

**COURSES OF STUDIES**  
**FOR**  
**THE HIGHER SECONDARY**  
**(10 + 2) STAGE**

**ARTS, SCIENCE AND COMMERCE**  
**2009**

MEGHALAYA BOARD OF



SCHOOL EDUCATION:: TURA

## **FOREWORD**

The Board introduced the revised syllabus based on the National Curriculum Framework, 2005, prepared by NCERT, from the session 2008 for Class XI and 2009 for Class XII, in Arts, Science and Commerce Streams. With great care and commitment, the Directorate of Educational Research and Training, Shillong, had prepared and modified the syllabi, keeping in mind the local needs and aspirations of the students in Meghalaya.

I take this opportunity to thank and compliment all the teachers, subject experts and academicians who were associated with the development of this Document. My deep appreciation is also placed on record to Smt. L. R. Sangma, IAS, the Director, Educational Research and Training, Shillong, for providing the necessary support and directions till completion of the task.

Any suggestions for further improvement of this Document are welcome.

Dated Tura, the 23<sup>rd</sup> June, 2009

(E. P. Kharbhih)  
***Executive Chairman,***  
Meghalaya Board of School Education,  
Tura.

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## **STRUCTURE OF THE COURSE** **(ARTS STREAM)**

<b>SUBJECTS</b>	<b>MARKS</b>	
	<b>CLASS XI</b>	<b>CLASS XII</b>
1. English	100	100
2. *M. I. L./Alternative English	100	100
3. Environmental Education	Grading	Grading
4. Elective Subjects		
- 1 <sup>st</sup> Elective	100	100
- 2 <sup>nd</sup> Elective	100	100
- 3 <sup>rd</sup> Elective	100	100
<b>Total</b>	<b>500</b>	<b>500</b>
5. Additional Subject	100	100

### **ADDITIONAL SUBJECT**

Students may offer any one of the elective subjects as an additional subject.

### **ELECTIVE SUBJECTS (ARTS STREAM)**

A candidate may offer any three subjects from the following:

History, Political Science, Education, Geography, Philosophy, Economics, Home Science, Mathematics, Anthropology, Computer Applications, Statistics and Elective Languages (Khasi/Garo/Assamese/Bengali/Hindi/Nepali/Mizo/English)

\* MIL: Khasi/Garo/Assamese/Bengali/Hindi/Nepali/Mizo.

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## **STRUCTURE OF THE COURSE** **(SCIENCE STREAM)**

SUBJECTS	MARKS	
	CLASS XI	CLASS XII
1. English	100	100
2. *M. I. L./Alternative English	100	100
3. Environmental Education	Grading	Grading
4. Elective Subjects		
- 1 <sup>st</sup> Elective	100	100
- 2 <sup>nd</sup> Elective	100	100
- 3 <sup>rd</sup> Elective	100	100
<b>Total</b>	<b>500</b>	<b>500</b>
5. Additional Subject	100	100

### **A. ELECTIVE SUBJECTS**

A candidate may offer any three subjects from the following:

Physics, Chemistry, Biology, Mathematics, Computer Applications, Geography, Anthropology, Home Science, Geology, Economics and Statistics.

### **B. ADDITIONAL SUBJECT**

A candidate may offer any one of the elective subjects as an additional subject.

\* MIL: Khasi/Garo/Assamese/Bengali/Hindi/Nepali/Mizo.

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**STRUCTURE OF THE COURSE**  
**(COMMERCE STREAM)**

SUBJECTS	MARKS	
	CLASS XI	CLASS XII
1. English	100	100
2. *M. I. L./Alternative English	100	100
3. Environmental Education	Grading	Grading
4. Economics	100	100
5. Accountancy	100	100
6. Business Studies	100	100
<b>Total</b>	<b>500</b>	<b>500</b>
7. Additional Subject	100	100

**ADDITIONAL SUBJECT (Any one of the following)**  
(Mathematics/Entrepreneurship/Computer Applications)

\* MIL: Khasi/Garo/Assamese/Bengali/Hindi/Nepali/Mizo.

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**ENGLISH CORE**  
**CLASS – XI**

**English Core Course (for a paper of 100 marks)**

**DISTRIBUTION OF MARKS**

1)	Prose	-	25 marks
2)	Poetry	-	25 marks
3)	Supplementary Reader	-	15 marks
4)	Grammar & Composition		
	a) Reading – Unseen Passages -		10 marks
	b) Writing	-	10 marks
	c) Grammar & Usage	-	15 marks

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**Total = 100 marks**

**I. Prose**

**Pieces To Be Read:**

1. 'We're Not Afraid to Die ... If We Can All Be Together' – *by Gordon Cook and Alan Frost*
2. The Ailing Planet: The Green Movements' Role – *by Nani Palkhivala*
3. Giant Despair – *by John Bunyan*
4. The Portrait of a Lady – *by Khushwant Singh*
5. The White Seal Adapted and Abridged from The Jungle Book – *by Rudyard Kipling*

**II. Poetry**

**Pieces To Be Read:**

1. The Kingfisher – *by W. H. Davies*
2. The Striders – *by A. K. Ramanujan*
3. To The Pupils of Hindu College – *by H. L. V. Derozio*
4. Childhood – *by Marcus Nattan*
5. In Paths Untrodden – *by Walt Whitman*

**Textbook Prescribed for Prose & Poetry:- Resonance Class XI**

Published by - Macmillan India Ltd., S. C. Goswami Road,  
Pan Bazar, Guwahati – 781001.

**III. Supplementary Reader**

**Pieces To Be Read (Any two of the following pieces):**

1. On Doing Nothing – *by J. B. Priestly*
2. Talking of Space – Report on Planet Three – *by Arthur C. Clarke*
3. A Devoted Son – *by Anita Desai*

**Textbook Prescribed:**           **Voices Classes XI & XII**  
Published by -           Macmillan India Ltd., S. C. Goswami Road,  
Pan Bazar, Guwahati – 781001.

**IV. Grammar & Composition**

**The Prescribed Portions are:**

1.     **Reading:** Unseen Passages for (Comprehension and note taking in various topics and situations)
2.     **Writing:** Reports/Essays/Letters
3.     **Grammar & Usage** (To be put in objective format only)
  - a)     Determiners
  - b)     Tenses
  - c)     Active & Passive Constructions
  - d)     Use of Idioms and Phrases
  - e)     Transformation of Sentences

**Textbook Prescribed:**           **English Grammar & Composition**  
Published by -           Pearson Education, 482 F. I. E. Patparganj,  
New Delhi – 110092, India.

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**ENGLISH CORE**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

1.	Prose	-	25 marks
2.	Poetry	-	25 marks
3.	Supplementary Reader	-	15 marks
4.	Grammar & Composition		
	a) Reading	-	10 marks
	b) Writing	-	10 marks
	c) Grammar Usages	-	15 marks
<hr/>			
<b>Total =</b>			<b>100 marks</b>

**I. Prose**

**Pieces To Be Read:**

1. Indigo – *by Louis Fischer*
2. The Rattrap – *by Selma Lagerlof*
3. Lost Spring – Stories of Stolen Childhood – *by Anees Jung*
4. Deep Water – *by William Douglas*

**II. Poetry**

**Pieces To Be Read:**

1. Keeping Quiet – *by Pablo Neruda*
2. A Thing of Beauty – *by John Keats*
3. Caring for Animals – *by Jon Silkin*
4. And So It Eventually Happened – *by R. Parthasarathy*

**III. Supplementary Reader**

**Pieces To Be Read:**

1. What Men Live By – *by Leo Tolstoy*
2. Enchanting Caves of Meghalaya – *by B. D. Kharpran Daly*

**IV. Grammar & Composition**

**Portions To Be Read:**

1. **Reading**
  - a) Unseen passages of various types (for comprehension, vocabulary enrichment and note-taking)
2. **Writing**
  - a) Short Composition like note-taking
  - b) Notice writing
  - c) Letter writing (formal & informal)
  - d) Letters of application for a job
  - e) Essay writing

3. **Grammar Usage**
- a) Transformation of sentences
  - b) Direct & Indirect Speech
  - c) Active & Passive Voice
  - d) Error correction in sentences
  - e) Use of word substitution
  - f) Opposite words

**Recommended Textbooks:**

- |    |  |   |  |
|----|--|---|--|
| 1. | <b>Resonance XII</b>   | - | Published by Macmillan India Ltd.,<br>S. C. Goswami Road,<br>Pan Bazar, Guwahati – 781001. |
| 2. | <b>Voices Classes XI &amp; XII</b>   | - | – do –   |
| 3. | <b>English Grammar &amp; Composition</b>   | - | Published by Pearson Education,<br>482 F. I. E. Patparganj,<br>Delhi – 110092, India.      |
| 4. | <b>Current English Grammar &amp; Usage</b><br>By R. P. Sinha Edited by Prof. P. Madhavan | } | Published by<br>Oxford University Press.   |
| 5. | <b>Writing With A Purpose:</b><br>By Champa Tickoo and Jaya Sasikumar                    |   |  |

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**ALTERNATIVE ENGLISH**  
**CLASS – XI**

**Alternative English (For a paper of 100 marks)**

**DISTRIBUTION OF MARKS**

1.	Prose	-	25 marks
2.	Poetry	-	25 marks
3.	Short Plays	-	20 marks
4.	Grammar & Composition		
a)	Reading Unseen Passages (Comprehension)	-	10 marks
b)	Precis Writing	-	10 marks
c)	Grammar & Usage	-	10 marks
<hr/>			
<b>Total =</b>			<b>100 marks</b>

**I. Prose**

**Pieces To Be Read:**

1. The Face on the Wall – *by E. V. Lucas*
2. Sparrows – *by K. A. Abbas*
3. Love Across The Desert – *by K. N. Dharuwala*
4. The Redemption – *by Victor Hugo*
5. The Castaway – *by Rabindranath Tagore*

**II. Poetry**

**Pieces To Be Read:**

1. Ode on a Grecian Urn – *by John Keats*
2. Laugh and Be Merry – *by John Masefield*
3. A Baby Running Barefoot – *by D. H. Lawrence*
4. Light Shining Out of Darkness – *by William Cowper*
5. To India – My Native Land – *by H. L. V. Derozio*

**III. Short Plays**

**The Prescribed Plays are:**

1. Abraham Lincoln – *by K. N. Devidas*
- Or*
2. Julius Caesar – *by William Shakespeare*

**Textbook Prescribed for Prose/Poetry/Short Plays: Imprints Class XI**

Published by - Macmillan India Ltd.,  
S. C. Goswami Road, Pan Bazar,  
Guwahati – 781001.

#### **IV. Grammar & Composition**

##### **The Prescribed Portions are:**

1. **Reading** – (Comprehension) Passages with a variety of questions based on **Vocabulary and Comprehension**
2. **Writing** – Precis Writing
3. **Grammar & Usage:**
  - a) Correction of grammatical errors in the given sentences
  - b) Agreement between subject and verb
  - c) Direct/Indirect Speech
  - d) Use of Prepositions
  - e) Use of Articles

##### **Textbook Prescribed:**

Published by -

##### **English Grammar & Composition**

Pearson Education, 482 F. I. E. Patparganj,  
New Delhi – 110092, India.

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**ALTERNATIVE ENGLISH**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

I.	Prose	-	25 marks
II.	Poetry	-	25 marks
III.	Short Plays	-	20 marks
IV.	Grammar & Composition		
	a) Reading Unseen Passages	-	10 marks
	b) Precis Writing/Amplification of an idea	-	10 marks
	c) Grammar & Usage	-	10 marks
<hr/>			
<b>Total =</b>			<b>100 marks</b>

**I. PROSE**

**Pieces To Be Read:**

- 1) The Rebellion – *George Orwell*
- 2) Trailing the Jaguar – *Willard Price*
- 3) A Day in the Life of a Debt Collector – *Munshi Premchand*
- 4) Growing Up – *Joyce Cary*

**II. POETRY**

**Pieces To Be Read:**

- 1) The Soul's Prayer – *by Sarojini Naidu*
- 2) The Education of Nature – *by William Wordsworth*
- 3) The Human Seasons – *by John Keats*
- 4) Enterprise – *by Nissim Ezekiel*

**III. SHORT PLAYS**

**The Prescribed Plays are:**

- 1) The Bishop's Candlesticks – *by Norman Mckinnell*  
*Or*
- 2) Macbeth – *by William Shakespeare*

**IV. GRAMMAR & COMPOSITION**

**The Prescribed Portions are:**

- 1) Reading  
Unseen Passages (descriptive/narrative/speech form) with a variety of questions leading to learning of New Vocabulary, test understanding and ability to write independently.
- 2) Writing
  - a) Precis Writing
  - b) Amplification of an idea

- 3) Grammar & Usage
- a) Correction of grammatical errors in the given sentences
  - b) Active and Passive Voice
  - c) Use of Adverbs
  - d) Question Tags
  - e) Modals
  - f) One word substitution

**Recommended Textbook for Prose/Poetry/Plays:**

**Imprints Class XII** - Published by Macmillan India Ltd.,  
- S. C. Goswami Road, Pan Bazar,  
Guwahati - 781001.

**Reference Books for Grammar & Composition:**

- 1) English Grammar & Composition XII  
- Published by Pearson Education,  
482 F.I.E. Patparganj, New Delhi – 110092, India.
- 2) Current English Grammar & Usage by R. P. Sinha  
copy edited by Prof. P. Madhavan  
- Oxford University Press
- 3) Writing With A Purpose by Champa Tickoo & Jaya Sasikumar  
- Oxford University Press.

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**ENVIRONMENTAL EDUCATION**  
**CLASS – XI**

(TO BE ASSESSED INTERNALLY BY AWARDING GRADES)

**Topics To Be Read:**

**Unit I: Man and Environment**

**(20 Marks)**

**Chapter 1: Dimensions of Environment**

Physical, biological and social dimensions; Environment dimensions; Exchange of heat between the earth and its atmosphere; Physical realms of the earth; The realm of the land; The biological environment; Social Environment.

**Chapter 4: Population and Environment**

Meaning and importance of population study; Population theories; World population growth; Population and environmental issues.

**Chapter 5: Impact of Human Activities on the Environment**

Environmental problems of urban and rural areas; Natural Resources and their depletion; Classification of Natural Resources; Depletion of soil; Depletion of plant resources; Stress on Civic Amenities and Supply of Water; Waste Disposal; Transport; Health Services; Vehicular Emission; Urbanization; The Housing Crisis; Migration; Floating Population.

**Unit II: Environment and Development**

**(10 Marks)**

**Chapter 7: Agriculture and Industrialization**

Historical background of the role of agriculture and industry in development; Localisation of Industrial Plants; Impact of industrialization on agricultural development.

**Chapter 9: Impact of Development on Environment**

Changing pattern of land use; Reclamation of land; Deforestation; Resource depletion; Pollution; Industrial pollution; Environment degradation.

**Unit III: Environmental Pollution and Global Issues**

**(30 Marks)**

**Chapter 12: Air, Water and Soil Pollution**

Air Pollution; Water Pollution; Soil Pollution.

**Chapter 20: Strategies of Reducing Pollution**

Air pollution control strategies; Strategies to reduce soil pollution; Strategies to reduce water pollution. (Chapters 12 and 20 to be studied together)

**Chapter 17: Green House Effect**

Green House Effect; Effects of global warming and climatic changes on human society; Biological impacts of global warming.

**Chapter 18: Pollution Related Diseases**

Diseases caused by air and water pollution; Disease of the modern age.

**Unit IV: Energy**

**(10 Marks)**

**Chapter 22: Conventional Sources of Energy**

Conventional energy sources; Fossil fuels; Coal; Petroleum; Firewood; Energy situation in India.

**Chapter 23: Non – Conventional Sources of Energy**

Biomass energy; Solar energy; Wind energy; Ocean power (Tidal waves and thermal); Wave energy; Ocean thermal energy conversion; Nuclear energy; Hydel power; Geothermal energy.

**Chapter 24: Conservation of Energy Resources**

Effects to conserve energy resources; Conserving energy resources in industries; Conserving energy resources in agriculture; Conserving energy resources in the transport sector.

- **One Exemplar Project/Activity may be completed in a year from the suggested list in the textbook.** **(30 Marks)**

**Book Recommended:**

Published by -

**Frank Environmental Education Class XI**

Frank Brothers & Co. Publishers Ltd.,  
136 Moti Lal Nehru Road,  
Opp. Pan Bazar Girls' Higher Secondary School,  
Guwahati – 781001.

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**ENVIRONMENTAL EDUCATION**  
**CLASS – XII**

**UNIT – I: BIODIVERSITY**

**(18 Marks)**

- a) Concepts and Values of Biodiversity: Concepts of biodiversity; Species of various gene pools; Biodiversity in an ecosystem; Values of biodiversity; Why value diversity.
- b) Types of Biodiversity (Species, Ecosystem and Genetic): Species diversity; Ecosystem diversity, Marine ecosystem; Estuarine ecosystem; Genetic diversity.
- c) Interdependence between Species: Interactions between plants and animals.
- d) Economic Potential of Biodiversity: Introduction; Economic potential of plant diversity; Economic importance of animal diversity.
- e) Loss of Biodiversity (Threatened, Endangered and Extinct Species): Introduction; Causes leading to loss of biodiversity; Threatened, endangered and extinct species.
- f) Strategies for Conservation of Biodiversity: Introduction; Why conserve biodiversity.

**UNIT – II: ENVIRONMENTAL MANAGEMENT**

**(16 Marks)**

- a) Need for Environmental Development Vis-à-vis Development: Introduction; Development levels and environment impacts.

**UNIT – III: SUSTAINABLE AGRICULTURE**

**(16 Marks)**

- a) Need for Sustainable Agriculture: Key components in the industrialization of modern agriculture.
- b) Green Revolution: Impact of green revolution on the environment; Ecological impacts; Sociological impacts.
- c) Impact of Agrochemicals on Environment.
- d) Management of Agriculture Produce: Storage and preservation; Transportation.

#### **UNIT – IV: SUSTAINABLE DEVELOPMENT**

**(20 Marks)**

- a) Concept of Sustainable Development: Introduction.
- b) Concept of Sustainable Consumption: Lessons on Sustainable Consumption; Contemporary concept of sustainable consumption.
- c) Challenges for Sustainable Development: Economic considerations; Need for sound economic policies; Political considerations; Social considerations; Need for a transformation in social conditions.
- d) Role of Individual and Community.

#### **EXEMPLAR ACTIVITIES (INTERNAL ASSESSMENT)**

**(30 Marks)**

Students must undertake at least one activity in a year. Teachers may design their own set of activities keeping in view the overall objectives of teaching and learning of Environmental education at this stage. Activities may be planned and designed depending upon the local situations, available resources and environmental issues of concern. The learners should be encouraged to initiate action on their own. As illustrations activities may be of the following types:

- To study the changes that have taken place in a given land area during a specific time in respect of number of houses and families and determine the effects on civic amenities like availability of water. Electricity and fuels, drainage system, disposal of wastes, etc.
- To study the practices followed in the region for storage, preservation, transportation and processing of perishable or nonperishable farm products and to assess the extent of wastage due to faulty practices.
- To study the status of an endangered species listed for the region by collecting information through different sources and observation, if possible and to assess the reasons for its diminishing number. Suggests ways and means to protect the species.
- Conduct a survey of plants and trees in the locality and collect information about their cultural, economic and medicinal values. Prepare action plans for the propagation of trees that are most valuable for use.
- Prepare plans for beautification of the school campus or a park in the locality. Identify suitable plants and trees for the same.

- Prepare a flow chart to show different steps involved in the supply of tap water from the source to houses in the locality. Plan and execute campaign to educate the society about the implications of wastage of water in terms of energy.

**RECOMMENDED TEXTBOOK: Frank Environmental Education (Class XII)**

- Frank Bros. & Co. (Publishers) Ltd.

**REFERENCE BOOKS:**

- Ecology and Environment *by P. D. Sharma; Rastogi Publications.*
- Environmental Biology *by P. D. Sharma; Rastogi Publications.*
- Man & His Environment *by Dr. S. R. Joshi & N. Joshi; Gautam Bros. & Co.*

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**ASSAMESE (MIL)**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

1.	Prose	-	30 marks
2.	Poetry	-	25 marks
3.	Rapid Reader	-	15 marks
4.	Grammar & Composition	-	30 marks

**Total = 100 marks**

**I. Prose**

**Pieces To Be Read:**

1.	Bor Boruahar Kobita Bedona	–	Lakhinath Bezbarua
2.	Jibonor Santiparba	–	Satyanath Bora
3.	Badha Kavya	–	Dr. Birinchi Kr. Boruah
4.	Asomor Khel Dhemali	–	Narayan Sharma

**II. Poetry**

**Pieces To Be Read:**

1.	Borgeet	–	Madhab Dev
2.	Bon Kunwari	–	Chandra Kr. Agarwala
3.	Lachit Phukan	–	Debakanta Baruah
4.	Ekhon Chithi	–	Hem Barua

**Book Recommended for Prose & Poetry: Sahitya Saurav**

Published by - Jyoti Prakashan, Jasowanta Road,  
Pan Bazar, Guwahati – 781001.

**III. Rapid Reader: Drama**

**Book Recommended: Chiraj: Phani Sarma – Pratham Anka (Page 01 to 25)**

**IV. Grammar & Composition**

**Pieces To Be Read:**

1. Pada Prakaran, Karak & Samash
2. Amplification & Sentence Making
3. Substance Writing
4. Sentence Making with Phrases and Idioms

**Book Recommended:**

1. Pravesika Rachana Sikkha: Giridhar Sarma
2. Rachana Bichitra: Dharma Singha Deka
3. Bahal Byakaran: Satyanath Bora

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**ASSAMESE (MIL)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

Unit I	Prose	-	30 marks
Unit II	Poetry	-	25 marks
Unit III	Drama	-	15 marks
Unit IV	Grammar	-	10 marks
	Composition	-	10 marks
	Essay	-	10 marks
<hr/>			
<b>Total</b>		<b>=</b>	<b>100 marks</b>

**I. PROSE**

**The Prescribed Pieces are:**

1. Kabir Ahaituk Priti *by Dr. B. K. Kakati*
2. Asomiya Vaishnab Kabir Narad *by Tirtha Nath Sarma*
3. Barnabodh *by Dr. Bhabendra Saikia*
4. Shahitya *by Upendra Nath Goswami*

**II. POETRY**

**The Prescribed Poems are:**

1. Indramunya Rajar Jagya Ayojon (Uresha Barnan) *by Srimanta Shankar Dev*
2. Naatghar *by Nalini Bala Devi*
3. Kukur *by Amulya Boruah*
4. Ubhati Nahar Kabita *by Nabakanta Barua*

**III. DRAMA: Chiraj**

**The Prescribed Portions are:**

Dwitiya and Tritiya Anka (Page 26 – till the end)

**IV. GRAMMAR & COMPOSITION**

**The Prescribed Portions are:**

1. Karak
2. Pratyoy
3. Bibhakti
4. Make sentences with phrases & idioms
5. Bhab Samprasharan
6. Comprehension
7. Essay

**RECOMMENDED TEXTBOOKS:**

1.   **Sahitya Saurav**  
          Published by: Jyoti Prakashan, Jasowanta Road,  
                            Pan Bazar, Guwahati – 1
2.   **Chiraj (Drama) by Phani Sharma**  
          Published by: Asom Prakashan Parishad
3.   **Prabeshika Rachana Siksha by: Giridhar Sharma**
4.   **Rachana Bichitra by: Dharma Singha Deka**
5.   **Bohal Byakaran by: Satyanath Bora.**

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**BENGALI (MIL)**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

1.	Prose	-	25 marks
2.	Poetry	-	20 marks
3.	Drama	-	15 marks
4.	Composition		
	a) Potro Likhon	-	6 marks
	b) Bhab Somprasaran	-	7 marks
	c) Prabandha Rachana	-	7 marks
5.	Grammar		
	a) Bakya Paribartan	-	5 marks
	b) Sadhu – O – Chalit Bhasha	-	5 marks
	c) Praband – Pracharan	-	5 marks
	d) Bagdhara	-	5 marks

**Total = 100 marks**

**I. Prose**

**Pieces To Be Read:**

1. Sitar Banobas – *by Iswar Chandra Bidyasagar*
2. Bhanu Singher Patro – *by Rabindranath Tagore*
3. Mahesh – *by Sharat Chandra Chattopaddhay*

**II. Poetry**

**Pieces To Be Read:**

1. Purborag – *by Chandi Das*
2. Jiban Bandana – *by Nazrul Islam*
3. Abar Asibo Phire – *by Jibanananda Dash*

**III. Drama: Udbastu (Selected Part from ‘Natun Ihudi’) by Salil Sen**

**Textbook Recommended: Uchcho Madhyamik Path Sankalan (MBOSE Publications)**

Printed & Distributed by - C & P Enterprises, Educational Publishers,  
M. C. Road, Guwahati – 781003.

**IV. Grammar & Composition (No textbook has been recommended)**

**The Recommended Portions are:**

- |                      |                             |
|----------------------|-----------------------------|
| 1. Patro Likhon      | 5. Sadhu – O – Chalit Bhasu |
| 2. Bhab Samprasaron  | 6. Praband - Prabachan      |
| 3. Prabandha Rachana | 7. Bagdhara                 |

4. Bakya Paribartan

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**BENGALI (MIL)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

I.	Prose	-	25 marks
II.	Poetry	-	20 marks
III.	Novel	-	15 marks
IV.	Grammar		
	a) Definition & Examples	-	7 marks
	b) Alankar	-	7 marks
	c) Banganubad/Prabad Prabachan	-	8 marks
V.	Composition		
	a) Summary Writing	-	8 marks
	b) Prabandha Rachana	-	10 marks

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**Total = 100 marks**

**I. PROSE**

**Pieces To Be Read:**

- a) Banglar Nabya Lekhokdiger Proti Nibedon – *Bankim Chandra Chattopaddhay*
- b) Balai – *Rabindranath Tagore*
- c) Dudher Dam – *Banophul*

**II. POETRY**

**Pieces To Be Read:**

- a) Sita-o-Sarama – *Michael Madhusudan Dutta*
- b) Dui Bigha Jami – *Rabindra Nath Tagore*
- c) Bangla Bhasha Uchchorito Holey – *Shamsur Rahaman*

**III. NOVEL**

- Rajsingha (Selected Part): Bankim Chandra Chattopaddhay.

**IV. GRAMMAR**

**i) Definition & Examples**

- a) Samibhaban
- b) Apinihiti
- c) Swar Sangati
- d) Swar Bhakti
- e) Abhishruti

**ii) Alankar**

- a) Anupras



- b) Shles
- c) Upoma
- d) Samasokti
- iii) **Banganubad/Prabad – Prabachan**

**V. COMPOSITION**

- a) Summary Writing
- b) Prabandha Rachana

***Recommended Textbook for Prose, Poetry & Novel:***

**Uchcho Madhyamik Path Sankalan by MBOSE**

Published by C & P Enterprises, Educational Publishers,  
M. C. Road, Guwahati – 781003.

**Grammar & Composition** (Any standard textbook on Bengali Grammar & Composition may be used)

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**GARO (MIL)**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

1.	Prose	-	35 marks
2.	Poetry	-	35 marks
3.	Essay	-	15 marks
4.	Agan Me·apa/Ku·jikse	-	15 marks
<b>Total =</b>			<b>100 marks</b>

**I. Prose**

**The Prescribed Pieces are:**

1. Nikgijagipa Gam – *Fridina K. Marak*
2. A·chik Jatni Ku·riting Agananirango Jajong aro Askirangni Gimin Aganani – *Dewansing S. Rongmuthu*
3. Japan Nokdang – *Rev. Gilbert K. Marak*

**Recommended Textbook:** A·chikni Chanchibewale Seanirang  
Compiled and edited by – K. M. Momin,  
Tura Book Room, Tura.

