH	NIKHIL GHOSH	MATHEMATICS	PHYSICS	ENVIRONMENTAL STUDIES	
2103	210340300010	202101049815	2021-22	Male	Unreserved	ARITRA MONDAL	MAHADEV MONDAL	PHYSICS	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300011	202101049816	2021-22	Male	SC	ARNAB DAS	RAJESWAR DAS	MATHEMATICS	PHYSICS	ENVIRONMENTAL STUDIES	
2103	210340300013	202101049818	2021-22	Male	OBC-B	BHAGBAT PAL	BINOY PAL	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300014	202101049819	2021-22	Female	Unreserved	BILKIS SULTANA	SK MIZANUR RAHAMAN	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300015	202101049820	2021-22	Male	ST	BIPUL SAREN	LATE MADAN SAREN	PHYSICS	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300016	202101049822	2021-22	Female	OBC-B	BRISTI GHOSH	BISWANATH GHOSH	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300017	202101049823	2021-22	Male	OBC-B	DEB KUMAR PAL	SANJIB PAL	MATHEMATICS	PHYSICS	ENVIRONMENTAL STUDIES	
2103	210340300018	202101049824	2021-22	Male	SC	DEBASISH MONDAL	JOGESWAR MONDAL	BOTANY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300019	202101049826	2021-22	Male	SC	DEBRAJ BHANGI	SUBRATA BHANGI	BOTANY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300020	202101049827	2021-22	Female	Unreserved	ISHITA NAHA	NETAI NAHA	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300021	202101049828	2021-22	Male	OBC-B	JOYDEEP PRAMANICK	RABINDRANATH PRAMANICK	BOTANY	CHEMISTRY	ENVIRONMENTAL STUDIES	



**THE UNIVERSITY OF BURDWAN**  
**THE LIST OF THE CANDIDATES FOR B.Sc. 3 YEAR DEGREE HONOURS (CBCS) SEMESTER - I EXAMINATION DECEMBER 2021**  
**DESCRIPTIVE ROLL**

2

COLLEGE CODE : 403

COLLEGE NAME : BEJOY NARAYAN MAHAVIDYALAYA

CATEGORY	ROLL NUMBER	REGISTRATION NUMBER	REGISTRATION YEAR	GENDER	CASTE	STUDENT'S NAME	FATHER'S NAME/ GUARDIAN'S NAME	HONOURS CC	SUBJECTS GE-1	AECC-1	REMARKS
2103	210340300022	202101049829	2021-22	Male	Unreserved	JYOTIRMOY RAY	SUDARSHON KUMAR RAY	MATHEMATICS	PHYSICS	ENVIRONMENTAL STUDIES	
2103	210340300023	202101049830	2021-22	Female	OBC-A	KIRAN KHATUN	MURTUJA ALI	ZOOLOGY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300024	202101049831	2021-22	Female	Unreserved	KOYAL PAN	SHYAMAL KUMAR PAN	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300025	202101049832	2021-22	Male	SC	KRIPASINDHU MAJHI	NANU MAJHI	ZOOLOGY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300026	202101049833	2021-22	Male	SC	KRISHNANSHU MONDAL	PRASANTA KUMAR MONDAL	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300027	202101049834	2021-22	Female	Unreserved	LONA CHOUDHURY	KAJAL CHOUDHURY	PHYSICS	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300028	202101049835	2021-22	Female	Unreserved	MAHIMA CHOWDHURY	KAMARUJ JAMAN CHOWDHURY	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300029	202101049836	2021-22	Male	Unreserved	MANISH BASU	AVIJIT BASU	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300031	202101049837	2021-22	Female	SC	MANISHA MAJHI	PRABIR MAJHI	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300032	202101049839	2021-22	Male	OBC-A	MD AFSUN ALI SK	MD NASIR ALI SK	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300033	202101049840	2021-22	Male	OBC-B	MRINMOY GHOSH	SUBAL CHANDRA GHOSH	BOTANY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300034	202101049841	2021-22	Female	Unreserved	NATASHA NAHA	NETAI NAHA	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300035	202101049842	2021-22	Female	OBC-A	NEHA SHABNAM	SK SAHARAB ALI	ZOOLOGY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300036	202101049843	2021-22	Female	Unreserved	NIBEDITA SAHA	NETAI SAHA	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300037	202101049844	2021-22	Male	Unreserved	PALLAB KOLEY	ABHIJIT KOLEY	MATHEMATICS	PHYSICS	ENVIRONMENTAL STUDIES	
2103	210340300038	202101049845	2021-22	Female	OBC-B	PARNA DEY	PALLAB DEY	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300039	202101049846	2021-22	Female	OBC-B	PIYALI SADHUKHAN	SWAPAN KUMAR SADHUKHAN	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300040	202101049848	2021-22	Male	ST	PRANAB MANDI	MAHENDRA MANDI	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300041	202101049849	2021-22	Female	Unreserved	PRATYUSHA GHOSH	PRADYUT KUMAR GHOSH	ZOOLOGY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300042	202101049850	2021-22	Male	Unreserved	PRIOTOSH BHATTACHARYYA	PRABIR KUMAR BHATTACHARYYA	BOTANY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300043	202101049851	2021-22	Male	Unreserved	PRITAM NANDY	PRABIR NANDY	MATHEMATICS	PHYSICS	ENVIRONMENTAL STUDIES	
2103	210340300044	202101049852	2021-22	Male	OBC-A	PRITHWIS NATH	SISIR KUMAR NATH	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300045	202101049853	2021-22	Female	Unreserved	PRITY MAITY	TAPAN MAITY	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	