**II. Poetry**

**The Prescribed Pieces are: Salingni Agana**

**Recommended Textbook:** Seokgimin Poetryrang – by D. S. Nengminza  
Tura Book Room

- III. Essay Writing (Unseen)** }  
**IV. Agan Me·apa/Ku·jikse** }

**Recommended Textbook:** A·chik Composition by Keneth M. Momin,  
Tura Book Room, Tura.

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**GARO (MIL)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

1.	Prose	-	35 marks
2.	Poetry	-	35 marks
3.	Essay	-	15 marks
4.	Agan Me·apa/Ku·jikse	-	15 marks

**Total = 100 marks**

**I. PROSE**

**The Prescribed Pieces are:**

1. Ki·tap Seani – *Hubert K. Sangma*
2. Lekka Pora aro Gisik Bimik – *K. M. Momin*
3. Gital Chasong Janggi Tangani – *L. R. Marak*

**II. POETRY**

**The Prescribed Pieces are:**

1. A·chik Ku·rang – *Howard Denison W. Momin*
2. Nang·ko Gisik Ra·gen – *Howard Denison W. Momin*
3. Hobani Sinteani – *Evelyn R. Marak*
4. Tom·tomani Dongja Ia A·gilsako – *Meckjin R. Marak*
5. Katta Ma·gitcham Niam Songgitcham – *D. S. Rongmuthu*

**III. ESSAY WRITING (UNSEEN)**

**IV. AGAN ME·APA/KU·JIKSE**

**RECOMMENDED TEXTBOOKS**

1. **A·chik Chanchibewale Seanirang** Compiled and edited by – K. M. Momin,  
Published by – Tura Book Room, Tura.
2. **Seokgimin Poetryrang by D. S. Nengminza**  
Published by – Garo Hills Book Emporium
3. **Chasong Gital A·chik Poetryrang by K. M. Momin**
4. **A·chik Kattarang by Winnish K. Sangma**

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**HINDI (MIL)**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

1.	Prose	-	25 marks
2.	Poetry	-	25 marks
3.	Rapid Reader	-	20 marks
4.	Grammar & Composition		
a)	Essay Writing	-	10 marks
b)	Letter Writing	-	10 marks
c)	Unseen Passage	-	10 marks

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**Total = 100 marks**

**I. Prose**

**Pieces To Be Read:**

1. Namak Ka Daroga – *by Premchand*
2. Apu Ke Saath Dhai Saal – *by Satyajit Ray*
3. Galta Loha – *by Shekhar Joshi*
4. Jamun Ka Per – *by Krishnachander*
5. Bharat Mata – *by Jawaharlal Nehru*
6. Atma Ka Taap – *by Sayyad Haider Raza*

**II. Poetry**

**Pieces To Be Read:**

1. Hum Nau Ek Ek Kari Jana – *by Kabir*
2. Mere To Giridhar Gopal, Dusro Na Koi – *by Meera*
3. Wah Aankhe – *by Sumitranandan Pant*
4. Ghar Ki Yaad – *by Bhawani Prasad Mishra*
5. Hai Bhukh! Mat Machal – *by Akkak Mahadevi*
6. Aao Milkari Bachae – *by Nirmala Putul*

**Textbook Prescribed for Prose & Poetry: Aroh – Hindi Core (NCERT)**

**III. Rapid Reader**

**Pieces To Be Read:**

1. Bhartiya Gayiko Mei Bejor: Lata Mangeshkar – *by Kumar Gandharu*
2. Rajasthan Ki Rajat Bunde – *by Anupam Mishra*
3. Aalo – Aandhari – *by Baby Haldar*

**Textbook Prescribed: Vitan Hindi Suppo I (Core) (NCERT)**

**IV. Grammar & Composition**

**a) Composition**  
**The Prescribed Portions are:**

1. Essay Writing
2. Letter Writing
3. Unseen Passage

**b) Grammar**

1. Shrutisan Bhinnarthak Shabd
2. Anekarthi Shabd
3. Anek Shabdo Badle Ek Shabd
4. Paryawachi
5. Velomi
6. Muhaovre
7. Lokoktiyan

**Textbook Prescribed: Hindi Vyakaran Aur Vyavahar, NCERT**

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**HINDI (MIL)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

1. Prose	-	25 marks
2. Poetry	-	25 marks
3. Rapid Reader	-	20 marks
4. Grammar & Composition		
a) Essay Writing	-	10 marks
b) Letter Writing	-	10 marks
c) Unseen Passage	-	10 marks

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**Total = 100 marks**

**I. PROSE**

**The Prescribed Pieces are:**

1. Bazaar Darshan – *by Jainaindra*
2. Pahalwan Ki Dholak – *by Phanishwar Nath Renu*
3. Charlie Chaplin Yani Hum Sab – *by Vishnu Khare*
4. Namak – *by Rajiya Sajjad Zahir*
5. (a) Shram Vibhajan aur Jati Pratha – *by Bhimrao Ambedkar*  
(b) Meri Kalpana Ka Adarsh Samaj – *by Bhimrao Ambedkar*

**II. POETRY**

**The Prescribed Pieces are:**

1. Atma Parichay – *by Harivansh Rai Bachchan*
2. Bat Sidhi Thi Par – *by Kuwar Narayan*
3. Usha – *by Rameshwar Bahadur Singh*
4. Badal Rag – *by Suryakant Tripathi 'Nirala'*
5. (a) KavitaVali (Uttar Kand Se) – *by Tulsidas*  
(b) Lakshman – Murchha Aur Ram Ka Vilap – *by Tulsidas*

**III. RAPID READER**

1. Atit Mein Dabe Pau - by Om Thanvi
2. Diary Ke Panne - by Anne Frank

**IV. GRAMMAR & COMPOSITION**

**a) Composition**

- i) Essay Writing

- ii) Letter Writing
- iii) Unseen Passage

**b) Grammar**

- i) Sandhi – Sandhi Vichched Aur Sandhi Ki Pahachan
- ii) Samas – Vighrah Aur Samas Ki Pahachan
- iii) Vakya – Prakar Aur Rupantaran

**RECOMMENDED TEXTBOOKS:**

1. **Aroh Bhag 2** – NCERT Publications.
2. **Vitan Bhag 2** – NCERT Publications.
3. **Hindi Vyakaran Aur Vyavahar** – NCERT.

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**KHASI (MIL)**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

1)	Prose	-	40 marks
2)	Poetry	-	45 marks
3)	Essay (Unseen)	-	15 marks

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**Total marks = 100 marks**

**1. Prose**

**Textbooks Recommended**

- i) Ki Syntiew Ha Ranab by W. Kharkrang -
- ii) Na Sla Ka Sohmyndur by Sweety Mon Rynjah -

**Pieces To Be Read**

Chapter 4: U Blei U Iohi Ia  
Kiei Kiei Baroh  
Chapter 5: Ban Aiti Namar  
Kiwei  
Chapter 3: Ki Matti U  
Longshwa  
Chapter 14: Ban Ieng Ha La  
Ki Kjat

**2. Poetry**

**Textbooks Recommended**

- i) Ka Samoi Jong Ka Lyer by K. S. Nongkynrih -
- ii) Ka Jingsneng Tymmen (Part I) by R. S. Berry -
- iii) Ki Poetry Khasi by V. G. Bareh -
- iv) Na Nengpei Ki Sur Myllung by B.C. Jyrwa -

**Pieces To Be Read**

i) Tang Ki tiew Pher Ki La  
Wan Sei Kynthong  
ii) Ka Prem Miet Harud Ka  
Tyllong Wah Umkhras  
Chapters I to X  
Chapter 4: Tiewdohmaw Ha  
Shiteng Riat  
Chapter 5: Pyrem  
Chapter 3: Ka Por Samla  
Chapter 11: U Nongshnadur

**3. Essay – Unseen**

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**KHASI (MIL)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

1)	Prose	-	30
2)	Poetry	-	40
3)	Grammar and Composition	-	30
<b>Total marks =</b>			<b>100</b>

**1. PROSE**

**Recommended Textbooks**

**Pieces To Be Read**

- |     |  |   |  |
|-----|--|---|--|
| i)  | Ka Pyrkhat U Khasi<br>by H. O. Mawrie  | - | Chapter II: “U Khasi bad Ka Akor”<br>Chapter 16: “U Khasi Ha Ka Mariang”   |
| ii) | Ki Syntiew Ha Ranab<br>by W. Kharkrang | - | Chapter 3: “Ka Jingiakynduh Jong U Bah Ta En”<br>a) Bah Ta En Sa Leit Suk Ho.<br>b) ..... Iaishah Bah Ta En<br>c) U Blei Un Kyrkhu Ia Phi Bah Ta En” |

**2. POETRY**

**Recommended Textbooks**

**Pieces To Be Read**

- |      |  |   |  |
|------|--|---|--|
| i)   | Ki Jingsneng Tymmen (PartII)<br>by R. S. Berry | - | Chapter I to Chapter 17  |
| ii)  | Ki Poetry Khasi<br>by V. G. Bareh              | - | Chapter 10: “Hapdeng Ki ‘Law Kynjah Ka Tlang”<br>Chapter 15: “Ka Weiking”  |
| iii) | Na Nengpei Ki Sur Myllung<br>by B. C. Jyrwa.   | - | Chapter: “Ka Sor Shillong”<br>Chapter: “ Ym Dei U Nongthaw   |
| iv)  | Ka Samoi Jong Ka Lyer<br>by K. S. Nongkynrih   | - | Chapter: “U Ren”<br>Chapter: “Haba U Myntri Rangbah Ha Shillong U Wan Hiar,<br>Ki Siej Jar Jar Ki Shu Iapeit Siar” |

### 3. GRAMMAR & COMPOSITION

#### Recommended Textbook

- i) Ka Grammar  
by H. W. Sten

- ii) Essay:

#### Pieces To Be Read

- Chapter 4: “Ka Adjective”  
Chapter 5: “ Ka Verb”  
Chapter 6: “Ka Preposition”  
Chapter 8: “Ka Adverb”

- Unseen

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**MIZO (MIL)**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

A.	Hla (Poetry)	-	20 marks
B.	Thu (Prose)	-	20 marks
C.	Thawnthu leh lemchan	-	15 marks
D.	Grammar	-	15 marks
E.	Chhiar (Pakhat, text bu pawn)-		10 marks
F.	Ziak	-	20 marks

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**Total = 100 marks**

**A. Hla (Poetry)**

**Pieces To Be Read:**

1.	Ka Va Ngai Em Lalram Ropui	-	Hleia
2.	Awmhar Huiva	-	Liangkhaia
3.	Kawltuchawia	-	Chhuana
4.	Khawngai Hnuchham	-	Vankhama
5.	Hraite Khawng I Chûn Ve Kha	-	Rokunga
6.	Chhingkhual Tha Lengheri	-	Laltanpuia
7.	Zofa Kan Dinhmun Hi	-	L. Z. Sailo
8.	An Dang Chuang Lo Ve	-	Suakliana
9.	Phu Loh Thahmingliani	-	F. Rokima
10.	Duhaisâm	-	T. Zorampela

**B. Thu (Prose)**

**Pieces To Be Read:**

1.	Buaina	-	Darchhawna
2.	Anni Leh Keini	-	Siamkima Khawlhiring
3.	Intodelh	-	Lalzuia Colney
4.	Hmanlai Nula Leh Tlangval Nun	-	B.Lalthangliana
5.	Leilung Hi Pathain Siam A Ni	-	P. L. Liandinga (Lehlin)
6.	Zoram Par Mawi	-	C. Rokhuma
7.	Chanchin Tha Malsawmna	-	Z. T. Sangkhuma
8.	Music	-	Sangzuala

**C. Thawnthu leh lemchan**

**Pieces To Be Read:**

1. Rauthla Leng (Thamnthu)

2. Kalkhama Leh Lianphunga (Lemchan)

**D. Grammar**

**Pieces To Be Read:**

1. Mood
2. Synonym & Antonym
3. Tawng upa (Class X - a zir loh 100)

**E. Chhiar**

**Pieces To Be Read:**

Text Bu Pawn Lam Thuziak Naupangin An Hritthiam Dan Enna Tur

Zirlaibu pawn (unseen passage) a mi thuziak pakhat, word 1000 vel, lakchhuah a, chumi atang chuan zawhna eng emaw zat siam tur a ni. Thumal awmzia an hriat loh zawhna mark 2 pu tel se.

Thuziak chu hetiang atanga lak tur a ni:

- (a) Factual passage
- (b) Discussion passage

**F. Ziak**

**Pieces To Be Read:**

1. Essay ziak
2. Report leh minute ziah. Thil thleng chanchin ziah  
(Thil ziah te hi ni tin chanchinbu leh School magazine a chhuah tlak tur ni se)
3. Leikhathawn: Leikhathawn ziah ngai chi hrang hrang ziah thiam. Hengte hi zirtir tel ngei ni se
  - (i) Sawrkara lehkha thehluh tur ziah (lehkha pangngai bakah complaint, enquiries etc. leh a chhan letna thlengin)
  - (ii) Kohhran leh tlawmngai pawl te hnena leikhathawn
  - (iii) Chanchinbu mite hnena leikhathawn
  - (iv) Hna dilna

**Books Recommended :**

**a) Prose & Poetry**

**Mizo – XI (Core) – by MBSE**

- R. D. Print Tech, Near Vanapa Hall, Treasury Square,  
Aizawl - 796001.

**b) Grammar & Composition**

**Mizo Grammar & Composition for Class XI & XII by MBSE**

- Milan Press, Zodin Square, Aizawl - 796001.

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**MIZO (MIL)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

A. Hla (Poetry)	-	20
B. Thu (Prose)	-	20
C. Fiction leh Drama	-	15
D. Grammar	-	10
E. Chhiar	-	15
F. Ziak	-	20

**Total = 100 marks**

**A. HLA (POETRY)**

**Pieces To Be Read:**

1. Pi Pu Chhuahtlang Hlui – *Liandala*
2. Kan Ram Nuahmah – *Rokunga*
3. Piallei Hmun Rem Kan Bele – *Dozinga*
4. Tleitirah Tleitiri – *Dura Chongthu*
5. Awmkhawar Lenkaw! Ka Han Thlira – *Van Khama*
6. Zun Phur Thing Tin Par – *Damhauhva*
7. Tahlai Ni Kawklung – *Romani*
8. Khuavel i La Chhing Ngei Ang – *V. Thangzama*
9. Panlai Kei Ka Ramtuanna – *Lalsangzuali Sailo*
10. Phungrual an tin anga – *Laithangpuia*

**B. THU (PROSE)**

**Pieces To Be Read:**

1. Hnam Inpumkhatna Kawnga Tawng Pawimawhna – *P. C. Biaksiama*
2. Mizo Inneih Dan – *B. Lalthangliana*
3. Mizo Nula Huaisen Pahnih – *R. L. Thanmawia*
4. Val Upa – *Darchhawna*
5. Lung In Malsawmna – *H. Lallungmuana*
6. Zoram Indopui Pahnihna – *C. Chhuanvawra*
7. Thangualte u, Nangmahni Khawvel a Nie – *P. L. Liandinga (Lehlin)*
8. Thlaa Lawn – *A. Sawihlira*

**C. FICTION LEH DRAMA**

**Pieces To Be Read:**

1. Fiction: Lali – Biakliana
3. Drama: Zothansangi – Vanneihluanga

**D. GRAMMAR**

**Pieces To Be Read:**

1. Applied Grammar
  - (a) Prefix and suffix
  - (b) Double Adverbs/Adjective Adverbs
2. Idioms and Phrases

**E. CHHIAR**

**Portions To Be Read:**

Zirlai bu pawn lam thuziak pahnih hetiang hian lak turani:

1. Thumal 500-600 inkar - 10 marks
2. Thumal 300-400 inkar - 05 marks

Mark 10 pu zawk hi zawhna chi hrang hrang, thuziak awnzia an man leh man loh enna tur ania Tin, thurnal awmzia an hriat dan enna tur mark 2 a awm ang.

**F. ZIAK**

1. Thuphuah tawi – Advertisement, notice, inneih sawmna, lungphun hriattirna, poster, form filled up etc. **05 marks**
2. Report emaw, thil thleng chanchin mi thusawi atanga ziak (Thumal 80 – 100) lekhathawn chi hrang leh mi lekhathawn chhan **05 marks**
3. Thuziak sei (article etc.) – Chanchibua chhuahtlak tura topic hrang hrang thuziak (Thumal 150 – 200) **10 marks**

**RECOMMENDED TEXTBOOKS**

1. **Mizo – XII (Core) by MBSE**  
- St. Joseph's Press, Tlangnuam, Aizawl – 796005.
2. **Mizo Grammar & Composition for Classes XI & XII by MBSE**  
- Milan Press, Zodin Square, Aizawl – 796001.

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**NEPALI (MIL)**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

Section A	Literature		
	(a) Short Story	-	20 marks
	(b) Essay	-	20 marks
	(c) Poetry	-	20 marks
Section B	Grammar	-	15 marks
Section C	Reading Unseen	-	10 marks
Section D	Composition and Writing	-	15 marks
<b>Total =</b>			<b>100 marks</b>

**Section A: Literature**

(a) **Story** – The following stories are to be read: **(20 marks)**

- |                         |   |                        |
|-------------------------|---|------------------------|
| (i) Madhu               | - | Indra Sundas           |
| (ii) Mero Auta Nagahuki | - | Hari Prasad Gorkha Rai |
| (iii) Chimeki           | - | Guru Prasad Mainali    |
| (iv) Aama               | - | Bikram Bir Thapa       |

(b) **Essay** – The following stories are to be read: **(20 marks)**

- |  |   |                       |
|--|---|-----------------------|
| (i) Virharu                            | - | Laximi Prasad Devkota |
| (ii) Nepali Sanskritima Madal Ko Sthan | - | Lil Bahadur Chettri   |
| (iii) Hamro Sanskriti                  | - | Krishna Prasad Gewali |
| (iv) Nakal                             | - | Rubi Neupane          |

(c) **Poetry** – The following poems are to be read : **(20 marks)**

- |                    |   |                        |
|--------------------|---|------------------------|
| (i) Nav Yuvak      | - | Madhav Ghimire         |
| (ii) Bhikari       | - | Laximi Prasad Devkota  |
| (iii) Hami Bahadur | - | Agam Singh Giri        |
| (iv) Barsha Wichar | - | Lekhnath Paudyal       |
| (v) Vidyarthi Sita | - | Mani Singh Thapa       |
| (vi) Shillong      | - | Krishana Prasad Gewali |

**Section B: Grammar:** The following chapters are to be read: **(15 marks)**

- (i) Swar Varna
- (ii) Vanjan Varna
- (iii) Matra Parichaya
- (iv) Wakya Parichaya
- (v) Samas
- (vi) Ukhan Ra Tukka

**Section C: Reading (Unseen)**

**(10 marks)**

**Section D: Composition and Writing**

**(15 marks)**

- (i) Comprehension Writing
- (ii) Essay Writing
- (iii) Letter Writing

**Textbook Prescribed:**

1. **Uchha Madhyamik Nepali Sahitya**  
- by Textbook Committee (Nepali) Shillong – 2.
2. **Madhyamik Nepali Vyakaran Ra Rachana**  
- by Shree Raj Prakashan, Darjeeling
3. **Ramro Rachana Mitho Nepali**  
- by Krishna Prasad Parajuli Sahayogi Press, Kathmandu

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**NEPALI (MIL)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

Section A – Literature	-	60 marks
Section B – Grammar	-	15 marks
Section C – Reading (Unseen)	-	10 marks
Section D – Composition and Writing	-	15 marks

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**Total = 100 marks**

**Section A – Literature**

**- 60 marks**

**I. PROSE**

**The Prescribed Short Stories are:**

1. Paral Ko Aago – *Guru Prasad Mainali*
2. Logne – *Puskar Shamsher*
3. Shatru – *Vishweshwar Prasad Koirala*
4. Kaikei – *Balkrishna Sama*

**II. ESSAY**

**Types of Essays:**

1. Nepali Hamro Matribhasa – *Parasmani Pradhan*
2. Adhunik Shikshak – *Indra Rai*
3. Gundruk Ko Pukar – *Rudra Raj Pandey*

**III. DRAMA**

- ‘**Mukunda – Indira**’ by Balkrishna Sama, Sajha Prakashan, Kathmandu.

**IV. POETRY**

- ‘**Muna – Madan**’ by Laxmi Prasad Deokota, Sajha Prakashan, Kathmandu.

**Section B – Grammar**

**- 15 marks**

**(Suggested Chapters):**

- (i) Linga
- (ii) Vachan
- (iii) Karak Ra Vivakti
- (iv) Dhatu Ra Pratyas
- (v) Upasarga
- (vi) Paryawachi Shabda
- (vii) Viparitarthak Shabda

- (viii) Shabda Suddhi Bimarsha
- (ix) Ukhan Tukka

**Section C – Reading (Unseen)**  
**(Books not prescribed)**

**- 10 marks**

**Section D – Composition and Writing**

**- 15 marks**

**1. Essay Writing**

- i. Atmaparak
- ii. Vicharatmak

**2. Letter Writing**

- a. Vyaktigat
- b. Vyaparik
- c. Daftari
- d. Smarak Patra

**RECOMMENDED TEXTBOOKS:**

- 1. **Uchha Madhyamik Nepali Sahitya**  
- Textbook Committee (Nepali), Shillong.
- 2. **Madhyamik Nepali Vyakaran Ra Rachana**  
- Shree Raj Prakashan, Darjeeling.
- 3. **Ramro Rachana Mitho Nepali by Krishna Prasad Parajuli**  
- Sahayogi Press, Kathmandu.

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## DISTRIBUTION OF MARKS

Units	Title	Marks	Periods
Part I	Understanding Economics	30	54
Part II	Indian Economy	30	48
Part III	Statistics	30	36
Part IV	Project Work	10	12
<b>Total =</b>		<b>100</b>	<b>150</b>

- **Nature and Scope of Economics** (Periods 6)  
Economics – Adam Smith, Alfred Marshall, Lionel Robbins and P. A. Samuelson.

- **Basic Concepts in Economics (Periods 10)**  
Utility, Goods, Value, Price, Income, Savings, Investment, Capital, Production, Consumption, Wealth and its Characteristics, Relation Between Wealth and Welfare, Human Wants, Characteristics and Types.

- Factors of Production** **(Periods 12)**  
 Land – meaning, characteristics, importance of land, factors affecting the productivity of land.  
 Labour – meaning and characteristics; Division of Labour – meaning, merits and demerits.

## Capital – meaning and stages of capital formation.

Organisation – meaning and functions of entrepreneurs, different forms of business organisation.

- Economic System (Periods 12)**  
 Capitalisation, Socialism and Mixed Economy; their meanings, characteristics, merits and demerits.

- **Money** (Periods 7)  
Meaning, Functions and Classifications.

- **Banking** (Periods 7)

<b>Part II</b>	<b><u>Indian Economy</u></b>	<b>(Periods 48) (30 Marks)</b>
	<b>Basic features of the Indian Economy</b>	<b>(Periods 4)</b>
	<b>Economic Development and Economic Growth</b>	<b>(Periods 3)</b>
	<b>Natural Periods</b>	<b>(Periods 8)</b>
-	Mineral, Forest and Water Resources of India – their economic importance.	
	<b>Population</b>	<b>(Periods 7)</b>
-	Trends and patterns of growth, causes of rapid population growth and measures to control it.	
	<b>Unemployment</b>	<b>(Periods 8)</b>
-	Meaning, types, causes and measures to solve the problem.	
	<b>Poverty</b>	<b>(Periods 8)</b>
-	Meaning, causes and measures to tackle it	
	<b>National Income</b>	<b>(Periods 10)</b>
-	Meaning, trends and patterns of growth of National Income and Per Capita Income; sectoral distribution of National Income.	
<b>Part III</b>	<b><u>Statistics</u></b>	<b>(Periods 36) (30 Marks)</b>
•	<b>Introduction</b>	<b>(Periods 4)</b>
-	Meaning and Scope of Statistics, Uses of Statistics in Economics	
•	<b>Collection of Data, Sources of Data</b>	<b>(Periods 8)</b>
-	Primary and Secondary, how basic data is collected, methods of data collection.	
•	<b>Presentation of Data</b>	
-	Tabular and diagrammatic presentation of data (bar diagrams and pie diagrams)	
•	<b>Measures of Central Tendency</b>	<b>(Periods 12)</b>
-	Mean, Median, Mode (ungrouped data only)	
•	<b>Measures of Dispersion</b>	<b>(Periods 12)</b>

- Range, quartile deviation, mean deviation and standard deviation (ungrouped data only)

#### **Part IV          Project Work**

**(Periods 12)  
(10 Marks)**

To encourage students to develop project with the help of primary data and secondary data or both. The objective of the project work is to enable the students to acquire the knowledge by which a project can be developed by using the theoretical knowledge learned in the course. This includes all the steps involved in designing a project such as choosing a title, exploring the information relating to the topic, collecting the data, analysing it with the help of various statistical tools, interpreting the findings or results, presenting the project and conclusion. Examples of project works that can be taken up are:

- (i) A report on demographic structure of your neighbourhood.
- (ii) Changing prices of a few vegetables in your market.
- (iii) Visit a few farms in a village and collect the details of foodgrains cultivated.
- (iv) Visit a nearby factory and collect information about the socio-economic conditions of the workers.
- (v) Consumer's awareness amongst households.

#### **Textbook Prescribed :**

**- Elementary Economics for Class XI**

Published by – Tushar Publications (P) Ltd.,  
C-21, Jhandewalan F. F. Complex, Rani Jhansi Road,  
New Delhi - 110055.

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**ECONOMICS**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

Part I	Micro Economics	-	40 marks
Part II	Macro Economics	-	30 marks
Part III	Indian Economy	-	30 marks
<hr/>			
<b>Total =</b>			<b>100 marks</b>

**PART I: MICRO ECONOMICS**

**40 marks**

1. **Meaning of Micro Economics:** Central problems of an economy, production possibility curve and opportunity cost.
2. **Consumer Behaviour:** Meaning and attainment of equilibrium through Utility Approach – one and two commodity cases.

**Demand:** Meaning, determinants, demand schedule, demand curve, movement along and shift in demand curve.

**Price elasticity of demand:** Meaning, determinants and measurement of price elasticity of demand (percentage, total outlay and geometric methods).

3. **Producer's Behaviour:** Supply – meaning, determinants, supply schedule, supply curve, movement along and shift in supply curve; price elasticity of supply, measurement of price elasticity of supply (percentage and geometric methods).

**Cost and Revenue:** Concepts of costs; short-run cost curves (fixed and variable costs; total cost, average and marginal costs). Concepts of revenue – total, average and marginal revenue and their relationship.

**Equilibrium of the firm:** Meaning and conditions.

4. **Market:** Meaning and forms of markets (perfect competition, monopoly and monopolistic competition) price determination under perfect competition (equilibrium price and effects of shifts in demand and supply) and monopoly.
5. **Theory of Distribution**

**Rent:** Meaning of economic rent, Ricardian theory of rent.

**Wages:** Meaning, distinction between real and nominal wages and factors determining real wages.

**Interest:** Meaning, distinction between gross interest and net interest, classical theory of interest.

**Profit:** Meaning, distinction between gross profit and net profit, uncertainty bearing theory of profit.

## **PART II: MACRO ECONOMICS**

**30 marks**

6. **Meaning** of Macro Economics and differences between Micro and Macro Economics.
7. **National Income:** Circular flow of income (two sector model); meaning of NI; concepts of GNP, NNP, GDP, NDP, (at market price and at factor cost) personal income, disposable personal income and per-capita income.
8. **Public Finance:** Meaning, distinction between public and private finance, sources of public revenue, taxes – direct and indirect taxes, their merits and demerits; public debt: meaning, need and classification of public debt; public expenditure: meaning and reasons for the increase in PE in recent times; budget: meaning, components, concept of deficit financing.
9. **International Trade:** Meaning, need and differences between international trade and internal trade. Balance of payments and balance of trade (concepts only).

## **PART III: INDIAN ECONOMY**

**30 marks**

10. **Infrastructure:** Meaning, types (economic and social infrastructures) and importance of infrastructure.
11. **Agriculture:** Importance, problems of Indian agriculture and measures to solve the problem.  
  
**Green revolution:** Meaning, causes and effects.  
  
**Agricultural finance:** Need, types and sources of agricultural finance.
12. **Industry:** Cottage and small scale industries – their meanings, role, problems and measures to tackle the problems.

- Industrial policies:** 1948, 1956 and 1991.
13. **India's foreign trade:** Major export and import items of India, composition and direction of India's foreign trade.
14. **Economic Planning and Reforms:** Meaning, need and main objectives of economic planning; brief outline of the latest plan.

**Economic Reforms:** Meaning, need and main features (LPG)

**Recommended Textbook**

- **Micro and Macro Economics by P. M. Passah and B. Syiem**
  - MEA Publications,
  - Lummawrie, Laitumkhrah,
  - Shillong – 793003.

**Reference Books:**

- i) Elementary Economic Theory – K. K. Dewett and J. D. Verma
- ii) Elementary Indian Economics – K. K. Dewett and J. D. Verma
- iii) Economics – J. K. Mitra
- iv) Basic Statistics – Goon, Gupta and Das Gupta.

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**POLITICAL SCIENCE**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

1)	Course I - Political Theory	-	50 marks
2)	Course II - The Indian Constitution and Political System	-	50 marks

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**Total = 100 marks**

<b>Course I – Political Theory</b>		<b>Periods</b>	<b>Marks</b>
Unit I	Definition, nature, scope and importance of Political Science State Nation	18	8
Unit II	The Process of Mobilization: Public Opinion, Political Party, Pressure Groups and Interest Groups.	18	14
Unit III	The Organs of the Government: The Executive The Legislature The Judiciary	20	14
Unit IV	Forms of Government and Structure of Government	18	14
<b>Course II – The Indian Constitution and Political System in Operation</b>			
Unit V	Framing of the Indian Constitution	20	14
Unit VI	Indian Federalism	15	14
Unit VII	Government in the States: The Governor The Chief Minister The State Legislature The State Judiciary	25	14
Unit VIII	Local Self – Government	16	8
<b>Total</b>		<b>150</b>	<b>100</b>

**Course I: Political Theory (I)**

**Periods: 74**

Unit I – Definition, nature, scope and importance of Political Science  
Political Science as a science; the Normative and the Empirical approaches  
The State – Definition and elements; state and society, state and association, state and government.  
Nation – Meaning, characteristics; distinction between state and nation.

**(8 marks) (18 periods)**

Unit II – The Process of Mobilization: Public Opinion – meaning, agencies and its importance in democracy.

The Political Party – Definition, characteristics and functions. Kinds of party system – Single party system, Bi-party system and Multi-party system, their merits and demerits; the role of the Opposition in a democracy.

Pressure groups and Interest groups – Meaning, general characteristics, their role and functions; differences between pressure groups and interest groups; differences between political parties and pressure groups. **(14 marks) (18 periods)**

Unit III – The Organs of the Government:

The Executive – Meaning of Executive, kinds of Executive and functions of the Executive. Importance of the Executive.

The Legislature – Meaning, functions of the Legislature and the types of legislatures. The Judiciary – Meaning of Judiciary, functions of the Judiciary, conditions for the independence of the Judiciary. **(14 marks) (20 periods)**

Unit IV – Forms of Government: Democracy – Direct and Indirect or Representative Democracy; the Devices of Direct Democracy – Referendum, plebiscite, recall and initiative. Merits and demerits of direct and indirect democracy.

Dictatorship – Meaning, characteristics, merits and demerits.

The Structure of Government: Unitary and Federal government – Characteristics, merits and demerits; Parliamentary and Presidential government – characteristics, merits and demerits. **(14 marks) (18 periods)**

**Course II: The Indian Constitution and Political System in operation Periods: 76**

Unit V – Framing of the Indian Constitution; Sources of the Indian Constitution; Philosophy of the Indian Constitution – the Preamble; Salient features of the Indian Constitution; **(14 marks) (20 periods)**

Unit VI – Indian Federalism: Meaning, need for federalism in India; Nature and features of Indian federalism.

Amendments – Need for amendment and procedure for amendment.

**(14 marks) (15 periods)**

Unit VII – Government in the States: The Governor – Appointment, powers and functions.

The Chief Minister and the Council of Ministers.

The State Legislature: The Legislative Assembly – composition, qualifications of members, term of office, resignation and removal, quorum, privileges, powers and functions.

The Speaker – election, removal, functions.

The Legislative Council – composition, qualifications of members, term of office, privileges, quorum, presiding officers, powers and functions.

The State Judiciary: The High Court – composition, qualifications of Judges, appointment, term of office and removal. Powers and functions of the High Court.

Subordinate Courts in the states. **(14 marks) (25 periods)**

Unit VIII – Local Self-Government: meaning, importance, Local Self-Government and Democracy.

The District Council (with reference to Meghalaya) – constitutional provisions, composition, tenure, powers and functions, workings, importance.

Rural Local Self-Government: Panchayati Raj System – essence and need, composition, functions relating to agriculture, public works, sanitation, education, village defence, welfare, forests and environment etc,

Traditional Institutions in Meghalaya: Nokmaship, Doloiship, Syiemship.

**(8 marks) (16 periods)**

**Recommended Textbook: Political Science for Class XI**

Published by - Pearson Education, Dorling Kindersley (P) Ltd.  
482 F.I.E. Patparganj, Delhi - 110092.

**Suggested reading materials:-**

1. Political Science (for +2 stage)  
Theory and Constitution  
Volume I & II  
Author: Durga Kant Sarmah (Wiley Eastern Limited)
2. Political Science - An Introduction  
Textbook for Class XI  
Author: S.N. Jha  
Editor: Nalini Pant (NCERT – 2002)
3. Indian Constitution and Administration  
Textbook for Class XI  
Author: B.L. Garg  
Editor: Nalini Pant (NCERT – 2002)

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**POLITICAL SCIENCE**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

1) Course III – Political Theory (II)	-	50 marks
2) Course IV – The Indian Constitution and - Political System in operation	-	50 marks

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**Total = 100 marks**

**Course III      Political Theory (II)      (80 Periods)**

Unit I	<p><b>Key Concepts: (30 Periods)</b></p> <p>Rights: Meaning and characteristics of Rights; kinds of Rights; classification of Rights; relation between Rights and Duties.</p> <p>Liberty: negative and positive meaning of Liberty; kinds of Liberty – natural, civil, political, economic, national; relation between Law and Liberty.</p> <p>Equality: negative and positive meaning of Equality; kinds of Equality – natural, social, civil, political, economic; the relationship between Liberty and Equality.</p> <p>Justice: the varied meanings of Justice; kinds of justice – natural, social, economic, political, legal.</p> <p>Law: meaning; source – customs, religion, equity, scientific commentaries judicial decisions, Legislature; kinds of Law; relationship between Law and Morality.</p> <p>Citizenship – Meaning of citizenship; Legal and Moral aspects of citizenship; similarities and differences between citizens and aliens; citizens and nationals; methods of acquiring citizenship – by birth and by naturalisation; double citizenship; loss or termination of citizenship.</p>
Unit II	<p>The Electorate: meaning and basis of franchise; Universal Adult Franchise arguments for and against. <b>(15 Periods)</b></p> <p>Systems of Representation: kinds of Representation – Proportional (Hare System &amp; List System), Functional, Territorial, Communal, and their merits and demerits.</p>

Unit III      Major Contemporary Political Theories      **(25 Periods)**  
Liberalism: its meaning and essence; classical or negative Liberalism and contemporary or positive Liberalism and the shift from classical Liberalism. Marxism: Genesis; tenets of Marxism – dialectical materialism, historical materialism, class struggle, surplus value, revolution and dictatorship of the proletariat, classless society.

Unit IV      The United Nations: Origins of the United Nations, development, aims and principles of the United Nations Organization of the United Nations  
**(10 Periods)**

**Course IV      The Indian Constitution and Political System in operation.**  
**(80 Periods)**

Unit V      The Fundamental Rights: Characteristics; Kinds of Fundamental Rights; Writs for enforcement of the Fundamental Rights; Evaluation of the Fundamental Rights.  
The Fundamental Duties: Kinds, characteristics and evaluation.

**(25 Periods)**  
The Directive Principles of State Policy: Sources, meaning and objectives. Classification – social welfare, Gandhian, economic, administrative, educational and cultural principles. Constitutional significance of the Directive Principles. Distinction between Fundamental Rights and Directive Principles.

Unit VI      The Union Government      **(35 Periods)**  
The President of India: - Qualifications, method of election, tenure and removal, privileges, powers and functions, constitutional position.  
The Vice-President of India: - Qualifications, election, tenure and removal, privileges, functions, position.  
The Union Council of Ministers: - Composition, powers and functions.  
The Prime Minister:- Appointment, tenure, powers, functions and position of the Council of Ministers, distribution of portfolios, as a supervisor of and co-ordinator between the different ministries, as a leader of the Parliament, as a link between the President and the Parliament, etc.

The Parliament:-

- (i) The Rajya Sabha (Council of States) – composition, qualifications of members, term of office, presiding officers, privileges, quorum, powers and functions.
- (ii) The Lok Sabha (House of the People) – composition, qualifications of members, election, term of office, privileges, quorum, powers and functions – legislative, executive, financial, constituent and miscellaneous. The Speaker of the Lok Sabha – election, tenure, powers and functions, position.

The Judiciary: The Supreme Court of India – Composition, appointment of Judges, qualifications of Judges, tenure and method of removal of Judges. Powers and functions – original jurisdiction, appellate jurisdiction, advisory jurisdiction, miscellaneous. Evaluation of the Supreme Court.

Unit VII      India and the world: India and the United Nations; India and SAARC; India's role in the Non-Align movement; India's approach to major world issues like Disarmament, Human Rights and Globalisation.      **(20 Periods)**

**Recommended Textbook:**      **Political Science for Class XII**  
Published by -      Pearson Education, Dorling Kindersley (P) Ltd.,  
482 F. I. E. Patparganj, Delhi – 110092.

**Reference Books:-**

1.      Political Science ( for +2 stage)  
Theory and Constitution  
Volume I & II  
Author: Durga Kant Sarmah (Wiley Eastern Limited)
2.      Political Science – Key Concepts and Theories  
A Textbook for Class XII  
Author: V.R.Mehta  
Editor: Nalini Pant (NCERT – 2003)
3.      Democracy in India – Issues and Challenges  
A Textbook in Political Science for Class XII  
Author: A.S. Narang  
Editor: Nalini Pant (NCERT – 2003)
4.      Foundations of Political Science by J.C.Johari.

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**HISTORY**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

Question Type	Section	No. of Questions	Marks for each Questions	Total Marks	Grand Total
A. Objective Type					
i) Multiple Choice }	I	10	× 01	10	} 30
ii) Fill up the blanks }		10	× 01	10	
iii) Very Short Answer }	II	10	× 01	10	} 20
iv) Short Answer }		10	× 02	10	
<b>Total</b>					<b>50</b>
B. Descriptive Type	-	04	× 12	48 (+) 02 for Cleanliness (is a must)	50
<b>Total</b>					<b>100</b>

Themes	Objectives
<b>I. EARLY SOCIETIES</b> <b>1. From the Beginning of Time</b> <b>Focus:</b> Africa, Europe till 15000 BC (a) Views on the origin of human beings (b) Early societies Debate on present – day hunter – gatherer societies.	<ul style="list-style-type: none"> <li>Familiarise the learner with ways of reconstructing human evolution.</li> <li>Discuss whether the experience of present – day hunting – gathering people can be used to understand early societies.</li> </ul>
<b>2. Early Cities</b> <b>Focus:</b> Iraq, 3 <sup>rd</sup> millennium BC (a) Growth of towns (b) Nature of early urban societies Debate on the uses of writing	<ul style="list-style-type: none"> <li>Familiarise the learner with the nature of early urban centres.</li> <li>Discuss whether writing is significant as a marker of civilization.</li> </ul>

<p><b>II. EMPIRES</b></p> <p><b>3. An Empire across Three Continents</b>  <b>Focus:</b> Roman Empire, 27 BC to AD 600.  (a) Political Evolution  (b) Economic expansion  (c) Religion  (d) Late Antiquity  Debate on the institution of slavery.</p> <p><b>4. Central Islamic Lands</b>  <b>Focus:</b> 7<sup>th</sup> to 12<sup>th</sup> centuries  (a) Polity  (b) Economy  (c) Culture  Debate on the nature of the Crusades.</p> <p><b>5. Nomadic Empires</b>  <b>Focus:</b> The Mongol, 13<sup>th</sup> to 14<sup>th</sup> century  (a) The nature of nomadism  (b) Formation of empires  (c) Conquests and relations with other states  Debate on nomadic societies and state formation.</p>	<ul style="list-style-type: none"> <li>• Familiarize the learner with the history of a major world empire.</li> <li>• Discuss whether slavery was a significant element in the economy.</li> <li>• Familiarize the learner with the rise of Islamic empires in the Afro – Asian territories and its implications for economy and society.</li> <li>• Understand what the crusades meant in these regions and how they were experienced.</li> <li>• Familiarize the learner with the varieties of nomadic society and their institutions.</li> <li>• Discuss whether state formation is possible in nomadic societies.</li> </ul>
<p><b>III. CHANGING TRADITIONS</b></p> <p><b>6. Three Orders</b>  <b>Focus:</b> Western Europe, 9<sup>th</sup> – 16<sup>th</sup> century.  (a) Feudal society and economy  (b) Formation of states  (c) Church and society  Debate on decline of feudalism.</p> <p><b>7. Changing Cultural Traditions</b>  <b>Focus</b> on Europe, 14<sup>th</sup> to 17<sup>th</sup> century.  (a) New ideas and new trends in literature and arts  (b) Relationship with earlier ideas  (c) The contribution of West Asia  Debate: Is the notion ‘European Renaissance’ valid?</p> <p><b>8. Confrontation of Cultures</b>  <b>Focus</b> on the Americas, 15<sup>th</sup> to 18<sup>th</sup> century.  (a) European voyages of exploration  (b) Search for gold; enslavement, raids, extermination</p>	<ul style="list-style-type: none"> <li>• Familiarize the learner with the nature of the economy and society of this period and the changes within them.</li> <li>• Show how the debate on the decline of feudalism helps in understanding processes of transition.</li> <li>• Explore the intellectual trends in the period.</li> <li>• Familiarize students with the paintings and buildings of the period.</li> <li>• Discuss changes in European economy that led to the voyages.</li> <li>• Discuss the implications of the conquests for the indigenous people.</li> <li>• Explore the debate on the nature of the slave</li> </ul>



<p>(c) Indigenous people and cultures – the Arawaks, the Aztecs, the Incas.</p> <p>(d) The history of displacements.</p> <p>Debate on the slave trade.</p>	<p>trade and see what this debate tells us about the meaning of these “discoveries”.</p>
<p><b>IV. PATHS TO MODERNIZATIONS</b></p> <p><b>9. Displacing Indigenous People</b></p> <p><b>Focus</b> on North America and Australia, 18<sup>th</sup> – 20<sup>th</sup> century.</p> <p>(a) European colonists in North America and Australia.</p> <p>(b) Formation of White settler societies.</p> <p>(c) Displacement and repression of local people.</p> <p>Debate on the impact of European settlement on indigenous populations.</p> <p><b>10. The Industrial Revolution</b></p> <p><b>Focus</b> on England, 18<sup>th</sup> and 19<sup>th</sup> century.</p> <p>(a) Innovations and technological change.</p> <p>(b) Patterns of growth.</p> <p>(c) Emergence of a working class.</p> <p>Debate: Was there an Industrial Revolution?</p> <p><b>11. Paths to Modernization</b></p> <p><b>Focus</b> on East Asia. Late 19<sup>th</sup> and 20<sup>th</sup> century.</p> <p>(a) Militarization and economic growth in Japan.</p> <p>(b) China and the Communist alternative.</p> <p>Debate on the meaning of Modernization.</p>	<ul style="list-style-type: none"> <li>• Sensitize students to the processes of displacements that accompanied the development of America and Australia.</li> <li>• Understand the implications of such processes for the displaced populations.</li> <li>• Understand the nature of growth in the period and its limits.</li> <li>• Initiate students to the debate on the idea of industrial revolution.</li> <li>• Make students aware that transformation in the modern world takes many different forms.</li> <li>• Show how notions like, ‘modernization’ need to be critically assessed.</li> </ul>

**Recommended Textbook: A Textbook of History Class XI**  
Published by - Sunflower Publications (P) Ltd., 542/16 Joshi Road,  
Karol Bagh, New Delhi – 110005.

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**HISTORY**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

Question Type	Section	No. of Questions	Marks for each Questions	Total Marks	Grand Total
A. Objective Type					
i) Multiple Choice } ii) True/False }	I	20 10	x 01 x 01	20 10	} 30
iii) Short Answer }	II	10	x 02	20	
Total =					50
B. Descriptive Type	-	02 02	x 12 x 13	24 26	= 50
Total =					

**Class XII: Themes in Indian History**

Themes	Objectives
<p><b>The Story of the First Cities: Harappan Archaeology.</b></p> <p><b>Broad overview:</b> Early urban centres.</p> <p><b>Story of discovery:</b> Harappan civilization.</p> <p><b>Excerpt:</b> Archaeological report on a major site.</p> <p><b>Discussion:</b> How it has been utilized by archaeologists/historians.</p>	<ul style="list-style-type: none"> <li>▪ Familiarize the learner with early urban centres as economic and social institutions.</li> <li>▪ Introduce the ways in which new data can lead to a revision of existing notions of history.</li> <li>▪ Illustrate how archaeological reports are analyzed and interpreted by scholars.</li> </ul>

Themes	Objectives
<p><b>Political and Economic History: How Inscriptions tell a story.</b></p> <p><b>Broad overview:</b> Political and economic history: Mauryan to the Gupta period.</p> <p><b>Story of discovery:</b> Inscriptions and the decipherment of the script. Shifts in the understanding of political and economic history.</p> <p><b>Excerpt:</b> Asokan inscription and Gupta period land grant.</p> <p><b>Discussion:</b> Interpretation of inscriptions by historians.</p>	<ul style="list-style-type: none"> <li>▪ Familiarize the learner with major trends in the political and economic history of the subcontinent from c. 4<sup>th</sup> century BCE to c. 5<sup>th</sup> century CE.</li> <li>▪ Introduce inscriptional analysis and the ways in which these have shaped the understanding of political and economic processes.</li> </ul>
<p><b>Use of Literary Sources in Reconstructing social History</b></p> <p><b>Broad overview:</b> Issues in social history, including caste, class, kinship and gender.</p> <p><b>Story of discovery:</b> How the Vedas, Puranas, Upanishads and the Mahabharata were discovered.</p> <p><b>Excerpt:</b> from the <i>Mahabharata</i>, illustrating how it has been used by historians.</p> <p><b>Discussion:</b> Other sources for reconstructing social history.</p>	<ul style="list-style-type: none"> <li>▪ Familiarize the learner with issues in social history.</li> <li>▪ Introduce strategies of textual analysis and their use in reconstructing social history.</li> </ul>
<p><b>A History of Buddhism: Sanchi Stupa</b></p> <p><b>Broad overview:</b> (a) A brief review of histories of Vedic religion, Jainism and Vaisnavism. (b) Focus on Buddhism.</p> <p><b>Story of discovery:</b> Sanchi stupa.</p> <p><b>Excerpt:</b> Reproduction of sculptures from Sanchi.</p> <p><b>Discussion:</b> Ways in which sculpture has been interpreted by historians and other sources for reconstructing the history of Buddhism.</p>	<ul style="list-style-type: none"> <li>▪ Discuss the major religious developments in early India.</li> <li>▪ Introduce strategies of visual analysis and their use in reconstructing histories of religion.</li> </ul>

Themes	Objectives
<p><b>The Evolution of South Indian Architecture from the Pallavas, Chola, Chalukya and Vijayanagar Period.</b></p> <p><b>Outlines only</b></p>	<ul style="list-style-type: none"> <li>Familiarize the learner with the patterns of this evolution and how it influenced the overall development of Indian architecture.</li> </ul>
<p><b>Agrarian Relations: The Ain – i - Akbari</b></p> <p><b>Broad overview:</b> a) Structure of agrarian relations in the 16<sup>th</sup> and 17<sup>th</sup> centuries. (b) Patterns of change over the period.</p> <p><b>Story of Discovery:</b> Account of the compilation and translation of Ain-i-Akbari.</p> <p><b>Excerpt:</b> from the Ain-i-Akbari</p> <p><b>Discussion:</b> Ways in which historians have used the text to reconstruct history.</p>	<ul style="list-style-type: none"> <li>Discuss developments in agrarian relations.</li> <li>Discuss how to supplement official documents with other sources.</li> </ul>
<p><b>The Mughal Court: Reconstructing Histories through Chronicles</b></p> <p><b>Broad Overview:</b> (a) Outline of political history c. 15<sup>th</sup> – 17<sup>th</sup> centuries. (b) Discussion of the Mughal court and politics.</p> <p><b>Story of Discovery:</b> Account of the production of court chronicles, and their subsequent translation and transmission.</p> <p><b>Excerpts:</b> from the <i>Akbarnama</i> and <i>Padshahnama</i>.</p> <p><b>Discussion:</b> Ways in which historians used the texts to reconstruct political histories.</p>	<ul style="list-style-type: none"> <li>Familiarize the learner with the major landmarks in political history.</li> <li>Show how chronicles and other sources are used to reconstruct the histories of political institutions.</li> </ul>
<p><b>Religious Histories: Bhakti-Sufi tradition</b></p> <p><b>Broad Overview:</b> (a) Outline of religious developments during this period. (b) Ideas and practices of the Bhakti-Sufi saints.</p> <p><b>Story of Transmission:</b> How Bhakti-Sufi compositions have been preserved.</p> <p><b>Excerpt:</b> Extracts from selected Bhakti-Sufi works.</p>	<ul style="list-style-type: none"> <li>Familiarize the learner with religious developments.</li> <li>Discuss ways of analyzing devotional literature as sources of history.</li> </ul>

Themes	Objectives
<p><b>Discussion:</b> Ways in which these have been interpreted by historians.</p>	
<p><b>Medieval Society Through Travellers' Accounts</b></p> <p><b>Broad Overview:</b> Outline of social and cultural life as they appear in travellers' accounts.</p> <p><b>Story of their writings:</b> A discussion of where they travelled, why they travelled, what they wrote, and for whom they wrote.</p> <p><b>Excerpt:</b> from Alberuni, Ibn Batuta and Bernier.</p> <p><b>Discussion:</b> What these travel accounts can tell us and how they have been interpreted by historians.</p>	<ul style="list-style-type: none"> <li>▪ Familiarize the learner with the salient features of social histories described by the travellers.</li> <li>▪ Discuss how travellers' accounts can be used as sources of social history.</li> </ul>
<p><b>Colonialism and Rural Society: Evidence from Official Reports</b></p> <p><b>Broad overview:</b> (a) Life of zamindars, peasants and artisans in the late 18<sup>th</sup> century. (b) East India Company, revenue settlements and surveys. (c) Changes over the nineteenth century.</p> <p><b>Story of official records:</b> An account of why official investigations into rural societies were undertaken and the types of records and reports produced.</p> <p><b>Excerpts:</b> From Firminger's Fifth Report, Accounts of Francis Buchanan, Hamilton and Deccan Riots Report.</p> <p><b>Discussion:</b> What the official records tell and do not tell, and how they have been used by historians.</p>	<ul style="list-style-type: none"> <li>▪ Discuss how colonialism affected zamindars and peasants</li> <li>▪ Understand the problems and limits of using official sources for understanding the lives of people.</li> </ul>
<p><b>Colonialism and Indian Towns: Town Plans and Municipal Reports</b></p> <p><b>Broad Overview:</b> The growth of Mumbai, Chennai, hill stations and cantonments (including Shillong) in the 18<sup>th</sup> and 19<sup>th</sup> century.</p> <p><b>Excerpts:</b> Photographs and paintings. Plans of cities. Extract from town plan reports.</p> <p><b>Focus</b> on Kolkata town planning.</p>	<ul style="list-style-type: none"> <li>▪ Familiarize the learner with the history of modern urban centres.</li> <li>▪ Discuss how urban histories can be written by drawing on different types of sources.</li> </ul>

Themes	Objectives
<p><b>Discussion:</b> How the above sources can be used to reconstruct the history of towns. What these sources do not reveal.</p>	
<p><b>British Expansion and the North East</b></p> <p><b>Broad Overview:</b> British Expansion in the North East; 1824 to early 20<sup>th</sup> Century.</p> <p><b>Focus:</b> Social and cultural impact of the colonial Rule with special reference to</p> <ul style="list-style-type: none"> <li>(i) Christian missionaries for e.g., Role of the American Baptist Missionaries.</li> <li>(ii) Modern Education.</li> </ul> <p><b>Excerpt:</b> Reports from Pemberton's (1835), Francis Jenkins and other contemporary writers.</p> <p><b>Discussion:</b> How reports can be used to reconstruct history.</p>	<ul style="list-style-type: none"> <li>▪ Familiarize the learners about. <ul style="list-style-type: none"> <li>(i) the nature of British expansion in the North East India.</li> <li>(ii) Social and cultural impact of British rule.</li> </ul> </li> </ul>
<p><b>Representations of 1857</b></p> <p><b>Broad Overview:</b> (a) The events of 1857-58. (b) How these events were recorded and narrated.</p> <p><b>Focus:</b> Lucknow.</p> <p><b>Excerpts:</b> Pictures of 1857. Extracts from contemporary accounts.</p> <p><b>Discussion:</b> How the pictures of 1857 shaped British opinion of what had happened.</p>	<ul style="list-style-type: none"> <li>▪ Discuss how the events of 1857 are being reinterpreted.</li> <li>▪ Discuss how visual material can be used by historians.</li> </ul>
<p><b>Mahatma Gandhi in National Movement</b></p> <p><b>Broad Overview:</b> (i) Early political organizations and the Indian National Congress – 1840s to 1885 (ii) Advent of Gandhi.</p> <p><b>Focus:</b> Nature of the Gandhian Movement 1917 – 1942.</p> <p><b>Excerpts:</b> Reports from English and Indian language newspapers and other contemporary writings.</p> <p><b>Discussion:</b> How newspapers can be a source of history.</p>	<ul style="list-style-type: none"> <li>▪ Familiarize the learner with significant elements of – <ul style="list-style-type: none"> <li>i) the nationalist movement and</li> <li>ii) the nature of Gandhian leadership (starting with the Champaran Satyagraha).</li> </ul> </li> </ul>

Themes	Objectives
<p><b>Partition, Transfer of Power and Making of the Constitution</b></p> <p><b>Broad Overview:</b> Nationalism and the Rise of Communalism. (b) Transfer of Power and the creation of Pakistan. (c) Constitutional Development 1909 – 1946.</p> <p><b>Focus:</b> (a) How Communalism worked in Punjab and Bengal. (b) The making of the Indian Constitution (1946 – 1950).</p> <p><b>Excerpts:</b> From the Newspaper, reports and constituent Assembly Debates.</p> <p><b>Discussion:</b> How such sources reveal and how they can be analyzed.</p>	<ul style="list-style-type: none"> <li>▪ Familiarize the learner in the rise of communalism as an important by-product of the National movement which led to partition.</li> <li>▪ The learners should be able to rationally understand the events.</li> <li>▪ Discuss how the founding ideals of the new National State were debated and formulated.</li> </ul>

**RECOMMENDED TEXTBOOK:**

Published by -

**A Textbook of History Class XII**

Sunflower Publication (P) Ltd.,  
542/16 Joshi Road, Karol Bagh,  
New Delhi - 110005.

***Reference Books:***

1. Textbook in History for Class XII: Themes In Indian History Part I – NCERT Publications.
2. Textbook in History for Class XII: Themes In Indian History Part II – NCERT Publications.
3. Textbook in History for Class XII: Themes In Indian History Part III – NCERT Publications.

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**PHILOSOPHY**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

Theory – 80 marks  
Internal Assessment – 20 marks

**UNIT 1:** (Marks: 15) (No. of Lectures: 20)  
**LOGIC** – Definition, Scope of Logic, Logic as Science or Arts, Word – Meaning, Kinds, **TERMS** – Meaning, Division of Terms, **DENOTATION AND CONNOTATION** of Terms, **LOGICAL CHARACTER** of Terms, **FORMAL TRUTH** and **MATERIAL TRUTH**.

**UNIT 2:** (Marks: 15) (No. of Lectures: 20)  
**PROPOSITION** – Meaning, Division of Proposition, Distinction between Grammatical Sentence and Logical Proposition, **SIMPLIFICATION** of Proposition, **DISTRIBUTION** of term, **REDUCTION** of Sentences into their Strict Logical form of Propositions, **OPPOSITION** of Proposition – Meaning and Kind.

**UNIT 3:** (Marks: 20) (No. of Lectures: 35)  
**INFERENCE** – Meaning, Kinds – **IMMEDIATE INFERENCE** – Conversion, Obversion, Inversion and Contraposition. **SYLLOGISM** – Meaning, Characteristics, Structure, Kinds, **GENERAL RULES** of Syllogism and its Fallacies, **FIGURE** of Syllogism, **MOODS** of Syllogism, **SPECIAL RULES** of Valid Moods of First, Second, Third and Fourth Figures, **REDUCTION** – Direct and Indirect.

**UNIT 4:** (Marks: 15) (No. of Lectures: 35)  
**SYMBOLIC LOGIC** – Meaning, Simple and Compound Statement, Conjunction, Disjunction, Material Equivalence and Negation, Using of Symbols and Simple Symbolization.

**UNIT 5:** (Marks: 15) (No. of Lectures: 35)



**PHILOSOPHY** – Meaning, of Philosophy with Reference to Western Philosophy, Scope of Philosophy, Branches of Philosophy, Relation of Philosophy to Logic.

**UNIT 6:**

(Marks: 20)

**PROJECT WORK/SEMINAR** – Any topic from the **SYLLABUS** (Internal).

**REFERENCE BOOKS:**

- |                                 |                   |
|---------------------------------|-------------------|
| 1. Textbook of Deductive Logic  | : B. N. Roy       |
| 2. Symbolic Logic               | : I. M. Copi      |
| 3. A Manual of Ethics           | : J. N. Sinha     |
| 4. Gandhi His Life and Thoughts | : J. B. Kripalini |
| 5. Introduction To Philosophy   | : John Patrick    |

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**PHILOSOPHY**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

Theory – 80 marks  
Internal Assessment – 20 marks

**UNIT 1:** (Marks: 15) (No. of Lectures: 25)  
**INDUCTION** – Relation between Induction and Deduction, Kinds of Induction – Scientific Induction, Unscientific Induction, Analogy, Perfect Induction, Colligation of Fact, Parity of Reasoning. **LAWS OF THOUGHT** – Meaning and Characteristics.

**UNIT 2:** (Marks: 15) (No. of Lectures: 25)  
**GROUND OF INDUCTION – FORMAL GROUND** of Induction – Law of Uniformity and Law of Causation, **CAUSE** – Definition, Qualitative & Quantitative Marks of Causation, **CAUSE AND CONDITION, PLURALITY OF CAUSE, PARADOX OF INDUCTION, MATERIAL GROUNDS** of Induction – Observation and Experiment.

**UNIT 3:** (Marks: 15) (No. of Lectures: 20)  
**EXPERIMENTAL METHODS** – Method of Agreement, Method of Difference, Joint Method of Agreement and Difference, Method of Concomitant Variation and Method of Residue, **HYPOTHESIS** – Meaning, Forms and Conditions of Hypothesis.

**UNIT 4:** (Marks: 20) (No. of Lectures: 35)  
**SYMBOLIC LOGIC** – Statement and Arguments, Statement form and Argument form, Logical Connectives – Conjunction, Disjunction, Implication, Implication **SYMBOLIZATION, CONSTRUCTION** of Truth Tables (**TAUTOLOGY, CONTRADICTION, CONTINGENT**), **PROVING INVALIDITY.**

**UNIT 5:** (Marks: 15) (No. of Lectures: 25)

**PHILOSOPHY** – Definition of Philosophy with Reference to Indian Philosophy, **DISTINCTIVE FEATURE** of Indian Philosophy, **RATIONALISM** and **EMPERICISM**.