**THE UNIVERSITY OF BURDWAN**  
**THE LIST OF THE CANDIDATES FOR B.Sc. 3 YEAR DEGREE HONOURS (CBCS) SEMESTER - I EXAMINATION DECEMBER 2021**  
**DESCRIPTIVE ROLL**

3

COLLEGE CODE : 403

COLLEGE NAME : BEJOY NARAYAN MAHAVIDYALAYA

CATEGORY	ROLL NUMBER	REGISTRATION NUMBER	REGISTRATION YEAR	GENDER	CASTE	STUDENT'S NAME	FATHER'S NAME/ GUARDIAN'S NAME	HONOURS CC	SUBJECTS GE-1	AECC-1	REMARKS
2103	210340300046	202101049855	2021-22	Male	Unreserved	RAMESH PAL	DINESH PAL	ECONOMICS	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300047	202101049856	2021-22	Male	OBC-B	RANA GHOSH	UTPAL GHOSH	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300048	202101049857	2021-22	Male	SC	RANA MALLIK	RAM PRASAD MALLIK	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300049	202101049858	2021-22	Female	Unreserved	RIMLI SARKAR	TARIT KUMAR SARKAR	BOTANY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300050	202101049860	2021-22	Male	OBC-A	SAIYAD MANIRUL HASSAN	SK RAMJAN ALI	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300051	202101049862	2021-22	Male	SC	SAYAK DAS	AMARESH DAS	ZOOLOGY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300052	202101049863	2021-22	Male	Unreserved	SAYAN MONDAL	LATE AMAR NATH MONDAL	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300053	202101049865	2021-22	Female	Unreserved	SHREYA DAN	ARUP KUMAR DAN	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300054	202101049867	2021-22	Male	Unreserved	SINJAN RAY	ANJAN RAY	PHYSICS	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300055	202101049868	2021-22	Male	OBC-A	SK SOHAIL	SK SAIFULLA	ZOOLOGY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300056	202101049869	2021-22	Female	Unreserved	SNIGDHA SARKAR	SANDIP SARKAR	ZOOLOGY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300057	202101049870	2021-22	Female	OBC-B	SOUMI GHOSH	SAMIR KUMAR GHOSH	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300058	202101049872	2021-22	Male	OBC-B	SOUVIK GHOSH	LALTU GHOSH	MATHEMATICS	PHYSICS	ENVIRONMENTAL STUDIES	
2103	210340300059	202101049873	2021-22	Male	Unreserved	SOUVIK SAMANTA	SATINATH SAMANTA	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300060	202101049874	2021-22	Male	OBC-B	SOVAN PAL	DURYADHAN PAL	MATHEMATICS	PHYSICS	ENVIRONMENTAL STUDIES	
2103	210340300061	202101049876	2021-22	Male	OBC-B	SUMAN GHOSH	SUSHANTA GHOSH	ZOOLOGY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300062	202101049877	2021-22	Male	OBC-B	SUMAN PAL	BASUDEB PAL	MATHEMATICS	PHYSICS	ENVIRONMENTAL STUDIES	
2103	210340300063	202101049878	2021-22	Female	Unreserved	SWARNALI PAUL	BIBHUTI BHUSON PAUL	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300064	202101049879	2021-22	Female	SC	SWATHI ROY	MANARANJAN ROY	BOTANY	CHEMISTRY	ENVIRONMENTAL STUDIES	
2103	210340300065	202101049880	2021-22	Male	Unreserved	TAPONITA BHATTACHARYYA	SIBNATH BHATTACHARYYA	PHYSICS	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300066	202101049881	2021-22	Male	Unreserved	TATHAGATA ROY	DIPTA NATH ROY	CHEMISTRY	MATHEMATICS	ENVIRONMENTAL STUDIES	
2103	210340300067	202101049882	2021-22	Female	Unreserved	TUMPA KUMAR	PRATAP CHANDRA KUMAR	NUTRITION	CHEMISTRY	ENVIRONMENTAL STUDIES	