**UNIT 6:**

(Marks: 20)

**PROJECT WORK/SEMINAR** – Any topic from the **SYLLABUS** (Internal).

**REFERENCE BOOKS:**

- |                                       |                |
|---------------------------------------|----------------|
| 1. Textbook Of Inductive Logic        | : B. N. Roy    |
| 2. Symbolic Logic                     | : I. M. Copi   |
| 3. Introduction To Indian Philosophy  | : J. N. Sinha  |
| 4. Introduction To General Philosophy | : John Patrick |
| 5. A Manual Of Ethics                 | : J. N. Sinha  |

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**GEOGRAPHY**  
**CLASS – XI**

**One Paper**  
**marks**

**Time: 3 hours**

**Theory – 70 marks**  
**Practicals – 30**

**DISTRIBUTION OF MARKS**

**A. Fundamental of Physical Geography**

Unit I	Geography as a Discipline	-	3 marks
Unit II	The Earth	-	6 marks
Unit III	Landforms	-	6 marks
Unit IV	Climate	-	10 marks
Unit V	Water (Oceans)	-	4 marks
Unit VI	Life On Earth	-	6 marks

**B. India - Physical Environment**

Unit I	Introduction	-	4 marks
Unit II	Physiography	-	10 marks
Unit III	Climate, Vegetation and Soil	-	14 marks
Unit IV	Natural Hazards and Disaster; Causes, Consequences and Management	-	7 marks

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**Total = 70 marks**

**A. FUNDAMENTALS OF PHYSICAL GEOGRAPHY (35 MARKS)**

**Unit I: Geography as a Discipline (3 marks) (6 Periods)**

- Geography as an integrating Subject, as a science of spatial attributes.
- Branches of Geography: Importance of Physical Geography.

**Unit II: The Earth (6 marks) (13 Periods)**

- Origin and Evolution of the Earth; Interior of the Earth; Wagener's Continental Drift Theory and Plate Tectonics; Earthquakes and volcanoes.

**Unit III: Landforms (6 marks) (13 Periods)**

- Rocks and minerals – Major types of rocks and their basic characteristics
- Geomorphic processes – Weathering, Mass wasting, Erosional and Depositional work of running water and wind.

**Unit IV: Climate (10 marks) (20 Periods)**

- Atmosphere – Composition and structure; elements of weather and climate.
- Insolation – Angle of incidence and distribution; Heating and cooling of the atmosphere (conduction, convection, terrestrial radiation and advection); temperature – horizontal and vertical.
- Pressure-Belt belts; wind planetary, seasonal and local; tropical and extra tropical (temperature) cyclones.
- Precipitation – evaporation, condensation – rainfall types
- World Climate – greenhouse effect, global warming and climatic changes

**Unit V: Water (Oceans) (4 marks) (10 Periods)**

- Hydrological Cycle
- Oceans – Submarine relief, distribution of temperature and salinity.

**Unit VI: Life on Earth (6 marks) (13 Periods)**

- Biosphere – Importance of plants and other organisms; ecosystems, energy flow; biodiversity and conservation; ecological balance.

**B. INDIA – PHYSICAL ENVIRONMENT (35 MARKS)**

**Unit I: Introduction (4 marks) (5 Periods)**

- Location – space relation and India's place in the world

**Unit II: Physiography (10 marks) (20 Periods)**

- Brief geological history of India
- Physiographic Divisions
- Drainage systems: concept of water sheds: the Himalayan and the Peninsular

**Unit III: Climate, Vegetation and Soil (14 marks) (25 Periods)**

- Weather and Climate – spatial and temporal; distribution of temperature; pressure; winds and rainfall; Indian monsoons – mechanism, onset and variability; Climatic types (Koeppen's)
- Natural vegetation (ICAR's classification) and their distribution; soil degradation and conservation.

**Unit IV: Natural Hazards and Disasters: Causes, Consequences and Management (7 marks) (10 Periods)**

- Floods and Droughts
- Earthquakes, Tsunami
- Cyclones
- Landslides

## **PRACTICAL SYLLABUS**

**FULL MARKS: 30**

**PASS MARKS: 9**

**Unit I: Fundamental of Maps (8 marks) (10 periods)**

- Scales – types; construction of linear scales, measuring distance, finding direction and use of symbols.
- Contours and cross profiles of gentle slope and steep slope, convex and concave slope, conical hill, v – shaped valley.
- Representation of Data – construction of diagrams: bars, circles and flow charts.

**Unit II: Topographic and Weather Maps (8 marks) (8 periods)**

- Study of Topographic maps under the heads – relief, drainage, natural vegetation, distribution of settlement, contour and cross profile of the landform in the specific map provided to the students.
- Use of weather charts: describing pressure, wind and rainfall distribution

**Unit III: Aerial Photographs and Satellite images (6 marks) (7 periods)**

- Aerial photographs: types and geometry – vertical aerial photographs, difference between maps and aerial photographs; photo scale determination
- Satellite images: stages in remote sensing data acquisition, platform & sensors and data products (photographic and digital)

- Practical Record Book (5 marks)
- Viva Voce (3 marks)

**Textbook Recommended:**  
Published by -

**Geography for Class XI**  
Sunflower Publications (P) Ltd., 542/16 Joshi Road,  
Karol Bagh, New Delhi - 110005.

### ***PRACTICAL***

**Book Recommended:**  
Published by -

**Practical Work in Geography**  
Sunflower Publications (P) Ltd., 542/16 Joshi Road,  
Karol Bagh, New Delhi - 110005.

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**GEOGRAPHY**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

A. Fundamentals of Human Geography	-	35 marks
B. India People and Economy	-	35 marks
C. Practical Work	-	30 marks

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**Total = 100 marks**

**A. Fundamental of Human Geography (35 marks)**

**Unit I: Human Geography: Nature and Scope (3 marks) (4 periods)**

**Unit II: People (7 marks) (10 periods)**

- Population of the world – distribution, density and growth
- Population change – spatial patterns and structure; determinants of population change
- Age – sex ratio, rural – urban composition
- Human development – concept, selected indicators (literacy and occupation)

**Unit III: Human Activities (10 marks) (24 periods)**

- Primary activities – concept and changing trends, subsistence agriculture, modern agriculture, major crops – rice, wheat, tea, coffee, rubber and sugarcane (conditions of growth and distribution)
- Mining – world distribution of iron ore, copper, bauxite, coal and petroleum
- Secondary activities – concept; manufacturing – agro – processing, household, small scale, large scale; iron and steel industries, location of industries.
- Tertiary activities – concept; knowledge – based industries (information technology industry)
- Quaternary activities – concept, knowledge – based industries (information technology industry)

- Unit IV: Transport, Communication and Trade (10 marks) (24 periods)**
- Land transport – roads, railways, trans-continental railways
  - Water transport – inland waterways; major ocean routes
  - Air transport – intercontinental air routes
  - Oil and gas pipelines
  - Satellite communication
  - International trade – based, and changing patterns; ports as gateways of international trade, role of WTO in International trade

- Unit V: Human Settlement (5 marks) (8 periods)**
- Settlement types – rural and urban; morphology of cities, distribution of mega cities; problems of human settlement in developing countries

**B. India People and Economy (35 Marks)**

- Unit I: People (5 marks) (10 periods)**
- Population – distribution, density and growth; composition of population: linguistic and religious compositions; occupations
  - Migration – international, national – causes and consequences
  - Human development – selected indicators (literacy and occupations)

- Unit II: Human settlements (4 marks) (6 periods)**
- Urban settlements – types and distribution and functional classification

- Unit III: Recourse and development (10 marks) (24 periods)**
- Land resources – general land use; agricultural land use – major crops agricultural development and problems
  - Water resource utilization – irrigation; scarcity of water and Conservation method – rain – water harvesting
  - Minerals and energy resources – metallic mineral (iron ore, copper, bauxite) and non-metallic minerals (limestone and dolomite). Their distribution, conventional and non conventional energy sources
  - Industries – types and distribution, industrial location and clustering; changing pattern of selected industries- iron and steel cotton textiles, petrochemicals and knowledge – based industries impact of liberalization, privatization and globalization on industrial location

- Unit IV: Transport, Communication and International Trade (7 marks) (10 periods)**
- Transport and communication – roads, railways, waterways and airways; oil and gas pipelines; national electric grid; satellite Communication
  - International trade – changing patterns of India's foreign trade; seaports and their hinterland and airports



## Unit V: Geographical Perspective on Selected Issues and Problems

**(4 marks)      (7 periods)**

- Environment pollution, urban – waste disposal
- Urbanization – rural – urban migration; problems of slum
- Land degradation

## Unit VI: Regional study of Meghalaya

**(5 marks)      (8 periods)**

- Relief, climate, agriculture and minerals

### C. Practical Work

**(30 Marks)**

**Unit I: Processing of Data and Thematic Mapping (8 marks) (12 periods)**

- Sources of Data (primary and secondary)
- Tabulation and processing of data; Calculation of averages, measures of Central tendency.
- Representation of data – choropleth and isopleths maps

## **Unit II: Map Projection and used of computer in Data Processing**

**(6 marks) (7 periods)**

- Map projection – topology construction and properties of conical with one standard parallel and Mercator's projection
- Use of computers in data processing and mapping (only theory)

### Unit III: Field Study

**(8 marks)      (6 periods)**

- Field visit and study on any one of the local concerns : pollution, land-use, or literary (any one topic may be taken up for study; observation and questionnaire survey may be adopted for the data collection; collected data may be tabulated and analyzed with diagrams and maps)

# Practical Report Book

**(5 marks)**

## Viva Voce

**(3 marks)**

### RECOMMENDED BOOKS:

1. Saraswati Geography, Published by: Saraswati House Pvt. Ltd., Educational Publishers, New Delhi – 110002.
2. ‘Fundamentals of Human Geography’ – Hira Lal Yadav, Savita Sinha, NCERT publication Editor – R. P Mishra Reprinted – November 2003
3. ‘India – People and Economy’ – S. K. Sharma, NCERT Publication, Editor – R. P. Mishra, May 2003

4. 'Practical Work in Geography – Part II ' – R. B. Singh, NCERT Publication  
Editor - R. P. Mishra Reprinted – February 2005

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**EDUCATION**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

Section – I: Education	=	60 marks
Section – II: Psychology of Education	=	40 marks

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**Total = 100 marks**

**SECTION I – EDUCATION** **(52 Periods)**

**Introduction** **(18 Periods)**

**1. Education – Broad & Narrow Meaning**

- Definitions on Education
- Aims of Education
  - Individual aims
  - Social aims
  - Aims for National Development

**2. Agencies of Education**

- Formal
- Informal
- Non-formal

**3. Levels of Education** **(10 Periods)**

- a. Educational ladder — Elementary, Secondary, Higher Education (Basic concepts, meaning and objectives)

**4. Constitutional Provisions Relating to Education** **(10 Periods)**

- a. Free and Compulsory Education
- b. Religious Instruction
- c. Language Safe Guards
- d. Equality of Educational Opportunities
- e. Education of Minorities
- f. Education of Weaker Sections & Scheduled Castes
- g. Instruction in Mother Tongue

- h. Development of Hindi
- i. Higher Education & Research

**5. Sociology and Education (14 Periods)**

- a. Meaning and definition of Educational Sociology
- b. Relationship between Sociology and Education
- c. Sociological bases of Education
- d. Importance of Educational Sociology

**SECTION II – PSYCHOLOGY OF EDUCATION (46 Periods)**

**6. Introduction (14 Periods)**

- a. What is Psychology?
- b. Branches of Psychology
- c. Relationship between Psychology and Education
- d. Nature and Scope of Educational Psychology

**7. Growth and Development (16 Periods)**

- a. Meaning of Growth and Development
- b. Factors influencing growth and development

**8. Developmental stages – Infancy, Childhood and Adolescence**

**9. Learning and Motivation (16 Periods)**

- a. Concept of Learning
- b. Theories and Laws of Learning. Trial & Error Theory (Thorndike), Gestalt (Insightful learning), Conditioning (Pavlov's)
- c. Factors facilitating Classroom learning
- d. Motivation in Learning
  - What is motivation?
  - Role of Motivation in learning – classroom incentives, competition, co-operation and interest.

**Reference Books: Class XI**

1. Aggarwal, J. C.: Theory and Principles of Education – Vani Educational Books, Vikas Publishing House Pvt. Ltd.
2. Bhatia and Bhatia: A Text Book of Education for Beginners – Kalyani Publishers, New Delhi.
3. Bhatia, Hans Raj: Elements of Educational Psychology – Orient Longman.
4. Chaube: Educational Psychology – Vinod Pustak Mandir, Agra – 2.
5. Kaushik, Vijaya Kumari: Education Theory & Practice; 1997.

6. Kaushik, Vijaya Kumari: Principles of Education; 1997.
7. Kundu, C. L.: Sterling Publishers Pvt. Ltd.
8. Mangal, S. K.: Psychological Foundations of Education – Prentice Hall of India, New Delhi.
9. Rai, B. C.: Sociological Foundations of Education – Prakashan Kendra, Lucknow.
10. Safaya, R. N.: Development of Educational Theory and Practice – Bani Mandir, Pan Bazar, Guwahati.
11. Sahu, Binod Kumar: Education of the Exceptional Children – Kalyani Publishers, New Delhi.
12. Saxena, N. R. Swaroop: Philosophical and Sociological Foundations of Education – R. Lall Book Depot Meerut.
13. Skinner, B. F.: Educational Psychology.
14. Taneja, V. R.: Educational Thought and Practice – Sterling Publishers Pvt. Ltd.

**Recommended Textbook: Intermediate Education Class XI**  
Published by - Pearson Education,  
Dorling Kindersley (P) Ltd.,  
482 FIE Patparganj, Delhi – 110092.

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**EDUCATION**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

SECTION I	:	EDUCATION	-	60
SECTION II	:	PSYCHOLOGY	-	40
<b>TOTAL</b>				<b>= 100</b>

**SECTION – I: EDUCATION**

**1. CURRICULUM: (24 Periods)**

- a. Concept of Curriculum.
- b. Principles of Curriculum Construction.
- c. Types of Curriculum
  - Child centred.
  - Subject centred.
  - Activity centred.
- d. Approaches to Curriculum Development

**2. INCLUSIVE EDUCATION (18 Periods)**

- Meaning and Concept
- Importance of Inclusive Education (As a basic human right)
- Children with Special Needs (Physically and Mentally challenged) — Preliminary Idea.
- Approaches to Inclusive Education — Discrimination and Psycho — Social Implications.

### **3. ART EDUCATION:**

**(26 Periods)**

- a. Concept of Art Education
- b. Modes of Expression – Visual Arts.
- c. Performing Arts.
- d. Need and Importance of Art Education.
- e. Stages and Process of Imparting Art Education

### **4. EDUCATIONAL TECHNOLOGY**

**(26 Periods)**

- a. Meaning and definition of Educational Technology
- b. Types of Educational Technology
- c. Aspects and Steps of Educational Technology
- d. Forms of Educational Technology

## **SECTION – II: PSYCHOLOGY**

### **1. PSYCHOLOGICAL ATTRIBUTES:**

**(18 Periods)**

- a. Individual differences in human functioning – meaning, factors and significance.
- b. Intelligence:
  - Concept of Intelligence.
  - Theories of Intelligence.
    - Spearman's Theory.
    - Thurstone's Theory
- c. Individual Differences in Intelligence

### **2. PERSONALITY:**

**(24 Periods)**

- a. Personality — Concept, definition and nature.
- b. Factors affecting personality development.
- c. Structure of Personality – type and trait approaches

### **3. ATTENTION AND MEMORY:**

**(22 Periods)**

- a. Attention —

- Characteristics
  - Types.
- b. Attention and Interest — their Educational Implications.
  - c. Memory — Meaning and Definition.  
Factors involved in Memory
  - d. Forgetting — Nature and Causes.
  - e. Enhancing Memory.

#### 4. THINKING AND REASONING:

(22 Periods)

- a. Concept and Nature of Thinking.
- b. Conditions that Stimulate Thinking.
- c. Reasoning: Concept and Steps in Reasoning.
- d. Training in Thought and Reasoning.

**Recommended Textbook: Intermediate Education Class XII**

Published by - Pearson Education,  
Dorling Kindersley (P) Ltd.,  
482 F. I. E., Patparganj, Delhi – 110092.

#### Reference Books - Class XII

1.	Aggarwal, J.C;	Theory and Principles of Education	Vani Educational Books Vikas Publishers House Pvt. Ltd.
2.	Alur, M.	Inclusive Education – 2005	DVS Publishers, Pan Bazar, Guwahati.
3.	Bhatia & Bhatia,	A Textbook of Education for Beginners	Kalyani Publishers

4.	Bhati, H.R.	Elements of Educational Psychology	Orient Longman Pvt. Ltd.
5.	Brown, Robert	Psychology	Pearson Education (Singapore) Indian Branch, New Delhi — 110092.
6.	Chauhan, S.S.	Exceptional Children	Vikas Publishing House, Pvt. Ltd., New Delhi.
7.	Jam, M.	Developmental Psychology	Eastern Book House, Guwahati.
8.	Loreman, T.	Inclusive Education — 2005	DVS Publishers, Pan Bazar, Guwahati.
9.	Mangal, S.K.	Fundamentals of Educational Technology	Parkash Brothers, Ludhiana
10.	Mangal, S.K.	Psychological Foundations of Education	Prentice Hall of India, New Delhi.
11.	Mohanty, Jagannath	Modern Trends in Indian Education	Deep and Deep Publications, New Delhi – 110027.
12.	Morgan, Clifford & Co.	Introduction to Psychology	Tata McGraw Hills, New Delhi.
13.	Panda, K.C.	Exceptional Children	Vikas Publishing House, Pvt. Ltd.,



			New Delhi.
14.	Prasad, J	Art Education — Concepts, Epistemacy and Role — 2005	DVS Publishers, Pan Bazar, Guwahati.
15.	Reddy, G.L.	B of Children with Special Needs	Ekta Book Distributors, New Delhi — 110059.
16.	Roback, A.A.	Psychology and Personality Development	Eastern Book House, Guwahati.
17.	Safaya, R.N.	Development of Educational Theory and Practice	Bani Mandir, Guwahati.
18.	Sen, Anima	Psycho — Social Integration of the Handicapped—A Challenge to the Society	Mittal Publications, New Delhi— 110054.
19.	Sharma, R.A.	Technology of Teaching	Loyal Book Depot, Meerut
20.	Smith, W.	Art Education — Scholastic and Industry — 2005	DVS Publishers, Pan Bazar, Guwahati.
21.	Taneja, V.R.	Educational Thought and Practice	Sterling Publishers, Pvt. Ltd.

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**HOME SCIENCE**  
**CLASS – XI**

**COURSE STRUCTURE**  
**(THEORY)**

**ONE PAPER**

**TIME : 3 HOURS**

**70 MARKS**

UNIT	TITLE	MARKS
I	Chemistry	20
II	Human Development	25
III	Family Resource Management	25
<b>Total =</b>		<b>70</b>

**UNIT I – CHEMISTRY**

- **Basic concepts of Chemistry:** Atom, Molecule, Symbol, Valency.
- **Structure of Atom:** Rutherford's model, Bohr's Model.
- **Concept of Energy levels (orbits):** Concept of shells, subshells, and orbitals.
- **Quantum Theory, electronic configuration of elements.**
- **Chemicals Bonding:** Kossel – Lewis approach to bonding – ionic bonding, covalent bonding, Resonance structures, Electronegativity, Hybridisation (quantitative treatment of  $sp$ ,  $sp^2$ ,  $sp^3$ )
- **Hydrogen ion concentration, Law of Mass action, Dissociation of water pH scale.**

- **Organic Chemistry:** Tetravalency of carbon, structure of carbon atom. Hydrocarbons – elementary idea of alkanes, alkenes, alkynes, their general formulae. Functional groups and Homologous series.
- **Biomolecular Chemistry:** Carbohydrates – classification, structures of pentoses and hexoses. Amino acids – Structures, peptide bond. Proteins – Simple idea of primary, secondary, tertiary and quaternary structures. Fatty acids: Saturated and unsaturated fatty acids.

## UNIT II – HUMAN DEVELOPMENT

### Meaning and Principles of Growth and Development.

- **Infancy (0 – 1 years):** Meaning and development Tasks of infancy. Physical care: Feeding: (breast feeding, artificial feeding, supplementary feeding and weaning) Bathing, Toilet training and clothing. Emotional Development: (fear, anger, joy, pleasure, tempers tantrums). Physical and Motor development. Immunisation.
- **Early childhood (1 – 4 yrs)** Meaning and development tasks of early childhood. Emotional development: (fear, anxiety, anger, jealousy, joy, pleasure, delight). Physical development. Language development. Social development. Intellectual development. Personality and Moral development. Common ailments: (fever, common cold, allergy, diarrhoea, whooping cough, worm infestation).
- **Late Childhood (4 – 12 years)** Meaning and development tasks of Late childhood. Emotional development (fear, anxiety, anger, curiosity, joy, pleasure). Physical development. Social development. Intellectual development. Development of creativity Personality and Moral development.
- **Adolescence (12 – 18 years)** Meaning and tasks of adolescence. Physical development. Emotional development: (Grief, affection, love, anger). Social development. Personality development. Moral development.

## UNIT III – FAMILY RESOURCE MANAGEMENT

- **My house and Its Care:** Meaning and characteristics of a house. Planning and layout of a house. Importance of cleaning. Care of the house (daily, weekly, monthly, seasonal cleaning) Cleaning equipments. Household pests and their prevention. Principles and types of flower arrangement
- **Resources and their Management** Meaning, characteristics and classification of resources. Family resources and their management. Budgeting, Meaning and need

for management. Steps in Management (planning, organizing, controlling, implementing and evaluating)

- **Household Equipments:** Care, maintenance and use of household equipments: Gas stove, kerosene stove, immersion rod, pressure cooker, heaters, cutting devices (peelers, cutters and graters)

### **PRACTICALS SYLLABUS**

**FULL MARKS: 30**  
**PASS MARKS: 9**

<b>Evaluation Scheme for Examination</b>		<b>Marks</b>
1.	Chemistry	7
2.	Human Development	8
3.	Family Resource Management	8
4.	Practical Journal	5
5.	Viva Voce	2
<b>Total -</b>		<b>30</b>

1. **CHEMISTRY :- Determination of pH using pH meter of**
  - a. Water
  - b. Given Solution
2. **HUMAN DEVELOPMENT :-**
  - a. Prepare a feeding schedule for an infant of 8 months old.
  - b. Interview two working mothers in your neighbourhood to find out their arrangements for children in their absence for the children below 4 years and evaluate.
3. **FAMILY RESOURCE MANAGEMENT :-**
  - a. Plan a monthly budget with your pocket money.
  - b. Cleaning of Gas Stove and Pressure Cooker.

**Reference Books :**

1. Chemistry Textbook for Class XI and Class XII – **MBOSE**
2. A Textbook of Practical Biochemistry, 3<sup>rd</sup> Edition, by T. Plummer – **Orient Longman Pvt. Ltd.**
3. Elements of Home Science (1997) by Mullick Premlata – **Kalyani Publishers, 4863/2B, Bharat Ram Road, 24, Daryaganj, New Delhi – 110002.**
4. Elements of Child Development (1997) by K. C. Panda – **Kalyani Publishers, 1/1 Rajendra Nager, Ludhiana – 141008.**
5. Child Psychology (1984) by E. B. Hurlock – **McGraw Hill (P) Ltd.**
6. Developmental Psychology: A Life Span Approach (1985) by E. B. Hurlock – **McGraw Hill (P) Ltd.**
7. Home Management for Indian Families (1985) by M. K. Mann – **Orient Longman (P) Ltd.**
8. Home Management, Educational Planning Group (1993) – **Arya Publishing House, New Delhi.**
9. Management of Modern Families (1980) by Gross, Granall and Kholi – **Prentice Hall Inc., New Delhi.**

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**HOME SCIENCE**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

Theory	-	70 marks
Practical	-	30 marks
<hr/>		
<b>Total</b>	<b>=</b>	<b>100 marks</b>

**THEORY**

I.	Community Development and Services	-	20 marks
II.	Textiles and Clothing	-	25 marks
III.	Food and Nutrition	-	25 marks
<hr/>			
<b>Total =</b>			<b>70 marks</b>

**PRACTICAL**

I.	Community Development and Services	-	7 marks
II.	Textiles and Clothing	-	8 marks
III.	Food and Nutrition	-	8 marks
	• Practical Journal	-	5 marks
	• Viva Voce	-	2 marks
<hr/>			
<b>Total =</b>			<b>30 marks</b>

**I. Community Development and Services (Theory) (20 marks)**

- **Community Development.** (8 Periods)  
Definition, Objectives, Principles and philosophy of Community Development.
- **Food Laws and Food Standards.** (10 Periods)  
Consumer rights, Consumer challenges, Food adulteration and Voluntary agencies.
- **Community Development Programmes.** (8 Periods)  
Feeding programmes (Local, State, National)  
Rural Employment Programme (TRYSEM, Village Co-operatives, Mahila mandals, Youth clubs)  
Adult Education Programmes.
- **Kitchen Gardening.** (8 Periods)  
Importance of kitchen gardening,  
Layout of a Kitchen garden, Selection of Rabi and Kharif crops Selection of manures, Compost making.

## **PRACTICAL**

(7 marks)

1 Practical is equal to 4 Periods

- **Simple Test for Checking Adulteration in**

1. Wheat
2. Rice
3. Red Gram Pulse
4. Tea leaves
5. Turmeric powder
6. Chilly Powder
7. Pepper Corns

## **II. Textiles and Clothing (Theory)**

(25 marks)

- **Fibre Science:**

(10 Periods)

Classification of fibres with examples,  
Properties of fibres (chemical and physical) of cotton, wool, silk, polyester,  
Identification of fibres (visual inspection, microscopic observation, burning and chemical tests/ of cotton, wool, silk, polyester.)

- **Yarn:**

(4 Periods)

Yarn making processing, Types of Yarns.

- **Stains:**

(8 Periods)

Meaning, classification of stains with examples.  
Removal of stains from different fabrics.

Fabrics – Cotton, wool, silk, synthetics.  
Stains – Blood, ink, curry, lipstick, grease, tea, ice-cream.

- **Bleaching:** (6 Periods)

Meaning and use of different bleaching agents.  
Types of bleaching agents.

- **Sewing:** (2 Periods)

Sewing equipments and tools.

### **PRACTICAL** (8 marks)

1 Practical is equal to 4 Periods

- **Microscopic Identification of Fibres:** (2 marks)

1. Cotton
2. Wool
3. Silk and
4. Polyester

- **Removal of Stains Cotton Fabric:** (2 marks)

1. Curry
2. Ice-cream
3. Lipstick and
4. Tea

**Drafting and Construction of an Apron.** (1 + 3\*)  
(\*3 Internal Assessment of the Completed Product. The marks should be added in to the Final Board Practical Examination)

### **III. Food and Nutrition (Theory)** (25 marks)

- **Foods and Nutrition:** (4 Periods)

Definition and Meaning of Food, Nutrition and Health.  
Functions and Constituents (nutrients) of food.  
Food Guide. (3, 4, 5, 7, 9 and 11)

- **Diets:** (8 Periods)

Definition and Meaning of Balanced and Therapeutic Diets.  
Balanced Diet and Nutritional Requirements during:  
Infancy (0- 2 yrs),



Pre-school (2 -6 yrs),  
School Age (6-12 years) and  
Adolescence (12 – 18 yrs).

• **Deficiency Diseases:** (12 Periods)

Definition, Causes and Preventive measures of:

Protein-Calorie Malnutrition. (Kwashiorkor, Marasmus and Marasmic Kwashiorkor), Iron deficiency, Iodine deficiency, Vitamin-A deficiency.

• **Methods of Food Preparation:** (10 Periods)

General principles and methods of food preparation: Boiling, Steaming, Pressure Cooking, Deep and Shallow Frying, Roasting and Grilling

**PRACTICAL** (4 Periods)

• **Using Different Methods of Cooking, Prepare Snacks with Locally Available Foods:** (8 marks)

1. Cereals,
2. Pulses,
3. Meat,
4. Fish and
5. Egg.

- **Practical Journal:** (5 marks)
- **Viva voce:** (2 marks)

**Reference Books:**

1. Chandra. A. Shah. A and Joshi. U: Fundamentals of Teaching Home Science, Sterling publishers, Pvt, Ltd., New Delhi, 1989.
2. Dantyagi, S: Fundamentals of Textiles and Clothing, 1985
3. Deulkar, D: Household Textiles and Laundry Work, Atma Ram and Sons publishers, Kashmere Gate, Delhi 6, 1985.
4. Educational Planning Group: Food and Nutrition, Arya Publishing House, New Delhi, 1993.
5. Mullick, Prem lata: Elements of Home Science, Kalyani Publishers, 4863/2B, Bharat Ram Nagar, 24, Daryaganj, New Delhi 110 002, 1997.
6. Reddy A.V.: Extension Education, Srilakshmi Press, Bapatla, 522101, A.P. 1997.

7. Srilakshmi B: Dietetics, New Age International (p) Ltd., 4835/24 Ansari Road, Daryaganj, New Delhi, 2005.
8. Swaminathan, M: Handbook of Food and Nutrition, Bangalore Printing and Publishing Co. Ltd., P.B. No. 1807, 88, Mysore Road, Bangalore 560 018. 1992.
9. Teachers of Lady Irwin College: A Text Book of Home Science, Orient Longman (p). Ltd., 1/24 Asaf Ali Road, New Delhi 110 002, 1999.

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## **GEOLOGY** **CLASS – XI**

### **DISTRIBUTION OF MARKS**

Theory – 70 Marks  
Practical – 30 Marks

### **COURSE STRUCTURE** **(THEORY)**

**One Paper**

**3 Hours**

Unit	Title	Marks allotted	Estimated no. of periods
Unit I	<i>General Geology</i>	15	23
Unit II	<i>Crystallography and Mineralogy</i>	13	17
Unit III	<i>Structural Geology &amp; Tectonics</i>	14	23
Unit IV	<i>Igneous Petrology</i>	15	23
Unit V	<i>Metamorphic Petrology</i>	13	15
	Total	70	101

**Unit I: General Geology**

**(23 Periods/15 Marks)**

Geology: different branches and scope.

Recent thoughts on the origin of the Earth/Solar system.

Geological Time Scale; Principle of Order of Superposition; Principle of Original Horizontality, Principle of Uniformitarianism.

Weathering: definition, agents and processes; erosion, denudation and deposition.

Geological work of running water and resulting erosional and depositional features.

Earthquakes – causes, classification, seismic waves, seismograph, seismogram; Earthquake intensity and magnitude. Earthquake belts of the World. Earthquake zones of India.

Interpretation of the Earth's interior with the help of seismic waves.

Volcanoes: Types and products of volcanoes.

## **Unit II: Crystallography and Mineralogy**

**(17 Periods/13 Marks)**

Crystal: its definition, external form, symmetry elements, axial elements and classification into 6 systems.

Study of the Normal class of the following systems: Isometric, Tetragonal and Hexagonal.

Minerals: definition, physical properties and chemical composition.

Elementary knowledge of optical mineralogy: Definition – polarization of light, Nicol Prism, double refraction, pleochroism, refractive index, birefringence, isotropism and anisotropism, extinction, interference color, twinning.

## **Unit III: Structural Geology and Geotectonic**

**(23 Periods/14 Marks)**

Rock deformation: definition, types-elastic, plastic, brittle deformation; rigid and non-rigid body deformation;

Basic structural elements: line and plane (linear and planar structures) and their measurement – trend, plunge, rake/pitch, strike, dip.

Folds: definition, elements of folds – limbs, hinge, fold axis, axial surface, inflection point, median surface. Types of folds – antiform, synform, syncline, anticline, open folds, tight folds, isoclinal folds, recumbent folds, plunging and non plunging folds, symmetrical folds, asymmetrical folds, overturned folds, concentric folds, similar folds.

Faults: definition, fault zone and shear zone; elements of a fault – fault plane, hanging wall, footwall, fault angle, hade, heave, throw, slip. Types of faults – Dip Slip faults (Normal Slip fault, Reverse Slip fault, and Thrust Slip fault), Strike Slip fault, Oblique Slip fault.

Joints: definition; joint set, joint system; master joints, systematic and non – systematic joints; extensional joints and shear joints.

Concept of Plate Tectonics: lithosphere, asthenosphere, plates, plate motion and plate boundaries.

#### **Unit IV: Igneous Petrology**

**(23Periods/15 Marks)**

Magma: definition and composition; crystallization of magma – unicomponent and binary system.

Bowen's Reaction Series.

Magmatic differentiation and assimilation.

Igneous Rocks: Mode of occurrence – intrusive and extrusive rocks. Forms, structures and textures of igneous rocks.

Simple classification of igneous rocks based on mineral constituents.

#### **Unit V: Metamorphic Petrology**

**(15Periods/13 Marks)**

Metamorphism: definition and concept.

Factors and types of metamorphism; Riecke's principle.

Preliminary idea of metamorphic grades and metamorphic facies.

Structures and textures of metamorphic rocks.

#### **Books Recommended:**

1. A Textbook of Geology – P. K. Mukerjee (World Press, 1997)
2. Introduction to Geology, Volume I: Principles – H. H. Read and J. Watson (ELBS,1988)
3. Physical Geology – R. F. Flint and B. J. Skinner (John Wiley, 1974)
4. Understanding Earth – F. Press and R. Siever (W. H. Freeman and Co. New York, 2nd Edition, 2001)
5. Physical Geology – D. Leet and S. Judson (Prentice Hall, 1974)
6. The Changing Earth – J. S. Monroe and R. Wiecarder (Brooks/Cole, 3rd Edition, 2001)
7. Geology – W. C. Putnam (OUP, 1971)
8. Rutley's Element of Mineralogy – H. H. Read (CBS, 1984)
9. Textbook of Mineralogy – E. S. Dana and W. Ford (John Wiley,1986)
10. Structural Geology – M. P. Billings (Prentice Hall, 1986)
11. Structure of Rocks and Regions – G. H. Davis (John Wiley,1984)

12. Principles of Petrology – G. W. Tyrrell (B. I. Publications Pvt. Ltd, 1998)
13. Petrology – E. G. Ehlers and H. Blatt (CBS, 1986)
14. Igneous and Metamorphic Petrology – M. G. Best (CBS, 1986)

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**PRACTICALS: 30 Marks**

**45 periods**

**3 (Three) Hours**

Study of crystals belonging to the Isometric, Tetragonal and Hexagonal systems: clinographic sketch; identification of crystals and determination of general symbol (Miller indices).

$$1+2=3$$

Identification of the following minerals in hand specimens on the basis of physical characters and chemical composition:

Quartz, orthoclase, plagioclase, calcite, augite, hornblende, olivine, garnet, tourmaline, muscovite, biotite, sillimanite, kyanite, gypsum.

$$1\frac{1}{2} \times 4 = 6$$

Identification of the following minerals on the basis of optical characters under the microscope with drawings: quartz, orthoclase, microcline, plagioclase, augite, hornblende, biotite, olivine.

4

Identification of the following igneous and metamorphic rocks in hand specimens on the basis of their physical characters, mineralogy, texture and structure:

Granite, diorite, pegmatite, rhyolite, gabbro, dolerite, basalt, slate, schist, gneiss, marble, phyllite.

$$1\frac{1}{2} \times 4 = 6$$

Measurement of orientation of lines and planes with the help of the clinometer compass and protractor.

2

Description of geological maps and drawing of cross sections.

5

Field work of 4 (Four) days duration as per the requirement of the syllabus and Viva voce

$$3 + 1 = 4$$

**Books Recommended:**

1. Laboratory Manual of Geology – A. K. Sen (Modern Book Agency, Calcutta, 1995)
2. Manual of Geological Maps – N. Gokhale (CBS, 1987)
3. Field Geology – F. H. Lahee (McGraw Hill)
4. Field Geology – R. Compton (McGraw Hill, 1987)

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**GEOLOGY**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

Theory	-	70 marks
Practical	-	30 marks
<hr/>		
<b>Total</b>	<b>-</b>	<b>100 marks</b>

**THEORY**

I.	Sedimentology	-	13 marks
II.	Paleontology	-	15 marks
III.	Stratigraphy	-	14 marks
IV.	Mineral and Energy Resources	-	15 marks
V.	Engineering Geology, Groundwater, -	-	13 marks
	Environment and Disaster Studies		

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**Total = 70 marks**

**Unit I: Sedimentology**

**(17 Periods/13 Marks)**

Processess of formation of sedimentary rocks: disintegration and decomposition, transporation, deposition, diagenesis and lithification.

Textures of sedimentary rocks.

Structures of sedimentary rocks – beds, laminations, ripple marks, current beddings, mud cracks, rain prints, borings, flute casts, load casts, nodules and concretions.

Genetic classification of sedimentary rocks: clastics-(rudaceous, arenaceous and argillaceous) and non-clastics.

Elementary idea of the classification of sedimentary environments of deposition.

## **Unit II: Paleontology**

**(23Periods/15 Marks)**

Paleontology: definition and scope.

Fossils: definition, conditions for preservation and modes of preservation.

Habits and habitats of organisms.

Morphological study of the following phyla: Brachiopoda and Mollusca (Lamellibranchia, Gastropoda and Cephalopoda).

Study of the following Gondwana flora: *Glossopteris*, *Gangamopteris*, *Vertebraria* and *Ptillophylum*

## **Unit III: Stratigraphy**

**(23Periods/14 Marks)**

A brief idea of Stratigraphic correlation.

Lithostratigraphy of the following:

Precambrian of Dharwar Supergroup of Karnataka, Vindhyan Supergroup of Sone Valley, Palaeozoic of Spiti and Tertiary of Upper Assam.

Lithostratigraphy of Meghalaya.

## **Unit IV: Mineral and Energy Resources**

**(23Periods/15 Marks)**

Mineral Resources: definition and its importance.

Definition of ore, gangue and tenor.

Processes of formation of mineral deposits- Magmatic, Sedimentary and Metamorphic processes.

Genetic classification of mineral deposits- Primary (Syngenetic and Epigenetic) and Secondary deposits.

Study of the mode of occurrence, distribution in India and uses of the following mineral resources: Galena, chalcopyrite, hematite, bauxite, magnetite, chromite and mica.

Energy Resources: sources and types.

Petroleum: origin, migration and accumulation; occurrence of petroleum in North-eastern region.

Coal: origin and mode of occurrence; types of coal; coal deposits of North – eastern region.

Study of the mode of occurrence, distribution in India and uses of the radioactive minerals.

## **Unit V: Engineering Geology, Groundwater, Environment and Disaster Studies**

**(17 Periods/13 Marks)**

Engineering Geology: definition. Geological considerations in the construction of dams.

Groundwater: definition and occurrence; porosity and permeability; hydrologic cycle; aquifer.

Environment: definition and components; impact of open-cast and underground mining on the environment.

Disasters: Landslides- causes, effects and remedial measures; Earthquakes – effects and mitigation.

**Reference Books:**

1. A Textbook of Geology – P. K. Mukerjee (World Press, 1997)
2. Principles of Petrology – G. W. Tyrrell (B. I. Publications Pvt. Ltd, 1998)
3. Petrology – E. G. Ehlers and H. Blatt (CBS, 1986)
4. Invertebrate Palaeontology – H. Woods (CBS, 1985)
5. Invertebrate Palaeontology – R. R. Shrock and W. Twenhofel (CBS, 1987)
6. Geology of India and Burma – M. S. Krishnan (CBS, 1986)
7. Fundamentals of Historical Geology and Stratigraphy of India – R. Kumar (Wiley Eastern, 1996)
8. Rec. Geological Survey of India, 107(2):80-90
9. Economic Mineral Deposits – A. M. Bateman and M. L. Jensen (John Wiley, 1981)
10. Indian Mineral Resources – Krishnaswamy and Sinha (Oxford IBH, 1988)
11. A Handbook Of Economic Geology – A. K. Sen and P. K. Guha (Modern Book Agency, Calcutta, 1993)
12. Geology of Petroleum – A. I. Levorsen (Vahil, Jetfor and Simon, 1997)
13. An Introduction to Geology of Coal and Indian Coalfields – N. L. Sharma and K. S. V. Ram (1991)
14. Engineering Geology – N. C. Kesavelu (Mc Millan India, 1993)
15. Environmental Geology – D. R. Coates (John Wiley)
16. Environmental Geology – E. A. Keller (Oxford, 1985)
17. Ground Water Hydrology – D. K. Todd (John Wiley)
18. Introducing Groundwater – M. Price (George Allen and Unwin, London)

**PRACTICALS: 30 Marks**

**45 periods**

**3 (Three) Hours**

Identification of the following sedimentary rocks in hand specimens on the basis of their physical characters, mineralogy, texture and structure:

Sandstone, limestone, shale, conglomerate, clay and coal.

$1\frac{1}{2} \times 2 = 3$

Drawing, labelling and study of the morphological characters of the following fossils with mention of their respective age-range: *Spirifer*, *Productus*, *Terebratula*, *Unio*, *Ostrea*, *Exogyra*, *Pecten*, *Cardita*, *Conus*, *Physa*, *Turritella*, *Nautilus*, *Perisphinctis*, *Glossopteris*, *Gangamopteris*, *Vertebraria* and *Ptillophylum*.

$2 + (2 \times 4) = 10$



Identification of rocks from Meghalaya on the basis of their stratigraphic position, age and characteristic lithological features :

Mylliem Granite, Khasi Greenstone, Quartzite and Phyllite of the Shillong Group, Sylhet Trap, Mahadek Sandstone, Therria Sandstone, Lakadong Limestone, Prang Limestone, Tura Sandstone, Siju Limestone.  $1 \times 4 = 4$

Recognition in hand specimens of the following economic minerals on the basis of physical characters and chemical composition:

Galena, sphalerite, chalcopryrite, hematite, magnetite, chromite, asbestos, bauxite and pyrolusite.  $2 \times 4 = 8$

Field work of 4 (Four) days duration as per the requirement of the syllabus and Viva voce  $3 + 2 = 5$

***Reference Books:***

1. Laboratory Manual of Geology – A. K. Sen (Modern Book Agency, Calcutta, 1995)
2. A Handbook Of Economic Geology – A. K. Sen and P. K. Guha (Modern Book Agency, Calcutta, 1993)
3. Invertebrate Palaeontology – H. Woods (CBS, 1985)
4. Field Geology – F. H. Lahee (McGraw Hill)

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**ANTHROPOLOGY**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

Theory – 70 Marks  
Practical – 30 Marks  
**Total – 100 Marks**

**PART I = THEORY**  
**(Total 48 Lectures)**

1. **Anthropology: The Study of Human** **(12 Periods)**
  - i. Meaning, aim and scope
  - ii. Core branches
  - iii. Relationships to other Science: Sociology, History, Biology, Geology and Geography.
2. **Man's Place In The Animal Kingdom** **(12 Periods)**
  - i. Classification of the order of primate.

- ii. Characteristic of primate order – great apes and man.
  - iii. Evolutionary Changes in Primate (upright posture and bipedalism)
- 3. Human Evolution (12 Periods)**
- i. Evidences of Evolution (Embryological, Morphological and Palaeontological).
  - ii. Principles of Evolution (Natural-Selection, Mutation, Genetic Drift & Migration).
  - iii. Stages of evolution (Prosimii to Hominoid, Hominoid to hominid)
- 4. Theories of Evolution (12 Periods)**
- i. Theory of Lamark (Lamarkism.)
  - ii. Theory of Darwin (Darwinism).
  - iii. Mutation Theory (Hugo De Vries).

## **PART II =THEORY** **(Total 72 Lectures)**

- 1. Culture and society: (12 Periods)**
- i. Culture and its characteristics, Ethnocentrism, Cultural-Relativism and Xenophobia.
  - ii. The concept of Society and Socialization.
  - iii. Relation between Society and Culture.
- 2. Social Institutions: (12 Periods)**
- i. Family – function and types.
  - ii. Marriage – types, regulations of marriage, marriage payment.
  - iii. Kinship – Descent and residence, Kinship Terminology (Morgan).
- 3. Social Groups: (12 Periods)**
- i. Primary and Secondary groups.
  - ii. Kin-groups (Lineage, Clan, Phantry and Moiety)
  - iii. Fission and Segmentation of social groups.
- 4. Religious Aspect of Culture: (12 Periods)**
- i. Religion – definition, function and types. (Animism, Animatism, Manaism and Naturism).
  - ii. Magic – definition, function and types (Frazer's)
  - iii. Relationship between Magic and Religion.
- 5. Economic Aspect of Culture: (12 Periods)**
- i. Foraging, Hunting and Fishing.
  - ii. Domestication of animals and plants (food production).
  - iii. System of Exchange: Reciprocity, Redistribution and Market

6. **Fieldwork in Anthropology:** (12 Periods)
- i. Development and significance of fieldwork.
  - ii. Stages of fieldwork
  - iii. Data collection – Interview, observation and genealogy.

**PART – III = PRACTICAL**  
**(Total 30 Classes)**

1. **Somatometry:** (15 Classes)

Measurements of the following somatometric indices should be taken from at least five subjects:

- i. Cephalic-Index: Head-length, breadth and circumference;
- ii. Nasal & Facial Index - Nasal length and breadth, Facial height and Bizogomatic breadth.
- iii. Height vertex and sitting height.

2. **Somatoscopy:** (15 Classes)

Observation and classification of the following samatoscopic characteristics should be taken from at least five subjects:

- i. Skin colour, Hair-colour, hair-form and texture.
- ii. Eye-colour, slit and epicanthic fold.
- iii. Nose form, Chin form and Lips form.

**Reference Books:**

- 1. Bhattacharya D. K. 1997 (1<sup>st</sup> published 1973) *Prehistoric Archaeology (A Comparative Study of Human Succession)* Delhi, Hindustan Publishing Corporation (India).
- 2. Basu Roy, Indrani 2003, *Anthropology: The Study of Man* New Delhi, S. Chand & Co. Ltd.
- 3. Das, B. M. *Outlines of Physical Anthropology*, Allahabad 1997 (1<sup>st</sup> published 1961, Kitab Mahal).
- 4. Das, B. M. & Deka, R. 1992, *Practical in Physical Anthropology*, Allahabad, Kitab Mahal.
- 5. Doshi S. L. and Jain, P. C. 2001, *Social Anthropology*, New Delhi, Rawat Publications.
- 6. Hasnain Nadeem, 1992, *General Anthropology*, New Delhi, Jawahar Publishers and Distributors.

7. Mair Lucy, 1984 (1<sup>st</sup> published 1965) *An Introduction to Social Anthropology*, New Delhi, Oxford University Press.
8. Jha Makhan, 1994, *An Introduction to Social Anthropology* Vikas Publishing House Pvt. Ltd., Sarkar, R. M. 1994, *Fundamentals of Physical Anthropology*, Calcutta, Book World Publishers.
9. Scupin, Raymond and Decorse, Christopher R. 2005, *Anthropology: A Global Perspective*, New Delhi, Prentice Hall of India.
10. Srivastava, A. R. N. 2005, *Essentials of Cultural Anthropology*, New Delhi, Prentice Hall of India.

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## **ANTHROPOLOGY** **CLASS – XII**

### **DISTRIBUTION OF MARKS**

Theory – 70 marks  
Practical – 30 marks

### **PART I: THEORY** **(Total 48 Periods)**

1. **Hominid Evolution** **(12 Periods)**
  - i. Australopithecine.
  - ii. Homo – Erectus
  - iii. Homo – Neanderthal.
  
2. **Human Adaptation** **(12 Periods)**
  - i. Concept of Adaptation
  - ii. Morphological adaptation
  - iii. Ecological adaptation (cases of Mountain, Desert, Coastal & Riverine)

**3. Human Growth (12 Periods)**

- i. Concept of Growth.
- ii. Stages of growth.
- iii. Factors responsible for growth and development.

**4. Human Race (12 Periods)**

- i. Race formation.
- ii. Major races of the world
- iii. Classification of Indian population by Risley and Guha.

**PART II: THEORY  
(72 Lectures)**

**1. Human Cultural Evolution (12 Periods)**

- i. Emergence of life on earth, geological time-scale and cultural – chronology.
- ii. Nature, Causes and Evidences of Glaciation
- iii. Bio-cultural Mechanism Behind the evolution of Man.

**2. Prehistoric Technology (12 Periods)**

- i. Techniques of tool-making.
- ii. Paleolithic typologies (Chopper, Hand-axes and Cleavers)
- iii. Mesolithic and Neolithic typologies (Microliths and Celts)

**3. Main features of Prehistoric Cultures (12 Periods)**

- i. Paleolithic: Lower, Middle & Upper Paleolithic cultures.
- ii. Mesolithic & Neolithic cultures.
- iii. Prehistoric Arts.

**4. Political Aspect of Society (12 Periods)**

- i. Traditional Political structure in tribal societies
- ii. Sanctions and Taboo, Customary Law and Statutory Law.
- iii. Justice and punishment in tribal societies.

**5. Gender and Culture (12 Periods)**

- i. Concept of Sex and Gender, Gender Roles and Socialization
- ii. Women in the Public and Private domain
- iii. Women's status in North-East India (Patrilineal and Matrilineal societies)

**6. Indian Society (12 Periods)**

- i. Caste: Origin, formation and characteristics of caste; concept of Schedule Caste and OBC.
- ii. Tribe: Concept of Tribe, Tribal Problems and Welfare measures.
- iii. Social change in India: Culture contact, Sanskritization and Modernization.

**PART III: PRACTICAL**  
**(30 Classes)**

**1. Prehistoric Culture (15 Periods)**

Drawing and identification of the following:

- i. Chopper, Handaxe & Cleavers (5 Nos.)
- ii. Blades and Scrapers (4 Nos.)
- iii. Microliths, Celts and Ring-stones (6 Nos.)

**2. Human Bones (15 Periods)**

Drawing and identification of the following:

- i. Long bones (4 Nos.)
- ii. Flat bones (2 Nos.)

**Reference Books:**

Bhattacharya D. K. 1997 (1<sup>st</sup> published 1973). *Prehistoric Archeology (A Comparative Study of Human Succession)*. Delhi Hindustan Publishing Corporation (India).

Basu Roy, Indrani. 2003. *Anthropology: The Study of Man*. New Delhi. S. Chand & Company Ltd.

Das, B. M. *Outlines of Physical Anthropology*. Allahabad. 1997 (1<sup>st</sup> Published 1961. Kitab Mahal)

Das, B. M. and Deka, R. 1992. *Practical in Physical Anthropology*. Allahabad. Kitab Mahal

Doshi S.L. and Jain, P. C. 2001. *Social Anthropology*. New Delhi. Rawat Publications.

Hasnain Nadeem. 1992. *General Anthropology*. New Delhi. Jawahar Publishers and Distributors.

Mair Lucy. 1984 (1<sup>st</sup> published 1965). *An Introduction to Social Anthropology*. New Delhi. Oxford University Press

Jha Makhan. 1994. *An Introduction to Social Anthropology*. Vikas Publishing House Pvt. Ltd.

Sarkar, R.M 1994. *Fundamentals of Physical Anthropology*. Calcutta. Book World Publishers.

Scupin, Raymond and Decorse, Christopher R. 2005. *Anthropology: A Global Perspective*. New Delhi. Prentice-Hall of India.

Srivastava, A.R.N. 2005. *Essentials of Cultural Anthropology*. New Delhi. Prentice-Hall of India.

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**COMPUTER APPLICATIONS**  
**CLASS – XI (ARTS/COMMERCE/SCIENCE)**

**DISTRIBUTION OF MARKS**

Theory – 70 Marks  
Practical – 30 Marks

**Total Class Hours: 130 hours (80 Hours theory, 50 Hours practical)**

*Working weeks per year* : 25 (approx)  
*Class per week* : 7 (of 45 Minutes duration)  
*Total Hours* : 130 (approx)

Units	Topics	Class Hours		
		Theory	Practical	Total
UNIT 1 : 20 Marks	Computer Hardware:	5		5
	Data Representation:	6		6
	Introduction to Windows:	8	7	15
UNIT 2 : 14 Marks	HTML Fundamentals:	6	5	11

	Hyperlinks and Anchors:	5	5	10
	Text Alignment and Lists:	4	5	9
UNIT 3 : 14 Marks	Text Formatting and Fonts:	5	5	10
	Images:	6	6	12
	Tables and Table Layout:	6	5	11
UNIT 4 : 10 Marks	Frames:	5	6	11
	HTML Forms:	5	6	11
UNIT 5 : 12 Marks	Introduction and Transmission Media:	7		7
	Networks and Topologies:	5		5
	Network Devices and Security:	7		7
Theory = 70 Marks		80	50	130

**UNIT I: 20 Marks**  
**Hours**

**Theory: 19 Hours + Practical: 7**

Computer Hardware – Parts of a computer and their functions – CPU, Clock speed, Cache memory, Primary memory, Secondary memory, Input and Output devices, Motherboard, Sound Card, Graphics Card, SMPS, UPS (*the aim is to only understand what components are present in a typical computer and their functions; details are not needed*)

Data Representation – Number system, Base of a number system, Decimal, Binary, Octal, Hexadecimal representation, Conversion between Decimal, Binary, Octal and Hexadecimal representations, character representation (ASCII, EBCDIC, Unicode)

Introduction to Windows – Graphical User Interface, Mouse – left click, right click, double click, drag, Concept of files and folders; Desktop; Start Menu; Parts of a window  
Navigating Window – Closing, Maximizing, Minimizing, resizing, using scrollbars, activating, deactivating, Dialog boxes – Command buttons, radio button, check boxes, ellipsis, list boxes, text boxes, spin button; My Computer and Windows Explorer – views, sort buttons; creating, deleting, renaming, moving files, folders and shortcuts; Selecting – contiguous and non-contiguous multiple objects; Notepad.

**UNIT II: 14 Marks**  
**Hours**

**Theory:15      Hours+Practical:15**

Basic concepts of Web Browsers with emphasis on popular browsers such as Internet Explorer and Mozilla Firefox.



Understanding HTML and the Web – Web Site Design and Web Page Design, Creating, Editing and Saving Web Pages in Notepad

HTML Tags – <HTML>, <HEAD>, <TITLE>, <BODY>, <P>, <BR>, <HR> and their attributes

Headings: <H1>, <H2>, <H3>, <H4>, <H5>, <H6> tags

Understanding Hyperlink and Anchors: <A> tag and its attributes

Text Alignment and Lists: <DIV>, Align text to CENTER, LEFT and RIGHT, <OL>, <UL>, <LI>, <DL>, <DT>, <DD>

### **UNIT III: 14 Marks**

***Theory: 17Hours+Practical: 16 Hours***

Text Formatting and Font Control: <B>, <I>, <U>, <TT>, <PRE>, <BIG>, <SMALL>, <SUB>, <SUP>, <STRIKE>, <FONT> tags with attributes

Background and Text Colors

Images – Adding Images, <IMG> tag and Attributes, Using Images as Hyperlink Anchors

Tables and Table Layout – Definition and its purpose, <TABLE>, <TR>, <TD> tags and attributes, Adding images to table

### **UNIT IV: 10 Marks**

***Theory: 10Hours+Practical: 12 Hours***

Frames and its Applications, Setting up a Frames Document, <FRAMESET>, <FRAME>, <IFRAME>, <NOFRAMES> tag and attributes, Nested Frames

Creating HTML forms: <FORM>, <INPUT>, <TEXTAREA>, <SELECT>, <OPTION> tags and attributes

### **UNIT V: 12 Marks**

***Theory: 19 Hours***

Evolution of Networking: ARPANET, Internet

Transmission Media – Twisted pair cable, Coaxial cable, Optical fiber, Infrared, Bluetooth, Radio link, Microwave link, Satellite link

Concepts of LAN, WAN, MAN; Different Topologies – Bus, Star, Tree

Network Devices – Modem, RJ45 Connector, Ethernet Card, Hub, Switch, Router, Gateway

Network Security Concepts: Cyber Law, Firewall, Cookies, Hackers and Crackers

**NOTE:** Activities for Practicals will be as mentioned in the textbook.

**Book Recommended:** Understanding Computer Science and Applications for Class  
**XI**

Published by - M/S C & P Enterprises,  
M. C. Road, Guwahati – 781003.

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**COMPUTER APPLICATIONS**  
**CLASS – XII (SCIENCE)**

**Total Class Hours: 168 hours (99 Hours theory, 69 Hours practical)**

*Working weeks per year* : 32 (approx)  
*Class per week* : 7 (of 45 Minutes duration)  
*Total Hours* : 168 (approx)

Units	Topics	Class Hours		
		Theory	Practical	Total
UNIT 1: 20 Marks	Logic Design :	20		20
	Karnaugh Map:	10		10
UNIT 2 : 14 Marks	C Fundamentals:	9	4	13

	Sequence Control :	10	10	20
UNIT 3 : 20 Marks	Functions and Storage Class:	10	10	20
	Arrays & Pointers :	15	15	30
UNIT 4 : 16 Marks	Structures, Unions and Enumerations:	10	10	20
	Data files:	10	15	25
	Macros :	5	5	10
<b>Theory : 70 Marks</b>		<b>99</b>	<b>69</b>	<b>168</b>

### ***UNIT 1: 20 Marks***

## **Computer Fundamentals**

### **Logic Design:**

### **20 Hours Theory**

Boolean Algebra - AND, OR, NOT Operations, Boolean Variables, Boolean Postulates, Boolean Theorems, Simplification of Boolean Expression by Algebraic Method, Dual and Complement of a Boolean Expression, Sum of Products and Product of Sums Forms of Logic Expressions, Canonical Form of a Logic Expression, Conversion of Sum of Products Expressions into Canonical Form, Conversion of Product of Sums Expressions into Canonical Form, Truth Tables and Boolean Expressions, Boolean Expression in Sum of Products Form from a Given Truth Table, Boolean Expression in Product of Sums Form from a Given Truth Table, Proof for Obtaining Expression in Product of Sums Form from a Given Truth, Implementing Logic Expressions with Logic Gates, Minimum Boolean Expression.

### **Karnaugh Map:**

### **10 Hours Theory**

Karnaugh Map Method of Simplification of Logic Expression, Karnaugh Map for Three Variables, Karnaugh Map for Four Variables, Prime Implicant, Labeling of Karnaugh Map Squares, Alternative Way of Representing Sum of Products Expression, Realization of Product of Sums Expressions from Karnaugh Map, Karnaugh Map for Product of Sums Expression, Don't-care Conditions.

### ***UNIT 2: 14 Marks***

## ***Programming in C***

### **C Fundamentals:**

### **9 Hours Theory + 4 Hours Practical**

Introduction to C, History of C language, Structure of a C program.

The C character set, Identifiers and Keywords, Data types, Data type qualifiers, Constants, Types of Constants, Difference in the storage of integer and floating point quantities, Strings, Variables Operators, Expressions, Statements, Symbolic Constants.

Operators (arithmetic, unary, binary, ternary, relational, logical), Precedence, Associativity, Result of operations on dissimilar operands, Type Cast, Assignment Operators.

Basic I/O Functions : getchar(), getch(), getche(), putchar (), scanf(), printf(), gets(), puts(); Conversion Characters and some commonly used Flags for scanf() and printf().

**Sequence Control: 10 Hours Theory + 10 Hours Practical**

Branching, Looping; if ... else; switch; while, do ... while, for; nested loops; break; continue; goto; comma operator.

***UNIT 3: 20 Marks***

**Functions and Storage Class: 10 Hours Theory + 10 Hours Practical**

Defining a Function; Accessing a function; Forward declaration: function prototypes, Call by value, Call by reference; Recursion; Storage classes (auto, register, static, extern), Header Files: Use Of Library Functions; Command line parameters.

**Arrays & Pointers: 15 Hours Theory + 15 Hours Practical**

**Arrays:** Declaration, initialisation, as arguments to functions, accessing array elements, Arrays & strings, Two-dimensional arrays, strings and two-dimensional arrays, sorting (selection, bubble, insertion).

**Pointers:** Declaration, initialisation, address operator, indirection operator; Pointer arithmetic; Pointers and functions (taking pointers as arguments and returning pointers); Pointers and arrays (one-dimensional and two-dimensional); array of pointers; Pointers and scanf () function; Pointer Arrays and Strings.

***UNIT 4: 16 Marks***

**Structures, Unions and Enumerations:**

**10 Hours Theory + 10 Hours Practical**

Declaration, instantiation; member access operators (. and ->), typedef; Structures / Unions and Pointers; functions and structures/unions; Nested Structures; Array of Structures; Enumerations.

**Data files: 10 Hours Theory + 15 Hours Practical**

File opening modes, File I/O (Character I/O, String I/O, Formatted I/O, Record I/O) checking file opening error, closing data files; Data files: Appending, editing, deleting, searching, displaying records.

**Macros:****5 Hours Theory + 5 Hours Practical**

Defining macros, macros with arguments, comparison of macros and functions (advantages and its advantages); The C Preprocessor.

**RECOMMENDED TEXTBOOK:****Understanding Computer Science and Applications for Class XII**

Published by -

M/S C & P Enterprises,  
M. C. Road, Guwahati – 781003.

**Reference Books:**

1. Ram, B, *Fundamentals of Microprocessors and Microcomputers*, Dhanpat Raji & Sons, Delhi, 1995.
2. Gottfried, Byron, S., *Theory and Practice of programming with C*, Schaum's Outline Series, McGraw Hill Publishing Company, New Delhi, 1990 (For Unit 1, 2 & 3 section (a)).
3. Malvino and Leach, *Digital Computer and applications*, Tata McGraw Hill, New Delhi.
4. Balagurusamy, E., *Programming In ANSI C*, Second edition, Tata McGraw Hill Publishing Company, New Delhi, 1995 (For Unit 1, 2 & 3).
5. Kanetkar, Yashavant, *Let Us C*, BPB Publishing Company, New Delhi, 1995
6. Lafore, Robert, *C Programming Using Turbo C++*, Galgotia Publishing Company, New Delhi, 1994

***Problem Sheet: Programming in C***

1. Write a program to display the message “Welcome to the C programming world” on the screen.
2. Write a program to find out the sum of two integer values and display the result on the screen. Input the two values from the keyboard.
3. Write a program to find out the greatest of three numbers.
4. Write a program for **swapping** the two numbers with / without using another variable.
5. Write a program to find whether the given year is a leap year or not (use % modulus operator)
6. Write a program to find out the real roots of quadratic equation,  $Ax^2+Bx+C=0$ .
7. Write a program to convert the given temperature in Fahrenheit to Celsius using the following conversion formula,  $C = (F-32)/1.8$
8. Write a program to find out the average of any ten numbers. (Use (a) **while** loop, and (b) **for** loop).
9. Write a program to generate fibonacci sequence. (1,1,2,3,5,8,13, ...)
10. An employee is paid 1.5 times the normal rate for every hour beyond 40 hours worked in a week. Write a program to calculate the weekly wage of an employee.
11. Write a program to check whether the given string is palindrome or not.
12. The total distance traveled by a vehicle in t seconds is given by

$$\text{Distance} = ut + (at^2)/2$$

Where **u** is the initial velocity (meters per second), **a** is the acceleration (meters per second<sup>2</sup>). Write a program to evaluate the distance traveled at regular intervals of time, given the values of **u** and **a**. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of **u** and **a**.

13. For a certain electrical circuit with an inductance L and resistance R, the damped natural frequency is given by  
Frequency =  $\sqrt{1/LC - R^2/4C^2}$

It is desired to study the variation of this frequency with C (capacitance). Write a program to calculate the frequency for different value of C starting from **0.1** in steps of **0.01**.

14. Write a program to read the following numbers, round them off to the nearest integers and print out the results in integer form:

35.7 50.21 -23.73 -46.45

15. Given the string "WORD PROCESSING", write a program to read the string from the terminal and display the same in the following formats:

- (a) WORD PROCESSING (b) WORD  
(c) W. P. PROCESSING

16. Admission to a professional course is subject to the following conditions:

- (a) Marks in mathematics  $\geq 60$   
(b) Marks in physics  $\geq 50$   
(c) Marks in chemistry  $\geq 40$   
(d) Total in all three subjects  $\geq 200$

Or

Total in mathematics and physics  $\geq 150$

Write a program to search of admission of students. The user has to enter the marks from the keyboard of the corresponding subjects.

17. Write a program that will read the value of **x** and evaluate the following function

1 for  $x > 0$   
 $Y = 0$  for  $x = 0$   
-1 for  $x < 0$

Using

- (a) nested **if** statements,  
(b) **else if** statements, and  
(c) conditional operator **?** :

18. Write a program to calculate the monthly telephone bill according to the following rules:

- (a) Rural subscribers:
- |                         |      |
|-------------------------|------|
| Upto 250 calls          | Free |
| 251 calls to 450 calls  | 0.60 |
| 451 calls to 500 calls  | 0.80 |
| 501 calls to 1000 calls | 1.00 |
| above 1000 calls        | 1.20 |
- (b) Urban subscribers:
- |                |      |
|----------------|------|
| Upto 150 calls | Free |
|----------------|------|

151 calls to 400 calls	0.80
401 calls to 1000 calls	1.00
above 1000 calls	1.20

- (c) The rental for urban subscribers depends on the number of calls upto 400 calls the rental will be 200/- and above 400 calls the rental will be 240/-. For rural subscribers the rental is always 200/-.
19. Write a C program to input the Name, City Type (whether Metro or Non-Metro) and Basic Pay of an employee and calculate the salary according to the following rules:
- (a) Dearness allowance (DA)
    - (i) Upto Rs. 3500                      110% of basic pay
    - (ii) Above Rs.3500                      90% of the basic pay subject to a maximum of Rs. 3850 (i.e. DA should be at least Rs. 3850).
  - (b) House Rent Allowance (HRA) is 15% of the basic pay subject to a maximum of Rs. 800 (i.e. never more than Rs. 800)
  - (c) If City is Metro, City Compensatory Allowance (CCA) = 800 else if it is Non-Metro, CCA=600.
  - (d) Provident Fund (PF) is 12% of the basic pay.  
(**Total Salary**=Basic Pay +DA+HRA+CCA-PF)

The output should be in the following format (Example only)

Example Name	ABCDEF
Basic Salary	5000
Dearness Allowance	4500
HRA	750
CCA : Non-Metro	600
PF	600
Total Salary	10250

20. Write a program to sum the following series:
- a) The first n natural numbers
  - b) The first n odd natural numbers
  - c) The first n even natural numbers
21. Write a program to sum the series :  $2 * 3 - 3 * 5 + 4 * 7 + \dots$  to n terms
22. Given a number, write a program using while loop to reverse the digits of the number. For example, the number 12345 should be written as 54321. (**Hint:** Use modulus operator to extract the last digit and the integer division by 10 to get the n-1 digit number from the n digit number.)
23. Write a program for sorting the elements of an array by using Selection sort, Bubble sort, Insertion sort.
24. Write a program to generate positive prime numbers.
25. Write a program to display the multiplication table of a given number from 1 to 20.
26. Write a program to display the multiplication table of a given number for a given range.
27. Write a program to display the multiplication table of a given group of numbers (maximum five numbers) for a given range.

28. Write a program to find the biggest and smallest number and its position in the given array.
29. Write a program to find addition, subtraction and multiplication of matrices using function.
30. The factorial of an integer m is the product of consecutive integers from 1 to m. That is, Factorial m =  $m! = m*(m-1)*(m-2)*...*1$ .
31. Write a program to find the sum of row, column, and diagonals of the given matrix.
32. Write a program to find the largest number of the given matrix using function.
33. Write a program to sort all the elements of a matrix using function.
34. Write a program to input a string and perform the following tasks without using library functions: (a) to find its length, (b) to change it to upper case / lower case (c) to extract the left most n characters, (d) to extract the right most n characters (e) to extract n characters from it starting from position p, (f) to insert another string in it at position p (g) to replace n characters in it starting at position p with a given string
35. Write a program to search a pattern in a given text.
36. Write a program to search a pattern in a given text and replace every occurrence of it with another given string.
37. Write a program to write a given number in words using function.
38. Write a program to display the text in a FILE. (TYPE command in DOS).
39. Write a program to copy the contents of one text to another text file using command line arguments.
40. Write a program to merge the two text file to another text file.
41. Write a program to copy the contents of one text file to any number of given files using command line arguments.
42. Write a program to count the number of characters, lines and words in a text file.
43. Write a program to print every line of a text file containing a given pattern.
44. To copy a file by converting lower case text file to upper case text file using command line argument.
45. Write a program to input, sort, and display n names using array of pointers.  
Write a program to count the number of vowels, consonants, and other characters and the number of words in a string / file. A word is separated by either a space, tab, or a punctuation mark (, ; . : !).
46. Write a menu driven program to create records of students with marks in various subjects and store them in a file (sequential, random or binary). Make provision for viewing all the records, searching a particular record, editing a particular record, deleting a particular record and listing a particular group of records.

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**COMPUTER APPLICATIONS**  
**CLASS – XII (ARTS/COMMERCE)**

**Total Class Hours:    168 hours (89 Hours theory, 79 Hours practical)**

*Working weeks per year    :*        32 (*approx*)  
*Class per week                :*        7 (*of 45 Minutes duration*)  
*Total Hours                    :*        168 (*approx*)

Units	Topics	Class Hours		
		Theory	Practical	Total
UNIT 1: 20 Marks	Internet	10		10

	Web Design Using FrontPage	10	10	20
UNIT 2 : 14 Marks	C Fundamentals:	9	4	13
	Sequence Control :	10	10	20
UNIT 3 : 20 Marks	Functions and Storage Class :	10	10	20
	Arrays & Pointers :	15	15	30
UNIT 4 : 16 Marks	Structures, Unions and Enumerations:	10	10	20
	Data files:	10	15	25
	Macros :	5	5	10
<b>Theory : 70 Marks</b>		<b>89</b>	<b>79</b>	<b>168</b>

### ***UNIT 1: 20 Marks***

#### ***Internet and Web Design***

##### **Internet:**

##### **10 Hours Theory**

Internet, Internet Applications, Addressing in Internet – IP and domains; Internet Service Providers; Types of Connectivity such as leased lines, dial up, VSAT; E-Mail Networks; Format of Email Message – Address, Header, Body, Attachment; Email Clients; Basic features of WWW; WWW Browsers; WWW Servers; URL; Search Engines

##### **Web Design Using FrontPage:**

##### **10 Hours Theory + 10 Hours Practical**

Document Overview; Header Elements; Section Headings; Block oriented elements; lists; Inline elements; Visual Markup; Hypertext Links; Images; Tables; Forms.

### ***UNIT 2: 14 Marks***

#### ***Programming in C***

##### **C Fundamentals:**

##### **9 Hours Theory + 4 Hours Practical**

Introduction to C, History of C language, Structure of a C program

The C character set, Identifiers and Keywords, Data types, Data type qualifiers, Constants, Types of Constants, Difference in the storage of integer and floating point quantities, Strings, Variables Operators, Expressions, Statements, Symbolic Constants

Operators (arithmetic, unary, binary, ternary, relational, logical), Precedence, Associativity, Result of operations on dissimilar operands, Type Cast, Assignment Operators

Basic I/O Functions : getchar(), getche(), getch(), putchar (), scanf(), printf(), gets(), puts(); Conversion Characters and some commonly used Flags for scanf() and printf()

**Sequence Control: 10 Hours Theory + 10 Hours Practical**

Branching, Looping; if ... else; switch; while, do ... while, for; nested loops; break; continue; goto; comma operator

***UNIT 3: 20 Marks***

**Functions and Storage Class: 10 Hours Theory + 10 Hours Practical**

Defining a Function Accessing a function; Forward declaration: function prototypes, Call by value, Call by reference; Recursion; Storage classes (auto, register, static, extern), Header Files: Use Of Library Functions; Command line parameters

**Arrays & Pointers: 15 Hours Theory + 15 Hours Practical**

**Arrays:** Declaration, initialisation, as arguments to functions, accessing array elements, Arrays & strings, Two-dimensional arrays, strings and two-dimensional arrays, sorting (selection, bubble, insertion)

**Pointers:** Declaration, initialisation, address operator, indirection operator; Pointer arithmetic; Pointers and functions (taking pointers as arguments and returning pointers); Pointers and arrays (one-dimensional and two-dimensional); array of pointers; Pointers and scanf() function; Pointer Arrays and Strings

***UNIT 4: 16 Marks***

**Structures, Unions and Enumerations: 10 Hours Theory + 10 Hours Practical**

Declaration, instantiation; member access operators (. and ->), typedef; Structures / Unions and Pointers; functions and structures/unions; Nested Structures; Array of Structures; Enumerations

**Data files: 10 Hours Theory + 15 Hours Practical**

File opening modes, File I/O (Character I/O, String I/O, Formatted I/O, Record I/O) checking file opening error, closing data files; Data files : Appending, editing, deleting, searching, displaying records;

**Macros: 5 Hours Theory + 5 Hours Practical**

Defining macros, macros with arguments, comparison of macros and functions (advantages and its advantages); The C Preprocessor

**RECOMMENDED TEXTBOOK:**

## Understanding Computer Science and Applications for Class

XI

Published by - M/S C & P Enterprises,  
M. C. Road, Guwahati – 781003.

### Reference Books:

1. Ram, B, *Fundamentals of Microprocessors and Microcomputers*, Dhanpat Raji & Sons, Delhi, 1995.
2. Gottfried, Byron, S., *Theory and Practice of programming with C*, Schaum's Outline Series, McGraw Hill Publishing Company, NewDelhi, 1990 (For Unit 1, 2 & 3 section (a)).
3. Malvino and Leach, *Digital Computer and applications*, Tata McGraw Hill, New Delhi.
4. Balagurusamy, E., *Programming In ANSI C*, Second edition, Tata McGraw Hill Publishing Company, New Delhi, 1995 (For Unit 1, 2 & 3).
5. Kanetkar, Yashavant, *Let Us C*, BPB Publishing Company, New Delhi, 1995.
6. Lafore, Robert, *C Programming Using Turbo C++*, Galgotia Publishing Company, New Delhi, 1994.

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## **STATISTICS** **CLASS – XI**

100 marks  
3 (three) hours

### **GROUP – A**

1. **Algebra:** Permutation and combination (Theorems with proofs and simple examples): Binomial theorem for a positive integral index (without proof):

simple examples on Binomial co-efficients, logarithms. Exponential and logarithmic series with simple examples (without proof).

2. **Finite Differences:**  $\Delta$  and E operators, construction of difference table. Newton's forward and backward interpolation formulae, Lagrange's formula (Numerical application of Lagrange's formula not required).

### **GROUP – B**

#### **Probability:**

Random experiments, sample point and sample space (finite, simple and compound events, relation among events. Basic assumptions and definition of probability. Theorem on total probability (two events only). Definition of conditional probability, compound probability (Elementary problems only).

### **GROUP – C**

1. **Descriptive Statistics:** Definition, scope and limitations of Statistics; collection of data; classification and tabulation; diagrammatic representation of statistical data. Frequency distributions; Histograms, Frequency Polygon and Ogive. Measures of location and dispersion.
2. **Vital Statistics:** Sources of vital statistics. Death rates and mortality rates.

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## **STATISTICS** **CLASS – XII**

100 marks  
3 (three) hours

### **GROUP – A**

1. **Mathematical expectation:** Definition of random variable and expectation. Statement of theorem on the expectation of sum and product of several variables. (Proof not necessary) Simple problems.
2. **Standard distribution:** Definition of Bernoulli trials, Binomial, Poisson and Normal distributions. (Their definitions, expressions for mean and standard deviation, properties, example and simple problems involving their uses, no derivations).

### **GROUP – B**

1. **Index Numbers:** Construction and use of index numbers; Simple and weighted relative of aggregates and averages of relatives; Laspeyre's, Paasche's, Marshall Edgeworth's and Fisher's formulae.
2. **Time Series:** Components of time series and moving average. To determine trends. (Only free hand smoothing and method of moving averages).

### **GROUP – C**

**Sample survey:** Sampling versus census; sources of errors in a survey – sampling and non-sampling: simple random sampling (definitions, uses, expressions for estimation of mean, total and standard deviations). Stratified random sampling; definition, uses, advantages, expression for the estimates of mean and total. (Derivation is not necessary).

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## **ELECTIVE ENGLISH** **CLASS – XI**

### **DISTRIBUTION OF MARKS**

1)	Short Stories	-	45
2)	Short Modern Plays	-	40
3)	Writing	-	15

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Total marks = 100

**I. Short Stories 45 Marks**

**The Prescribed Pieces are:**

1. The Gift of the Magi – *by O. Henry*
2. The Gold Watch – *by Mulk Raj Anand*
3. The Night the Ghost Got in – *by James Thurber*
4. Dr. Heidegger's Experiment – *by Nathaniel Hawthorne*

**Name of the textbook:** Short Stories of Yesterday And Today  
Edited by Shiv K. Kumar  
**Published by -** Oxford University Press, Danish Road,  
Pan Bazar, Guwahati – 781001.

**II. Short Plays 40 Marks**

**The Prescribed Plays are:**

1. The Carrier Pigeon – *by Eden Phillpotts*
2. The Three Wayfarers – *by Thomas Hardy*
3. The Conspiracy – *by Robert Barr and Sydney Ransom*
4. Comedy and Tragedy – *by W. S. Gilbert*

**Name of the textbook:** Short Modern Plays – Second Series  
**Selected by – S. R. Littlewood.**  
**Published by -** Macmillan India Ltd., S. C. Goswami Road,  
Pan Bazar, Guwahati – 781001.

**III. Writing (Unseen) 15 Marks**

- a) To write an essay on an argumentative/discursive/descriptive topic (200-250 words)  
- **08 marks**
- b) To write a shorter composition such as an article/report (100-125 words)  
- **07 marks**

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**ELECTIVE ENGLISH**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

I.	Prose	-	15 marks
II.	Poetry	-	15 marks
III.	Fiction	-	25 marks
IV.	Drama	-	25 marks

V. Reading/Writing - 20 marks

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**Total = 100 marks**

**I. PROSE**

**Pieces To Be Read:**

1. The Conquest of Malaria – *T. C. Bridges & H. H. Tiltman*
2. On The Rule of the Road – *A. G. Gardiner*

**II. POETRY**

**Poems To Be Read:**

1. The Highwayman – *Alfred Noyes*
2. The Solitary Reaper – *William Wordsworth*
3. On His Blindness – *John Milton*

**III. FICTION**

The Guide - *R. K. Narayan*

**IV. DRAMA**

Arms and the Man - *Bernard Shaw*

**V. Reading/Writing**

- a) Phonology (Phonology or the study of sounds is not included for written examination)
- b) Comprehension  
(Unseen)  
Poetry of fifteen lines followed by short questions to test interpretation and appreciation.
- c) Essay: Argumentative, Discursive, Reflective, Narrative and Descriptive.

- No Textbook has been recommended for Grammar & Phonology.

***Recommended Textbooks:***

1. **Gateways to Prose and Poetry – R. S. Macnicol**  
Published by – Oxford University Press, Danish Road, Pan Bazar,  
Guwahati – 781001
2. **Novel: The Guide (Unabridged) – R. K. Narayan**  
Published by – Indian Thought Publications  
New No. 38, Thinakachalam Road, T. Nagar, Chennai – 600017



**3. Arms And The Man – Bernard Shaw**

Published by – Orient Blackswan Private Limited, H. B. Road,  
Mission Compound, Pan Bazar, Guwahati – 781001.

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**ASSAMESE (ELECTIVE)**

**CLASS – XI**

**DISTRIBUTION OF MARKS**

1)	Prose	-	30
2)	Poetry	-	30
3)	Novel	-	15
4)	Rhetoric and Prosody	-	15

5) Essay - 10

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**Total marks - 100**

**A. Prose**

**Pieces To Be Read:**

1. Sahityar Mulkatha – *by S. K. Bhuyan*
2. Adhunik Galpa Sahitya – *by H. Baruah*

**Name of the Textbook: Prabandhawali**  
Guwahati University, Guwahati – 781001.

**B. Poetry**

**Pieces To Be Read:**

1. Bhiksha Bahagir Biya Keteki
2. Charai; Golpo; Basisthasram; Sankardev; Gowa be Eber Mar Priya
3. Bihangini (7 poems)

**Name of the Textbook: Sadari – by Raghunath Chaudhary**

**C. Novel: Bhanumati – by Padmanath Gohain Borah**

**D. Rhetoric and Prosody and Unseen**

**E. Essay:**

**For Rhetoric and Prosody:**

(Students are expected to have some general idea of the topics along with definitions and examples)

1. Alankara – Sabdalam Kara and Arthalam Kara Anuprasa, Upama; Rupaka; Tamaka
2. Chanda – Yati; Parba Carama; Stavaka; Mitakshara and Mitalshara Pada; Chavi; Dulari; Lechari

**Book Recommended: Sahitya Say – by Senapati Dev Sharmah**

**Book Recommended as Reference: Sahitya Vidya Parikrama: Tirtha Nath Sarmah**

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**ASSAMESE (ELECTIVE)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

A.	Prose	-	30 Marks
B.	Poetry	-	30 Marks

C.	Drama	-	20 Marks
D.	History of Assamese Literature	-	20 Marks

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**Total - 100 Marks**

**A. Prose: Prabandhawali: Guwahati University**

**Pieces To Be Read:**

1. Omar Khaiyam – *by Jatindranath Dowerah*
2. Sahitya Sadhana Art aru Ruchi – *by M. Neog*
3. Madhavdevar Rachanat – *by S. N. Sarmah Dhaltiras*

**B. Poetry: Kavya**

**Pieces To Be Read:**

1. Khatasuh-Badh – *by Rama Saraswati*

**C. Drama:**

**Pieces To Be Read:**

1. Maariban Ajan – *by Sarada Bardaloi*

**D. History of Assamese Literature**

**Topics To Be Read:**

1. Assamiya Vaiwava Sahitya (Sankardev, Madhavdev and Battadev)
2. Adhunik Assamiya Sahitya (1826 – 1910) (Michanarir Avadan and General idea of Janaki writers)

**RECOMMENDED BOOKS:**

1. Assamiya Sahityar Dristipat – *by Hemanta Kumar Sarmaah*
2. Assamiya Sahityar Katha – *by Satendra Goswami*
3. Assamiya Sahityar Chamu Buranji – *by Jatindranath Goswami*

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**BENGALI (ELECTIVE)**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

1)	Novel	-	20
2)	Poetry	-	15

3)	Short Stories	-	15
4.	Grammar & Composition		
	a) Metre (Chanda)	-	10
	b) Rhetoric (Alankar)	-	10
	c) Essay	-	15
	d) Unseen	-	15

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**Total marks = 100**

**I. Novel**

**Name of the Novel:** **Datta – by Sarat Chandra Chatterjee**

**II. Poetry**

**The Prescribed Poems are:**

1. Bangla Bhasha
2. Kashiramdas
3. Yaser Mandir
4. Aswin Mas
5. Sita Devi
6. Kapolaksanad
7. Bijoya Dasami
8. Samapta

**Name of the textbook:** **Chaturdaspadī Kabitābālī – by M. S. Dutta**

**III. Short Stories**

**The Prescribed Pieces are:**

1. Ichchapuran
2. Anadhikar Prabes
3. Sadar O Andar
4. Megh O Roudra

**Name of the textbook:** **Galpaguccha (Short Story) – by Rabindranath Tagore**

**Note:** Any standard Publication of the Prescribed Books may be followed.

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**BENGALI (ELECTIVE)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

I.	Bibidha Prabandha – Bankim Chatterjee	-	20 marks
II.	Prayaschitta (Drama) Rabindranath Tagore	-	30 marks

III.	Pre- University Poetry Selection	-	30 marks
IV.	History of Bengali Literature	-	20 marks
<b>Total</b>		<b>-</b>	<b>100 marks</b>

**I. Bibidha Prabadha – Bankim Chaterjee**

**Pieces To Be Read:**

- 1) Banglar nabya Lekhadiger Prati
- 2) Banglar Itihas
- 3) Bhalobasar Atyachar
- 4) Anukaran

**II. Prayaschitta (Drama) Rabindranath Tagore**

**Portions To Be Read:**

The Whole Drama

**III. Pre – University Poetry Selection**

**Pieces To Be Read:**

- 1) Purbarang
- 2) Padukagrahan
- 3) Annandar Atmaparichaya O Bhabananda Bhabane Gaman
- 4) Dasananer Bilap
- 5) Satisunya Kailas
- 6) Prasna
- 7) Abar Asiba Phire
- 8) Sree Kshetre

**IV. History of Bengali Literature**

**Portions To Be Read:**

Charyapad theke Bharat Chandra parjanta.

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**GARO (ELECTIVE)**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

- |    |        |   |          |
|----|--------|---|----------|
| 1. | Prose  | - | 45 marks |
| 2. | Poetry | - | 35 marks |

3. Grammar - 20 marks

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**Total = 100 marks**

**I. Prose**

**Recommended Textbook:** Maniani Bidik – by Mihir N. Sangma  
Tura Book Room, Tura.

**The prescribed pieces are:**

**“Gamma Ge·ani Bidingo A·chikrangni Manianirang”**

- a) A·a o·pata ba jumang sia
- b) Rama krita ba a·a bakchata ba den·bilsia ba wa·cheng balrroa
- c) A·galmaka ba a·galmak doa
- d) A·krita ba me·jak sim·a
- e) Rongchu gala ba wanna stita guri janggia
- f) Me·gap ra·ona ba ja·pang ra·a ba ja·megapa
- g) Wangala ba wanma rongchua ba dru wanbola

**II. Poetry**

**Recommended Textbook:** Chasong Gital A·chik Poedorang  
Compiled and Edited – by Keneth M. Momin,  
Published by – Tura Book Room, Tura

**The prescribed pieces are:**

- a) Pring - S. S. Marak
- b) Nokgipani Pattia - Phoebe W. Momin
- c) Ka·saa - Keneth Momin
- d) Rasongni Kimbriona - Rev. Gilbert Marak
- e) A·chik A·song - Perkins K. Sangma

**III. Grammar**

**Pieces To Be Read:** Bak I and II

**Recommended Textbook:** A·chik Grammar – by E. G. Phillips  
Published by – Tura Book Room, Tura

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**GARO (ELECTIVE)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

- 1. Prose - 55 marks
- 2. Dakmesokani (Drama) - 30 marks

3. Garo Grammar - 15 marks

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**Total = 100 marks**

**I. PROSE**

**RECOMMENDED TEXTBOOKS:**

**A. Chigitchakgreni Nokma by Icylian R. Marak**

- Published by Tura Book Room, Tura.

**B. Maniani Bidik by Mihir N. Sangma**

- Published by Tura Book Room, Tura.

**Pieces To Be Read:**

a) Asi Malja

b) Nokpante

**II. DAKMESOKANI (ONE ACT PLAY)**

**RECOMMENDED TEXTBOOK:**

**Dak Ge-sao Dakmesokani by Viola Sonachi B. Sangma**

- Distribution: Mrs V. S. B. Sangma,  
Upper Chandmari, Tura, West Garo Hills,  
Meghalaya – 794002.

**The Prescribed Pieces are:**

a) Do-sia

b) Watanggimin Ripeng

**III. GRAMMAR**

**RECOMMENDED TEXTBOOK:**

**A-chik Grammar Bak III & IV by E. G. Phillips**

- Published by - Tura Book Room, Tura.

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**HINDI (ELECTIVE)**

**CLASS – XI**

**DISTRIBUTION OF MARKS**

1)	Nibandh	-	35
2)	Natak	-	35

3)	Upanyas	-	30
<b>Total =</b>			<b>100</b>

## 1. Nibandh

### Prescribed Pieces

1. Ruchi – Balakrishna Bhatt
2. Utsaha – Acharya Ramachandra Shukla
3. Dakshin Ganga Godavari – Kaka Kalelkar
4. Gehun Banam Gulab – Ramvriksha Banipuri
5. Ninda Rasa – Harishankar Parasai

**Book Prescribed:** **Parijat – Harbans Lal Sharma and Brijbhushan Sharma,**  
NCERT, New Delhi

## 2. Natak

**Book Prescribed:** **Ashadh Ka Ek Din – Mohan Rakesh**  
- Published by Rajpal and Sons, Delhi

**Book for reference:** **Mohan Rakesh Aur Unke Natak – Dr.Girish Rastogi**  
- Published by Lok Bharati Prakashan, Allahabad.

## 3. Upanyas

**Book Prescribed:** **Nirmala – Premchand**  
- Published by Saraswati Prakashan, Allahabad

**Book for Reference:** **Premchand Ke Upanyasa Ka Silp Vidhan**  
– Dr. Kamal Kishore Goenka.

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## **HINDI (ELECTIVE)** **CLASS – XII**

### **DISTRIBUTION OF MARKS**

I.	Prose	-	30 marks
II.	Poetry	-	30 marks



III.	Rapid Reader	-	15 marks
IV.	Essay	-	10 marks
V.	Shabda-shakti, Rasa, Alankar	-	15 marks

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**Total = 100 marks**

## **I. PROSE**

### **Pieces To Be Read:**

- |    |                                 |   |                                  |
|----|---------------------------------|---|----------------------------------|
| 1. | Premdhan Ki Smritichchaya       | - | Ramchandra Shukla                |
| 2. | Sumirini Ke Manke               | - | Pundit Chandradhar Sharma Guleri |
| 3. | Kachcha Chittha                 | - | Brajmohan Vyas                   |
| 4. | Gandhi, Nehru aur Yasser Arafat | - | Bhishm Sahini                    |
| 5. | Doosra Devdas                   | - | Mumta Kaliyan                    |

## **II. POETRY**

### **Poems To Be Read:**

- |    |                    |   |                           |
|----|--------------------|---|---------------------------|
| 1. | Devsena Ka Geet    | - | Jaishankar Prasad         |
| 2. | Geet Gane Do Mujhe | - | Suryakant Tripathi Nirala |
| 3. | Yah Deep Akela     | - | Sachchidanand Heeranand   |
|    | Vatsyayan Agya     |   |                           |
| 4. | Satya              | - | Vishnu Kher               |
| 5. | Bharat-Ram Ka Prem | - | Tulsidas                  |
| 6. | Barahmasa          | - | Malik Muhammad Jayasi     |

***Recommended Textbook for Prose & Poetry:***

**Antaraa Bhag – 2**

- NCERT Publications

## **III. Rapid Reader**

### **Pieces To Be Read:**

- |    |                  |   |                     |
|----|------------------|---|---------------------|
| 1. | Surdas Ki Jhopri | - | Premchand           |
| 2. | Aarohan          | - | Sanjeev             |
| 3. | Biskohar Ki Mati | - | Vishwanath Tripathi |
| 4. | Apna Malwa       | - | Prabhash Joshi      |

***Recommended Textbook for Rapid Reader:***

**Antaral Bhag – 2**

- NCERT Publications

## **IV. Shabda – Shakti, Rasa, Alankar**

- Shabda: Shakti – Abhida – Lakshana, Vyanjana.
- Rasa: Sthayi – bhava, Vibhava, Anubhava, Sanchari – bhava, Rasa – Nishpatti
- Alankar: Anuprasa, Yamak, Shlesha, Uparna, Roopak, Utpreksha, Drishtanth, Manaveekaran.

***Recommended Textbook:***    **Sahitya Shastra Parichaya – Prem Swaroop Gupta**  
- NCERT Publications.

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**KHASI (ELECTIVE)**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

i)	Elementary Theory and Criticism	-	20
ii)	History of Khasi Literature	-	30

iii)	Poetry	-	30
iv)	Short Story	-	20

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**Total marks = 100**

**1. Elementary Theory and Criticism:**

**Textbook prescribed - Ki Snap Ka Bishar Bniah**  
- by H. W. Sten, B. L. Swer and B. War

**Pieces to be read – All**

**2. History of Khasi Literature**

**Textbook prescribed - Ka History Ka Thoh Ka Tar (Bynta I)**  
- by R. S. Lyngdoh

**Pieces To Be Read – All**

**3. Poetry:**

**Textbooks Prescribed -**

a) **Ka Snap U Longshuwa** – by Pascal Malngiang

**Pieces To Be Read -** Chapter 17: Shong Ruh Jhieh  
Chapter 18: U Lok Bashisha

b) **Ka Marynthing Rupa** – by L. G. Shullai

**Pieces To Be Read -**

- i. Pumpum Tdem Dewiong, Diesel & Bad Duma
- ii. Talawiar U Sohpetbneng

**4. Short Story:**

**Textbooks Prescribed - Shithiar Ki Khana Lyngkot** – by Paul Lyngdoh

**Pieces To Be Read -**

- i) Mab Bad Klet
- ii) U Nongialam
- iii) U Thlen

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**KHASI (ELECTIVE)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

1) Theory and Criticism	-	10
2) Poetry	-	30

3) Drama	-	25
4) Novel	-	25
5) Folklore	-	10

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**Total = 100 marks**

**1. THEORY AND CRITICISM**

**Recommended Textbook**

Katto Katne Shaphang Ka Sonnet  
by B. L. Swer

**Pieces To Be Read**

Chapter 1 and Chapter 2

**2. POETRY**

**Recommended Textbooks**

i) Na Dymmiew Tngen by Edward Dkhar -

**Pieces To Be Read**

Chapter 3: “Ka Snap B’la Jah”  
Chapter 12: “Phi Dei Ma Phi”

ii) Ha Ki Sur Ka Poetry by S. S. Majaw -

Chapter: “Ka Shnong Jingthala”

iii) Ki Sur Shongsbai by K. W. Nongrum -

Chapter: “Ka Saia Nongrum”

**3. DRAMA**

**Recommended Textbook**

- Ka Sohpdung Ki Jingphohsniew by W. D. Jyrwa.

**4. NOVEL**

**Recommended Textbook**

- U Klop by C. Wolflang

**5. FOLKLORE**

**Recommended Textbook**

Ki Khana Nongtymmen Na Ki  
Tnum Soppring U 7 Trep  
by E. W. Dkhar

**Pieces To Be Read**

Chapter II: “Ka Panshandi”  
Chapter XXXII: “U Sim Tyngwieng”  
Chapter XXXVI: “Ka Sunapani”  
Chapter XXXVIII: “Tiew Lalyngngi Pep Shad”.

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**MIZO (ELECTIVE)**

**CLASS – XI**

**DISTRIBUTION OF MARKS**

I.	Hla (Poetry)	-	25 marks
II.	Thu (Prose)	-	25 marks

III.	Thawnthu (Short Story)	-	25 marks
IV.	Lemchan (Plays)	-	25 marks

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**Total = 100 marks**

**I. Hla (Poetry)**

**Pieces To Be Read:**

1.	Zo Hnam Hla	-	Thanga
2.	Damlai Tuipui Fawn	-	C. Z. Huala
3.	Awmkhawmna In Hlui	-	Hrawva
4.	Kawmu	-	Chhuana
5.	Pathian Ralthuam Hmangtute Chu	-	Saihnuna
6.	Fur	-	Lalthangfala Sailo
7.	German Run Zai		
8.	Abor Run Zai		
9.	Japan Ral Len Hla		
10.	Kumsul Liam Hnu	-	C. Lalkhawliana
11.	Tan Hla	-	R. L. Kamlala
12.	Lenna Khua Hmun Lo	-	Lalzova
13.	Mi Zawn Inchuh	-	James Dokhuma
14.	Ziak Loh Zirlai	-	Laltluangliana Khiangte
15.	Thlawhhma Hla	-	Romani

**II. Thu (Prose)**

**Pieces To Be Read:**

1.	Hmangaihna	-	Lalhmingliana Saiawi
2.	Mizo Thu Leh Hla Mawi	-	C. Chhuanvawra
3.	Hri Dai Theu	-	C. Vanlallawma
4.	Thalaite Intodelhna	-	P. C. Biaksiama
5.	Nghah	-	Darchhawna
6.	Mizo Thangval Rual Leh Japan Ral	-	Zokima
7.	Mizo Tawng Khawvel	-	C. Sangzuala
8.	Zin Kawng Thim	-	R. L. Thanmawia
9.	Fam Ta Lo Chu	-	James Dokhuma
10.	Mizo Thu Leh Hla Tobul	-	B. Lalthangliana

**III. Thawnthu (Short Story)**

**Pieces To Be Read:**

1.	Eng nge Pawi?	-	Lalzuithanga
2.	Leitlang Dingdi	-	C. Thuamluaia

**IV. Lemchan (Plays)**

**Pieces To Be Read:**

- |    |                      |   |                  |
|----|----------------------|---|------------------|
| 1. | Hausakna Nun Dik Tak | - | Chawngzika       |
| 2. | Diktea Vahvaihna     | - | C. Lalsiamthanga |

**Textbook Prescribed:**

**Mizo – XI (Elective) – by MBSE**

- Printed by Milan Press,  
Zodin Square, Aizawl – 796001.

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**MIZO (ELECTIVE)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

- |                 |   |          |
|-----------------|---|----------|
| I. Hla (Poetry) | - | 25 marks |
| II. Thu (Prose) | - | 25 marks |

III. Fiction	-	25 marks
IV. Drama	-	25 marks

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**Total = 100 marks**

**I. HLA (POETRY)**

**Pieces to be read:**

1.	Chai Hla	-	Hla 8
2.	Chawngchen Zai	-	Hla 8
3.	Ram Hmangaihna hla	-	R. L. Kamlaha
4.	Zoram Ka Ram	-	Kaphleia
5.	Parnawi Thang Vulna	-	Liandala
6.	Khuanuleng Chawi	-	Hrawva
7.	Kan Sutpui Ber	-	R. L. Thanmawia
8.	Ka Nu	-	P. S. Chongthu
9.	Chunnu	-	Biakliana
10.	Chul Ram Ka Thlir	-	C. Zachhungna
11.	Nungchate	-	R. Rochungnunga
12.	Zun	-	C. Chhuanvawra
13.	Pum	-	James Dokhuma
14.	Ka Hmaah Luiral Khaw Mawi	-	Zumi
15.	Ka Awmkhawhar Changin	-	Zasiama

**II. THU (PROSE)**

**Pieces to be read:**

1.	Mi Puitling	-	Lalena
2.	Nun Puitling	-	C. Vanlallawma
3.	Awithangpa Hla Phuah Thiamzia	-	R. Lallianzuala
4.	Mizo Zai Leh Hla	-	C. Lalsiamthanga
5.	Mizo, Hnam Leh Sakhua	-	Lal Rinawma
6.	Mi Huaissen	-	J. Malsawma
7.	Nihawi Par	-	Vanneihthuanga
8.	Duhthusam	-	P. L. Liandinga
9.	Kan Nun Khuarei A Chang Tur Hi	-	C. Thuamluaia
10.	Zirlaite Hnena Thuchah	-	Zikpuii pa
11.	Mizo Arsi Hriat Dan	-	Liangkhaia
12.	America Ram Ha Hmuh Dan	-	R. Vanlawma

**III. FICTION**

**Pieces to be read:**

1.	Lal Hlau Lo Thi	-	Lalzuia Colney
2.	Lallianvunga Vanglai	-	H. Thangkhuma

**IV. DRAMA**

**Pieces to be read:**

- |    |                         |   |                          |
|----|-------------------------|---|--------------------------|
| 1. | Tlai ngai lo Pathian    | - | Liansailova              |
| 2. | The Taming of the Shrew | - | P. L. Liandinga (Lehlin) |

**RECOMMENDED TEXTBOOKS:**

- |    |   |        |   |
|----|---|--------|---|
| 1. | <b>Mizo – XII (Elective) by MBSE</b>  | -      | Baptist Literature Service<br>Serkawn, Lunglei. |
| 2. | <b>The Taming of the Shrew (Drama) -<br/>Translated by P. L. Liandianga</b> | - do - |   |
| 3. | <b>Lal Hlau Lo Thi (Fiction)<br/>by Lalzuia Colney</b>                      | -      | - do -  |

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**NEPALI (ELECTIVE)**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

Literature	-	60 marks
Grammar	-	15 marks



Reading Unseen	-	10 marks
Composition & Writing	-	15 marks

**Total = 100 marks**

**A. Poetry (20 marks)**

**Pieces To Be Read:**

**Writer**

- |    |                 |   |                       |
|----|-----------------|---|-----------------------|
| 1. | Pinjara Ko Suga | - | Lekh Nath Paudel      |
| 2. | Udbodhan        | - | Dharndhar Koirala     |
| 3. | Jabiko Chara    | - | Uddha Prasad Mishra   |
| 4. | Manish Chainan  | - | Siddhicharan Shrestha |
| 5. | Nirjhar         | - | Narendra Kumai        |
| 6. | Bhikhari        | - | Laxmi Prasad Deokota  |

**B. Prose (Story) (20 marks)**

**Pieces To Be Read:**

**Writer**

- |    |               |   |                          |
|----|---------------|---|--------------------------|
| 1. | Sahid         | - | Guru Prasad Mainali      |
| 2. | Machha Ko Mol | - | Shiv Kumar Rai           |
| 3. | Tangan Ghoda  | - | Balkrishna Sam           |
| 4. | Pavitra       | - | Biswessar Prasad Koirala |

**C. Prose (Essay) (20 marks)**

**Pieces To Be Read:**

**Writer**

- |    |  |   |                   |
|----|--|---|-------------------|
| 1. | Bhani Bisauni Thego                    | - | Dr. Jagat Chettri |
| 2. | Birsiyeko Sanskriti                    | - | M. M. Gurung      |
| 3. | Hamro Rashtriya Chad Ra Sayapatri Phul | - | Bishnu Ram Rai    |
| 4. | Lok Sahityama Sawai Ko Sthan           | - | Shiv Kumar Rai    |

**Textbook Prescribed:**

1. **Uchha Madhyamik Nepali Sahitya**  
by Textbook Committee (Nepali), Shillong – 2.

**D. Grammar (15 marks)**

**Chapters:** Paryayevachi Shabda, Viparitarthak Shabda, Anekarthak Shabda, Saar Shabda, Shabda Suddhi Prakriya

**Essay Writing:** Atmaparak, Vastuparak

**Letter Writing:** Vyaktigat, Daftari, Smarak Patra

**Reading Unseen: (10 marks)**

**(i) Composition and Writing (15 marks)**

**Textbook Prescribed:**

1. **Madhyamik Nepali Vyakaran Ra Rachana**  
by Shree Raj Prakashan, Darjeeling

2. **Ramro Rachana Mitho Nepali**  
by Krishna Prasad Parajuli  
- Sahayogi Press, Kathmandu

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**NEPALI (ELECTIVE)**  
**CLASS – XII**

**DISTRIBUTION OF MARKS**

Literature	-	60 marks
Grammar	-	15 marks

Reading Unseen	-	10 marks
Composition & Writing	-	15 marks

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**Total = 100 marks**

**A. NOVEL (30 marks)**

**Pieces To Be Read:**

Basai

**Writer**

- Lil Bahadur Chettri  
- Sajha Prakashan, Kathmandu

**B. DRAMA (30 marks)**

**Pieces To Be Read:**

Masan

**Writer**

- Gopal Prasad Rimal  
- Sajha Prakashan, Kathmandu

**C. GRAMMAR (15 marks)**

**Pieces To Be Read:**

**1. Ramro Rachana Mitho Nepali**

by Krishna Prasad Parajuli

- Sahayogi Press, Kathmandu

**2. Madhyamik Nepali Vyakaran Ra Rachana**

by Shree Raj Prakashan, Darjeeling

Chapters: Chanda Parichaya, Alankar, Wachya, Shabdabibhaho, Karak Ra Vivakti,  
Ras Parichaya

**D. COMPOSITION & WRITING**

**(i) Letter Writing and Essay Writing**

**(15 marks)**

**(ii) Reading Unseen**

**(10 marks)**

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**MATHEMATICS**

**CLASS – XI**

**COURSE STRUCTURE**

**One Paper**

**Three Hours**

**Max. Marks 100**

**Units**

**Marks**

I.	Sets and Functions	29
II.	Algebra	37
III.	Coordinate Geometry	13
IV.	Calculus	06
V.	Mathematical Reasoning	03
VI.	Statistics and Probability	12

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**Total Marks = 100**

## **Unit I: Sets and Functions**

### **1. Sets: (12 Periods)**

Sets and their representations. Empty set. Finite & Infinite sets. Equal sets. Subsets. Subsets of the set of real numbers especially intervals (with notations). Power set. Universal set. Venn diagrams. Union and Intersection of sets. Difference of sets. Complement of a set.

### **2. Relations & Functions: (14 Periods)**

Ordered pairs, Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the reals with itself (upto  $\mathbb{R} \times \mathbb{R} \times \mathbb{R}$ ). Definition of relation, pictorial diagrams, domain, codomain and range of a relation. Function as a special kind of relation from one set to another. Pictorial representation a function, domain, co-domain & range of a function. Real valued function of the real variable, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum and greatest integer functions with their graphs. Sum, difference, product and quotients of functions.

### **3. Trigonometric Functions: (18 Periods)**

Positive and negative angles. Measuring angles in radians & in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity  $\sin^2 x + \cos^2 x = 1$ , for all  $x$ . Signs of trigonometric functions and sketch of their graphs. Expressing  $\sin(x+y)$  and  $\cos(x+y)$  in terms of  $\sin x$ ,  $\sin y$ ,  $\cos x$  &  $\cos y$ . Deducing the identities like following:

Identities related to  $\sin 2x$ ,  $\cos 2x$ ,  $\tan 2x$ ,  $\sin 3x$ ,  $\cos 3x$  and  $\tan 3x$ . General solution of trigonometric equations of the type  $\sin \theta = \sin \alpha$ ,  $\cos \theta = \cos \alpha$  and  $\tan \theta = \tan \alpha$ . Proofs and simple applications of sine and cosine formulae.

## **Unit II: Algebra**

**1. Principle of Mathematical Induction: (06 Periods)**

Processes of the proof by induction, motivating the application of the method by looking at natural numbers as the least inductive subset of real numbers. The principle of mathematical induction and simple applications.

**2. Complex Numbers and Quadratic Equations:**

Need for complex numbers, especially  $\sqrt{-1}$ , to be motivated by inability to solve every quadratic equation. Brief description of algebraic properties of complex numbers. Argand plane and polar representation of complex numbers. Statement of Fundamental theorem of algebra, solution of quadratic equations in the complex number system. Square root of a complex number, cube roots of unity.

**3. Linear Inequalities:**

Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line. Graphical solution of linear inequalities in two variables. Solution of system of linear inequalities in two variables – graphically.

**4. Permutations & Combinations: I**

Fundamental principle of counting. Factorial  $n$ . Permutations and combinations, I derivation of formulae and their connections, simple applications.

**5. Binomial Theorem:**

History, statement and proof of the binomial theorem for positive integral indices. Pascal's triangle, general and middle term in binomial expansion, simple applications.

**6. Sequence and Series:**

Sequence and Series. Arithmetic progression (A. P.), arithmetic mean (A. M.)... Geometric progression (G. P.), general term of a G. P., sum of  $n$  terms of a G. P., geometric mean (G. M.), relation between A. M. and G. M. Sum to  $n$  terms of the special series:  $\sum n$ ,  $\sum n^2$  and  $\sum n^3$ .

**7. Logarithms:**

Meanings of Logarithm of a number to a given base  $a$ ,  $a > 0$ ,  $a \neq 1$ , Laws of Logarithms including change of base, common logarithm (Base 10), characteristic and mantissa, antilogarithms, logarithms tables.

**Unit III: Coordinate Geometry**

**1. Straight Lines:**

Brief recall of 2D from earlier classes. Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axes, point-slope form, slope-intercept form, two-point form, intercepts form and normal form. General equation of a line. Distance of a point from a line.

## **2. Conic Sections:**

Sections of a cone: circles, ellipse, parabola, hyperbola, a point, a straight line and pair of intersecting lines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.

## **3. Introduction to Three-dimensional Geometry I**

Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points and section formula.

### **Unit IV: Calculus**

#### **1. Limits and Derivatives: (18 Periods)**

Derivative introduced as rate of change both as that of distance function and geometrically, intuitive idea of limit. Definition of derivative, relate it to slope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.

### **Unit V: Mathematical Reasoning**

#### **1. Mathematical Reasoning: (08 Periods)**

Mathematically acceptable statements. Connecting words/phrases – consolidating the understanding of “if and only if (necessary and sufficient) condition”, “implies”, “and/or”, “implied by”, “and”, “or”, “there exists” and their use through variety of examples related to real life and Mathematics. Validating the statements involving the connecting words-difference between contradiction, converse and contrapositive.

### **Unit VI: Statistics & Probability**

#### **1. Statistics: (10 Periods)**

Measure of dispersion; mean deviation, variance and standard deviation of ungrouped/grouped data. Analysis of frequency distributions with equal means but different variances.

#### **2. Probability: (10 Periods)**

Random experiments: outcomes, sample spaces (set representation). Events: occurrence of events, ‘not’, ‘and’ and ‘or’ events, exhaustive events, mutually exclusive events Axiomatic (set theoretic) probability, connections with the theories of earlier classes. Probability of an event, probability of ‘not’, ‘and’ & ‘or’ events.

### **Book Recommended:**

### **Mathematics XI**

Published by – M/S Bharati Bhavan,  
Publishers & Distributors, 10 Raja Subodh Mallick Square,  
Kolkata – 700013.

***Reference Books:***

- **A Textbook of Mathematics for Class XI**
  - Published by Tulip Publications Pvt. Ltd.,
  - C-21, Jhandewalan F. F. Complex, Rani Jhansi Road,
  - New Delhi – 110005.

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**MATHEMATICS**  
**CLASS – XII**

**One Paper**

**Three hours**

**Marks: 100**

**Units**

I. Relations and Functions

**Marks**

08

II.	Algebra	14
III.	Calculus	50
IV.	Vectors and Three – Dimensional Geometry	14
V.	Linear Programming	06
VI.	Probability	08

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**Total = 100**

## **UNIT I: RELATIONS AND FUNCTIONS**

- 1. Relations and Functions: (10 Periods)**  
Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions, composite functions, inverse of a function. Binary operations.
- 2. Inverse Trigonometric Functions: (12 Periods)**  
Definition, range, domain, principal value branches. Graphs of inverse trigonometric functions. Elementary properties of inverse trigonometric functions.

## **UNIT II: ALGEBRA**

- 1. Matrices: (18 Periods)**  
Concept, notation, order, equality, types of matrices, zero matrix, transpose of a matrix, symmetric and skew symmetric matrices. Addition, multiplication and scalar multiplication of matrices, simple properties of addition, multiplication and scalar multiplication. Non-commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Concept of elementary row and column operations. Invertible matrices and proof of the uniqueness of inverse, if it exists; (Here all matrices will have real entries).
- 2. Determinants: (20 Periods)**  
Determinant of a square matrix (up to  $3 \times 3$  matrices), properties of determinants, minors, cofactors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.

## **UNIT III: CALCULUS**

- 1. Continuity and Differentiability: (18 Periods)**  
Continuity and differentiability, derivative of composite functions, chain rule, derivatives of inverse trigonometric functions, derivative of implicit function. Concept of exponential and logarithmic functions and their derivative. Logarithmic differentiation. Derivative of functions expressed in parametric



forms. Second order derivatives. Rolle's and Lagrange's Mean Value Theorems (without proof) and their geometric interpretations.

- 2. Applications of Derivatives: (10 Periods)**  
Applications of derivatives ; rate of change, increasing/decreasing functions, tangents & normals, approximation, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real-life situations).

- 3. Integrals: (20 Periods)**  
Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, only simple integrals of the type

to be evaluated.

Definite integrals as a limit of a sum. Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals.

- 4. Applications of the Integrals: (10 Periods)**  
Applications in finding the area under simple curves, especially lines, areas of circles/parabolas/ellipses (in standard form only), area between the two above said curves (the region should be clearly identifiable).

- 5. Differential Equations: (10 Periods)**  
Definition, order and degree, general and particular solutions of a differential equation. Formation of differential equation whose general solution is given. Solution of differential equations by method of separation of variables, homogenous differential equations of first order and first degree. Solutions of linear differential equation of the type:

$$+ p(x)y = q(x), \text{ where } p(x) \text{ and } q(x) \text{ are functions of } x.$$

#### **UNIT IV: VECTORS AND THREE-DIMENSIONAL GEOMETRY**

- 1. Vectors: (12 Periods)**  
Vectors and scalars, magnitude and direction of a vector. Direction cosines/ratios of vectors. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position

vector of a point dividing a line segment in a given ratio. Scalar (dot) product of vectors, projection of a vector on a line. Vector (cross) product of vectors.

**2. Three – dimensional Geometry: (12 Periods)**

Direction cosines/ratios of a line joining two points. Cartesian and vector equation of a line, coplanar and skew lines, shortest distance between two lines. Cartesian and vector equation of a plane. Angle between (i) two lines, (ii) two planes, (iii) a line and a plane. Distance of a point from a plane.

**UNIT V: LINEAR PROGRAMMING**

**1. Linear Programming: (12 Periods)**

Introduction, definition of related terminology such as constraints, objective function, optimization, different types of linear programming (L. P.) problems, mathematical formulation of L. P. problems, graphical method of solution for problems in two variables, feasible and infeasible regions, feasible and infeasible solutions, optional feasible solutions (up to three non-trivial constraints).

**UNIT VI: PROBABILITY**

**1. Probability: (18 Periods)**

Multiplication theorem on probability. Conditional probability, independent events, total probability, Baye's theorem, Random variable and its probability distribution, mean and variance of haphazard variable. Repeated independent (Bernoulli) trials and Binomial distribution.

**APPENDIX:-**

**1. Proofs in Mathematics:**

Through a variety of examples related to mathematics & already familiar to the learner, bring out different kinds of proofs: direct, contrapositive, by contradiction, by counter-example.

**2. Mathematical Modelling:**

Modelling real-life problems where many constraints may really need to be ignored (continuing from Class X however, now the models concerned would use techniques/results of matrices, calculus and linear programming.

**RECOMMENDED TEXTBOOK:**

**Senior Secondary School Mathematics for Class XII**

- Published by Bharati Bhawan,  
10 Raja Subodh Mallick Square,  
Kolkata – 700013.

### REFERENCE BOOKS:

1. Modern abc of Mathematics Class XII by *J. P. Mohindru, Modern Publishers.*
2. Mathematics, A Textbook for Class XII (Part II) – *NCERT.*
3. Mathematics for Class XII (Vol II) by *Babita Tyagi.*
4. Mathematics for Class XII by *H. K. Dass and Rama Verma, S. Chand & Co. Ltd.*
5. Oxford Mathematics (Part A & B) by *A. K. Roy, Oxford University Press.*
6. Saraswati Mathematics for Class XII (1 – 2) by *Saraswati House Pvt. Ltd.*

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### PHYSICS CLASS – XI

#### DISTRIBUTION OF MARKS

Theory	-	70 Marks
Practical	-	30 Marks

## **COURSE STRUCTURE**

**One Paper**

**Three Hours**

**Max. Marks 100**

		<u><b>Weightage</b></u>
Unit I	Physical World & Measurement	03
Unit II	Kinematics	10
Unit III	Laws of Motion	10
Unit IV	Work, Energy and Power	06
Unit V	Motion of System of particles & Rigid Body	06
Unit VI	Gravitation	05
Unit VII	Properties of Bulk Matter	10
Unit VIII	Thermodynamics	05
Unit IX	Behaviour of Perfect Gas & Kinetic Theory of gases	05
Unit X	Oscillations & Waves	10
<b>Total</b>		<b>70</b>

### **Unit I: Physical World and Measurement**

**(10 Periods)**

Physics – scope and excitement; nature of physical laws; Physics, technology and society.

Need for Measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures.

Dimensions of physical quantities, dimensional analysis and its applications.

### **Unit II: Kinematics**

**(30 Periods)**

Frame of reference. Motion in a straight line: Position-time graph, speed and velocity.

Uniform and non-uniform motion, average speed and instantaneous velocity.

Uniformly accelerated motion, velocity-time, position-time graphs, relations for uniformly accelerated motion (graphical treatment).

Elementary concepts of differentiation and integration for describing motion.

Scalar and vector quantities: Position and displacement vectors, general vectors and notation, equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. Relative velocity.

Unit vector; Resolution of a vector in a plane – rectangular components. Motion in a plane. Cases of uniform velocity and uniform acceleration-projectile motion. Uniform circular motion.

### **Unit III: Laws of Motion**

**(16 Periods)**

Intuitive concept of force. Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications.

Equilibrium of concurrent forces. Static and kinetic friction, laws of friction, rolling friction.

Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on level circular road, vehicle on banked road).

### **Unit IV: Work, Energy and Power**

**(16 Periods)**

Scalar product of vectors. Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power.

Notion of potential energy, potential energy of a spring, conservative forces: conservation of mechanical energy (kinetic and potential energies); non-conservative forces: elastic and inelastic collisions in one and two dimensions.

### **Unit V: Motion of System of Particles and Rigid Body**

**(18 Periods)**

Centre of mass of a two-particle system, momentum conservation and centre of mass motion. Centre of mass of a rigid body; centre of mass of uniform rod.

Vector product of vectors; moment of a force, torque, angular momentum, conservation of angular momentum with some examples.

Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions; moment of inertia, radius of gyration.

Values of moments of inertia for simple geometrical objects (no derivation). Statement of parallel and perpendicular axes theorems and their applications.

### **Unit VI: Gravitation**

**(14 Periods)**

Kepler's laws of planetary motion. The universal law of gravitation.

Acceleration due to gravity and its variation with altitude and depth.

Gravitational potential energy; gravitational potential. Escape velocity. Orbital velocity of a satellite. Geo-stationary satellites.

### **Unit VII: Properties of Bulk Matter**

**(28 Periods)**

Elastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity.

Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes). Effect of gravity on fluid pressure.

Viscosity, Stokes' law, terminal velocity, Reynold's number, streamline and turbulent flow. Bernoulli's theorem and its applications.

Surface energy and surface tension, angle of contact, application of surface tension ideas to drops, bubbles and capillary rise.

Heat, temperature, thermal expansion; specific heat – calorimetry; change of state – latent heat.

Heat transfer-conduction, convection and radiation, thermal conductivity, Newton's law of cooling.

### **Unit VIII: Thermodynamics**

**(12 Periods)**

Thermal equilibrium and definition of temperature (zeroth law of thermodynamics). Heat, work and internal energy. First law of thermodynamics.

Second law of thermodynamics: reversible and irreversible processes. Heat engines and refrigerators.

### **Unit IX: Behaviour of Perfect Gas and Kinetic Theory**

**(8 Periods)**

Equation of state of a perfect gas, work done on compressing a gas.

Kinetic theory of gases – assumptions, concept of pressure. Kinetic energy and temperature; rms speed of gas molecules; degrees of freedom, law of equipartition of energy (statement only) and application to specific heats of gases; concept of mean free path, Avogadro's number.

### **Unit X: Oscillations and Waves**

**(28 Periods)**

Periodic motion – period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion (S. H. M) and its equation; phase; oscillations of a spring-restoring force and force constant; energy in S. H. M.-kinetic and potential

energies; simple pendulum-derivation of expression for its time period; free, forced and damped oscillations (qualitative ideas only), resonance.

Wave motion. Longitudinal and transverse waves, speed of wave motion. Displacement relation for a progressive wave. Principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats, Doppler effect.

## PRACTICALS

**Note:** Every student will perform 10 experiments (5 from each section) and 8 activities (4 from each section) during the academic year.

Two demonstration experiments must be performed by the teacher with participation of students. The students will maintain a record of these demonstration experiments. Schools are advised to see the guidelines for evaluation in practicals for Class XII. Similar pattern may be followed for Class XI.

## SECTION A

### *Experiments*

1. Use of Vernier Callipers
  - (i) to measure diameter of a small spherical/cylindrical body.
  - (ii) to measure dimensions of a given regular body of known mass and hence find its density.
  - (iii) to measure internal diameter and depth of a given beaker/calorimeter and hence find its volume.
2. Use of screw gauge
  - (i) to measure diameter of a given wire, (ii) to measure thickness of a given sheet (iii) to measure volume of an irregular lamina
3. To determine radius of curvature of a given spherical surface by a spherometer.
4. To find the weight of a given body using parallelogram law of vectors.
5. Using a simple pendulum, plot L-T and L-T<sup>2</sup> graphs. Hence find the effective length of second's pendulum using appropriate graph.
6. To study the relationship between force of limiting friction and normal reaction and to find co-efficient of friction between a block and a horizontal surface.
7. To find the downward force, along an inclined plane, acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination by plotting graph between force and  $\sin\theta$ .

### *Activities*

1. To make a paper scale of given least count, e.g. 0.2 cm, 0.5 cm.
2. To determine mass of a given body using a metre scale by principle of moments.
3. To plot a graph for a given set of data, with proper choice of scales and error bars.
4. To measure the force of limiting friction for rolling of a roller on a horizontal plane.
5. To study the variation in range of a jet of water with angle of projection.
6. To study the conservation of energy of a ball rolling down on inclined plane (using a double inclined plane).
7. To study dissipation of energy of a simple pendulum by plotting a graph between square of amplitude and time.

## **SECTION B**

### ***Experiments***

1. To determine Young's modulus of elasticity of the material of a given wire.
2. To find the force constant of a helical spring by plotting graph between load and extension.
3. To study the variation in volume with pressure for a sample of air at constant temperature by plotting graphs between P and V, and between P and  $1/V$ .
4. To determine the surface tension of water by capillary rise method.
5. To determine the coefficient of viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body.
6. To study the relationship between the temperature of a hot body and time by plotting a cooling curve.
7. (i) To study the relation between frequency and length of a given wire under constant tension using sonometer.  
(ii) To study the relation between the length of a given wire and tension for constant frequency using sonometer.
8. To find the speed of sound in air at room temperature using a resonance tube by two-resonance positions.
9. To determine specific heat of a given (i) solid (ii) liquid, by method of mixtures.

### ***Activities***

1. To observe change of state and plot a cooling curve for molten wax.
2. To observe and explain the effect of heating on a bi-metallic strip.
3. To note the change in level of liquid in a container on heating and interpret the observations.
4. To study the effect of detergent on surface tension by observing capillary rise.



5. To study the factors affecting the rate of loss of heat of a liquid.
6. To study the effect of load on depression of a suitably clamped metre scale loaded (i) at its end (ii) in the middle.

**Book Recommended:**

**Textbook of Physics XI**

- Published by S. Chand & Company Ltd.,  
Publishers & Distributors (An ISO 9001; 2000 company)  
Dilip Commercial 1<sup>st</sup> Floor, M. N. Road, Pan Bazar,  
Guwahati – 781001.

***Reference Books:***

1. Modern's abc of Physics Vol. I (Class XI) by S. K. Gupta – Published by Modern Publisher, New Delhi.
2. Comprehensive Physics (Class XI) by J. N. Jaiswal, Laxmi Publication, New Delhi.
3. Pradeep's Fundamental Physics (Class XI) by K. L. Gogia, Pradeep Publication, Jalandhar.
4. Comprehensive Practical Physics (Class XI) – Published by Laxmi Publication, New Delhi.
5. APC Laboratory Manual Physics (Class XI) – Published by Arya Publication, New Delhi.

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**PHYSICS**  
**CLASS – XII**

**COURSE STRUCTURE**  
**(THEORY)**

**One Paper****Time: 3 Hours****Marks: 70**

				Marks
Unit I	Electrostatics	-	-	8
Unit II	Current Electricity	-	-	8
Unit III	Magnetic effect of current & Magnetism	-	-	8
Unit IV	Electromagnetic Induction and Alternating current	-	-	8
Unit V	Electromagnetic Waves	-	-	3
Unit VI	Optics	-	-	10
Unit VII	Dual Nature of Matter and Radiation	-	-	4
Unit VIII	Atoms and Nuclei	-	-	8
Unit IX	Electronic Devices	-	-	8
Unit X	Communication Systems	-	-	5
<b>Total =</b>				<b>70</b>

**UNIT I: ELECTROSTATICS****(25 Periods)**

Electric Charges; Conservation of charge, Coulomb's law-force between two point charges, forces between multiple charges; superposition principle and continuous charge distribution.

Electric field, electric field due to a point charge, electric field lines; electric dipole, electric field due to a dipole; torque on a dipole in uniform electric field.

Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside.)

Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two point charges and of electric dipole in an electrostatic field.

Conductor and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarization, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor. Van de Graaff generator.

**UNIT II: CURRENT ELECTRICITY****(22 Periods)**

Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity

and conductivity. Carbon resistors, colour code for carbon resistors; series and parallel combinations of resistors; temperature dependence of resistance.

Internal resistance of a cell, potential difference and emf of a cell, combination of cell in series and in parallel.

Kirchhoff's laws and simple applications. Wheatstone bridge, metre bridge.

Potentiometer – principle and its applications to measure potential difference and for comparing emf of two cells; measurement of internal resistance of a cell.

### **UNIT III: MAGNETIC EFFECTS OF CURRENT AND MAGNETISM**

**(25 Periods)**

Concept of magnetic field, Oersted's experiment.

Biot – Savart law and its application to current carrying circular loop.

Ampere's law and its applications to infinitely long straight wire, straight and toroidal solenoids.

Force on a moving charge in uniform magnetic and electric fields. Cyclotron.

Force on a current-carrying conductor in a uniform magnetic field. Force between two parallel current-carrying conductors-definition of ampere. Torque experienced by a current loop in uniform magnetic field; moving coil galvanometer – its current sensitivity and conversion to ammeter and voltmeter.

Current loop as a magnetic dipole and its magnetic dipole moment. Magnetic dipole moment of a revolving electron. Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; Earth's magnetic field and magnetic elements. Para-, dia- and ferro – magnetic substances, with examples. Electromagnets and factors affecting their strengths. Permanent magnets.

### **UNIT IV: ELECTROMAGNETIC INDUCTION AND ALTERNATING CURRENTS**

**(20 Period)**

Electromagnetic induction; Faraday's law, induced emf and current; Lenz's Law, Eddy currents. Self and mutual inductance.

Need for displacement current.

Alternating currents, peak and rms value of alternating current/voltage; reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit, resonance; power in AC circuits, wattless current.

AC generator and transformer.

## **UNIT V: ELECTROMAGNETIC WAVES**

**(4 Periods)**

Electromagnetic waves and their characteristics (qualitative ideas only). Transverse nature of electromagnetic waves.

Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X – rays, gamma rays) including elementary facts about their uses.

## **UNIT VI: OPTICS**

**(30 Periods)**

Reflection of light, spherical mirrors, mirror formula. Refraction of light, total internal reflection and its applications, optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lens-maker's formula. Magnification, power of a lens, combination of thin lenses in contact. Refraction and dispersion of light through a prism.

Scattering of light – blue colour of the sky and reddish appearance of the sun at sunrise and sunset.

Optical instruments: Human eye, image formation and accommodation, correction of eye defects (myopia, hypermetropia, presbyopia and astigmatism) using lenses. Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

Wave optics: wave front and Huygens ' Principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygens ' Principle. Interference, Young's double slit experiment and expression for fringe width, coherent sources and sustained interference of light. Diffraction due to a single slit, width of central maximum. Resolving power of microscopes and astronomical telescopes. Polarisation, plane polarised light; Brewster's law, uses of plane polarised light and Polaroids.

## **UNIT VII: DUAL NATURE OF MATTER AND RADIATION**

**(8 Periods)**

Dual nature of radiation. Photoelectric effect, Hertz and Lenard's observations; Einstein's photo-electric equation-particle nature of light.

Matter waves-wave nature of particles, de Broglie relation. Davisson-Germer experiment.

## **UNIT VIII: ATOMS & NUCLEI**

**(18 Periods)**

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum.

Composition and size of nucleus, atomic masses, isotopes, isobars; isotones. Radioactivity-alpha, beta and gamma particles/rays and their properties; radioactive decay law. Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission and fusion.

#### **UNIT IX: ELECTRONIC DEVICES**

**(18 Periods)**

Semiconductors; semiconductor diode - I-V characteristics in forward and reverse bias, diode as a rectifier; I-V characteristics of LED, photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator. Junction transistor, transistor action, characteristics of a transistor; transistor as an amplifier (common emitter configuration) and oscillator. Logic gates (OR, AND, NOT, NAND and NOR). Transistor as a switch.

#### **UNIT X: COMMUNICATION SYSTEMS**

**(10 Periods)**

Elements of a communication system (block diagram only); bandwidth of signals (speech, TV and digital data); bandwidth of transmission medium. Propagation of electromagnetic waves in the atmosphere, sky and space wave propagation. Need for modulation. Production and detection of an amplitude-modulated wave.

### **PHYSICS PRACTICALS 2009**

**Time: 4 hours**

**Total Marks: 30**

**Pass Marks: 9**

**Note A:** Every student will perform at least 10 Experiments (a minimum of 5 Experiments from each Section) and at least 8 activities (a minimum of 4 activities from each section) during the academic year.

**B:** Evaluation Scheme for Practical Examination:

<b>One experiment from any one section</b>	<b>-</b>	<b>12 marks</b>
<b>One activity from any one section</b>	<b>-</b>	<b>7 marks</b>
<b>Practical Record of experiment and activity</b>	<b>-</b>	<b>6 marks</b>
<b>Viva on experiment and activity</b>	<b>-</b>	<b>5 marks</b>

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<b>Total</b>	<b>30 marks</b>
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#### **SECTION A**

**Experiments:**

1. To determine resistance per cm of a given wire by plotting a graph of potential difference versus current.
2. To find resistance of a given wire using metre bridge and hence determine the specific resistance of its material.
3. To verify the laws of combination (series/parallel) of resistance using a metre bridge.
4. To compare the emfs of two given primary cells using potentiometer.
5. To determine the internal resistance of given primary cell using potentiometer.
6. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
7. To convert the given galvanometer (of known resistance and figure of merit) into an ammeter and voltmeter of desired range and to verify the same.
8. To find the frequency of the a. c. mains with a sonometer.

#### **Activities:**

1. To measure the resistance and impedance of an inductor with or without iron core.
2. To measure resistance, voltage (AC/DC), current (AC) and check continuity of a given circuit using multimeter.
3. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.
4. To assemble the components of a given electrical circuit.
5. To study the variation in potential drop with length of a wire for a steady current.
6. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram.

### **SECTION B**

#### **Experiments:**

1. To find the value of  $v$  for different values of  $u$  in case of concave mirror and to find the focal length.
2. To find the focal length of a convex lens by plotting graphs between  $u$  and  $v$  or between  $1/u$  and  $1/v$ .
3. To find the focal length of a convex mirror, using a convex lens.
4. To find the focal length of a concave lens, using a convex lens.
5. To determine angle of minimum deviation for a given prism by plotting a graph between the angle of incidence and the angle of deviation.
6. To determine refractive index of a glass slab using a travelling microscope.
7. To find refractive index of a liquid using (i) Concave mirror, (ii) Convex lens and plane mirror.

8. To draw the I-V characteristics curve of a p-n junction in forward bias and reverse bias.
9. To draw the characteristics curve of a zener diode and to determine its reverse break down voltage.
10. To study the characteristics of common - emitter npn or pnp transistor and to find out the values of current and voltage gains.

**Activities:**

1. To study effect of intensity of light (by varying distance of the source) on an LDR.
2. To identify a diode, an LED, a transistor, an IC, a resistor and a capacitor from mixed collection of such items.
3. Use of multimeter to (i) Identify base of transistor, (ii) Distinguish between npn and pnp type transistors, (iii) See the unidirectional flow of current in case of a diode and an LED, (iv) Check whether a given electronic component (e.g., diode, transistor or IC) is in working order.
4. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
5. To observe polarization of light using two Polaroids.
6. To observe diffraction of light due to a thin slit.
7. To study the nature and size of the image formed by (i) Convex lens, (ii) Concave mirror, on a screen by using a candle and a screen (for different distances of the candle from the lens/mirror)
8. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.

**RECOMMENDED TEXTBOOK: Textbook of Physics for Class XII**

Published by - S. Chand & Co. Ltd., Dilip Commercial 1<sup>st</sup> Floor,  
M. N. Road, Pan Bazar, Guwahati – 781001.

**REFERENCE BOOKS:**

1. Physics Textbook for Class XII (Latest Edition) NCERT Publications
2. Physics Laboratory Manuals for Class XII (Latest Edition) NCERT Publications.
3. Modern's abc of Physics for Class XII (Vol II), Modern Publishers.
4. Comprehensive Physics for Class XII, Laxmi Publications.
5. Pradeep's Fundamental Physics for Class XII, Pradeep Publications.

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**CHEMISTRY**  
**CLASS – XI**

## **DISTRIBUTION OF MARKS**

**Theory – 70 marks**

**Practical – 30 marks**

### **COURSE STRUCTURE**

**(Theory)**

**One Paper**

**Time: 3 Hours**

**70 marks**

<b>Unit No.</b>	<b>Title</b>	<b>Marks</b>
Unit I	Some Basic concepts of chemistry	3
Unit II	Structure of Atom	6
Unit III	Classification of Elements and Periodicity in Properties	4
Unit IV	Chemical Bonding and molecular Structure	5
Unit V	States of Matter: Gases and Liquids	4
Unit VI	Thermodynamics	6
Unit VII	Equilibrium	6
Unit VIII	Redox Reactions	3
Unit IX	Hydrogen	3
Unit X	S-Block Elements	5
Unit XI	Some P-Block Elements	7
Unit XII	Organic Chemistry: some basic Principles and Techniques	7
Unit XIII	Hydrocarbons	8
Unit XIV	Environmental Chemistry	3
<b>Total</b>		<b>70</b>

#### **Unit I: Some Basic Concepts of Chemistry**

**(14 Periods)**

General Introduction: Importance and scope of chemistry.

Historical approach to particulate nature of matter, laws of chemical combination.  
Dalton's atomic theory: concept of elements, atoms and molecules.

Atomic and molecular masses. Mole concept and molar mass: percentage composition, empirical and molecular formula; chemical reactions, stoichiometry and calculations based on stoichiometry.

#### **Unit II: Structure of Atom**

**(16 Periods)**

Discovery of electron, proton and neutron; atomic number, isotopes and isobars. Thomson's model and its limitations, Rutherford's model and its limitations. Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, De Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p, and d orbitals, rules for filling electrons in orbitals – Aufbau



principle, Pauli exclusion principle and Hund's rule, electronic configuration of atoms, stability of half filled and completely filled orbitals.

### **Unit III: Classification of Elements and Periodicity in Properties (8 Periods)**

Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements – atomic radii, ionic radii, inert gas radii. Ionization enthalpy, electron gain enthalpy, electro negativity, valence.

### **Unit IV: Chemical Bonding and Molecular Structure (16 Periods)**

Valence electrons, ionic bond, covalent bond: bond parameters. Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital; theory of homo nuclear diatomic molecules (qualitative idea only), hydrogen bond.

### **Unit V: States of Matter: gases and liquids (14 Periods)**

Three states of matter. Intermolecular interactions, type of bonding, melting and boiling points. Role of gas laws in elucidating the concept of the molecule, Boyle's law. Charles law, Gay Lussac's law, Avogadro's law. Ideal behaviour, empirical derivation of gas equation, Avogadro's number. Ideal gas equation. Derivation from ideal behaviour, liquefaction of gases, critical temperature.

Liquid State – Vapour pressure, viscosity and surface tension (qualitative idea only, no mathematical derivations).

### **Unit VI: Thermodynamics (16 Periods)**

Concepts of System, types of systems, surroundings. Work, heat, energy, extensive and intensive properties, state functions.

First law of thermodynamics – internal energy and enthalpy, heat capacity and specific heat, measurement of  $\Delta U$  and  $\Delta H$ , Hess's law of constant heat summation, enthalpy of: bond dissociation, combustion, formation, atomization, sublimation. Phase transition, ionization and dilution.

Introduction of entropy as a state function, free energy change for spontaneous and non-spontaneous process, equilibrium.

### **Unit VII: Equilibrium (16 Periods)**

Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium – Le Chatelier's principle; ionic equilibrium – ionization of acids and bases, strong and weak electrolytes, degree of ionization, concept of pH. Hydrolysis of salts (elementary idea). Buffer solutions, solubility product, common ion effect (with illustrative examples).

**Unit VIII: Redox Reactions****(6 Periods)**

Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, applications of redox reactions.

**Unit IX: Hydrogen****(8 Periods)**

Position of hydrogen in periodic table, occurrence, isotopes, preparation, properties and uses of hydrogen; hydrides – ionic, covalent and interstitial; physical and chemical properties of water, heavy water; hydrogen peroxide-preparation, reactions and surface; hydrogen as a fuel.

**Unit X: s-Block Elements (Alkali and Alkaline earth metals)****(14 Periods)****Group 1 and Group 2 elements:**

General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group, diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), trends in chemical reactivity with oxygen, water, hydrogen and halogens; uses.

**Preparation and properties of some important compounds:**

Sodium carbonate, sodium chloride, sodium hydroxide and sodium hydrogen carbonate, biological importance of sodium and potassium.

CaO, CaCO<sub>3</sub> and industrial use of lime and limestone, biological importance of Mg and Ca

**Unit XI: Some p-Block Elements****(16 Periods)****General Introduction to p-Block Elements**

**Group 13 elements:** General introduction, electronic configuration, occurrence. Variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group; Boron-physical and chemical properties, some important compounds: borax, boric acids, boron hydrides. Aluminium: uses, reactions with acids and alkalis.

**Group 14 elements:** General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behaviour of first element, Carbon – catenation, allotropic forms, physical and chemical properties; uses of some important compounds: oxides.

Important compounds of silicon and a few uses: silicon tetrachloride, silicones, silicates and zeolites.

**Unit XII: Organic Chemistry – Some Basic Principles and Techniques (14 Periods)**

General introduction, method, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds.

Electronic displacements in a covalent bond: inductive effect, electrometric effect, resonance and hyper conjugation.

Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions; electrophiles and nucleophiles, types of organic reactions.

### **Unit XIII: Hydrocarbons**

**(16 Periods)**

#### **Classification of hydrocarbons**

Alkanes – Nomenclature, isomerism, conformations (ethane only), physical properties, chemical reactions including free radical mechanism or halogenation, combustion and pyrolysis.

Alkenes – Nomenclature, structure of double bond (ethene) geometrical isomerism, physical properties, methods of preparation; chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.

Alkynes – Nomenclature, structure of triple bond (ethyne), physical properties. Methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of hydrogen, halogens, hydrogen halides and water.

Aromatic hydrocarbons: Introduction, IUPAC nomenclature; Benzene: resonance aromaticity; chemical properties: mechanism of electrophilic substitution – nitration sulphonation, halogenation, Friedel Craft's alkylation and acylation: directive influence of functional group in mommo-substituted benzene; carcinogenicity and toxicity.

### **Unit XIV: Environmental Chemistry**

**(6 Periods)**

Environmental pollution – air, water and soil pollution, chemical reactions in atmosphere, smog, major atmospheric pollutants; acid rain, ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warming – pollution due to industrial wastes; green chemistry as an alternative tool for reducing pollution, strategy for control of environmental pollution.

## **PRACTICALS SYLLABUS**

**FULL MARKS: 30**

**PASS MARKS: 9**

<b>Evaluation Scheme for Examination</b>	<b>Marks</b>
Volumetric Analysis	10
Salt Analysis	6
Content Based Experiment	4
Class Record and Viva	5
Investigatory Project	5
<b>Total</b>	<b>= 30</b>

**PRACTICALS SYLLABUS**  
**(Total Periods 60)**

**A. Basic Laboratory Techniques**

1. Cutting glass tube and glass rod
2. Bending a glass tube
3. Drawing out a glass jet
4. Boring a cork

**B. Characterization and Purification of Chemical Substance**

1. Crystallization involving impure sample of any one of the following:  
Alum, copper sulphate, Benzoic acid.

**C. Quantitative Estimation**

Using a chemical balance.

Preparation of standard solution of oxalic acid.

Determination of strength of a given solution of sodium hydroxide by titrating it against standard solution of oxalic acid.

Preparation of standard solution of sodium carbonate.

Determination of strength of a given solution of hydrochloric acid by titrating it against standard sodium carbonate solution.

**D. Qualitative Analysis**

Determination of one cation and one anion in a given salt.

Anions -  $\text{CO}_3^{2-}$ ,  $\text{S}^{2-}$ ,  $\text{SO}_4^{2-}$ ,  $\text{NO}_3^-$ ,  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$ ,

Cations -  $\text{Cu}^{2+}$ ,  $\text{Al}^{3+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Sr}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{NH}_4^+$ ,

**(Note: Insoluble salts excluded).**

**PROJECT**

Scientific investigations involving laboratory testing and collecting information from other sources.

**A Few suggested Projects**

Study of the acidity of different samples of the tea leaves.

Determination of the rate of evaporation of different liquids.

Analysis of fruit and vegetable juices for their acidity.

Investigation of the foaming capacity of different washing soaps and the effect of addition of sodium carbonate on them.

**NOTE:** Any other investigatory project can be chosen with the approval of the teacher.

**Book Recommended:**

**Chemistry XI**

Published by -

Ratna Sagar (P) Ltd.,

60, Dr. Sundari Mohan Avenue, Kolkata – 700014.

***Reference Books:***

1. Modern's abc of Chemistry (Class XI) by S. P. Jauhar – Published by Modern Publisher, New Delhi.
2. Pradeep's New Course Chemistry XI by S. N. Dhawan, S. C. Khetrepal, P. N. Kapil, Pradeep Publication, Jalandhar.
3. Comprehensive Chemistry, XI by N. K. Varma, S. K. Khanna, B. Kapila, Laxmi Publication, New Delhi.
4. Comprehensive Practical Chemistry (Class XI) – Published by Laxmi Publication, New Delhi.
5. APC Laboratory Manual Chemistry (Class XI) – Published by Arya Publication, New Delhi.

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**CHEMISTRY**

**CLASS – XII**

**(THEORY)**

**Full Marks: 70**

**One Paper**

**Time: 3 Hours**

Unit No.	Title	Marks
Unit I	Solid State	4
Unit II	Solutions	5
Unit III	Electrochemistry	5
Unit IV	Chemical Kinetics	5
Unit V	Surface Chemistry	4
Unit VI	General Principles and Process of Isolation of Elements	3
Unit VII	p-Block Elements	8
Unit VIII	d and f-Block Elements	5
Unit IX	Co-ordination Compounds	3
Unit X	Haloalkanes and Haloarenes	4
Unit XI	Alcohols, phenols and Ethers	4
Unit XII	Aldehydes, Ketones and Carboxylic Acids	6
Unit XIII	Organic Compounds containing Nitrogen	4
Unit XIV	Biomolecules	4
Unit XV	Polymers	3
Unit XVI	Chemistry in everyday life	3
<b>Total:</b>		<b>70</b>

**UNIT I: SOLID STATE (12 Periods)**

Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea), unit cell in two dimensional and three dimensional lattices, calculation of density in unit cell, packing in solids, voids, number of atoms per unit cell in a cubic unit cell, point defects, electrical and magnetic properties.

**UNIT II: SOLUTIONS (12 Periods)**

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties – relative lowering of vapour pressure, elevation of B. P., depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass.

**UNIT III: ELECTROCHEMISTRY (14 Periods)**

Redox reactions, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and laws of electrolysis (elementary idea), dry cell – electrolytic cells and Galvanic cells; lead accumulator, E.M.F of a cell, standard electrode potential, Nernst's equation and its application to chemical cells, fuel cells, corrosion.

**UNIT IV: CHEMICAL KINETICS (12 Periods)**

Rate of a reaction (average and instantaneous), factors affecting rates of reactions; concentration, temperature, catalyst; order and molecularity of a reaction; rate law and specific rate constant, integrated rate equations and half life (only for zero and first order reactions); concept of collision theory (elementary idea, no mathematical treatment).

**UNIT V: SURFACE CHEMISTRY (8 Periods)**

Adsorption – physisorption and chemisorption; factors affecting adsorption of gases on solids; catalysis : homogeneous and heterogeneous, activity and selectivity; enzyme catalysis; colloidal state; distinction between true solutions, colloids and suspensions; lyophobic, lyophilic, multimolecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation; emulsions – types of emulsions.

**UNIT VI: GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS (8 Periods)**

Principles and methods of extraction – concentration, oxidation, reduction, electrolytic method and refining; occurrence and principles of extraction of aluminium, copper, zinc and iron.

**UNIT VII: p-BLOCK ELEMENTS (14 Periods)**

**Group 15 elements:** General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; nitrogen – preparation, properties and uses; compounds of nitrogen; preparation and properties of ammonia and nitric acid, oxides of nitrogen (structure only);

Phosphorus – allotropic forms; compounds of phosphorus; preparation and properties of phosphine, halides ( $\text{PCl}_3$  and  $\text{PCl}_5$ ) and oxoacids (elementary idea only).

**Group 16 elements:** General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; dioxygen; preparation, properties and uses; simple oxides; Ozone, Sulphur – allotropic forms; compounds of sulphur; preparation, properties and uses of sulphur dioxide; sulphuric acid; industrial process of manufacture, properties and uses, oxoacids of sulphur (structures only).

**Group 17 Elements:** General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; compounds of halogens; preparation, properties and uses of chlorine and hydrochloric acid, interhalogen compounds, oxoacids of halogens (structures only).

#### **UNIT VIII: d and f BLOCK ELEMENTS**

**(14 Periods)**

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation. Preparation and properties of  $\text{K}_2\text{Cr}_2\text{O}_7$  and  $\text{KMnO}_4$ .

Lanthanoids – electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction.

Actinoids – Electronic configuration, oxidation states.

#### **UNIT IX: COORDINATION COMPOUNDS**

**(12 Periods)**

Coordination compounds – Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds, bonding; isomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological systems).

#### **UNIT X: HALOALKANES AND HALOARENES**

**(12 Periods)**

**Haloalkanes:** Nomenclature, nature of C-X bond, physical and chemical properties, mechanism of substitution reactions.

**Haloarenes:** Nature of C-X bond, substitution reactions (directive influence of halogen for monosubstituted compounds only).

Uses and environmental effects of – dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.



## **UNIT XI: ALCOHOLS, PHENOLS AND ETHERS**

**(12 Periods)**

**Alcohols:** Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only); identification of primary, secondary and tertiary alcohols; mechanism of dehydration, uses, some important compounds – methanol and ethanol.

**Phenols:** Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenol.

**Ethers:** Nomenclature, methods of preparation, physical and chemical properties, uses.

## **UNIT XII: ALDEHYDES, KETONES AND CARBOXYLIC ACIDS (12 Periods)**

**Aldehydes and Ketones:** Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, and mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes; uses.

**Carboxylic Acids:** Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

## **UNIT XIII: ORGANIC COMPOUNDS CONTAINING NITROGEN (10 Periods)**

**Amines:** Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines.

**Cyanides and Isocyanides** – will be mentioned at relevant places in context.

**Diazonium salts:** Preparation, chemical reactions and importance in synthetic organic chemistry.

## **UNIT XIV: BIOMOLECULES**

**(12 Periods)**

**Carbohydrates:** Classification (aldoses and ketoses), monosaccharides (glucose and fructose), oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); importance.

**Proteins:** Elementary idea of  $\alpha$  – amino acids, peptide bond, polypeptides, proteins, primary structure, secondary structure, tertiary structure and quaternary structure (qualitative idea only), denaturation of proteins; enzymes.

**Vitamins:** Classification and functions.

**Nucleic acids:** DNA and RNA.

**UNIT XV: POLYMERS****(8 Periods)**

Classification – natural and synthetic, methods of polymerization (addition and condensation) copolymerization. Some important polymers; natural and synthetic like polythene, nylon, polyesters, bakelite and rubber.

**UNIT XVI: CHEMISTRY IN EVERYDAY LIFE****(8 Periods)**

1. Chemicals in medicines – analgesics, tranquilizers, antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamines.
2. Chemicals in food – preservatives, artificial sweetening agents.
3. Cleansing agents – soaps and detergents, cleansing action.

**CHEMISTRY PRACTICALS****EVALUATION SCHEME FOR THE PRACTICAL EXAMINATION**

Time: 4 hours

Full Marks: 30

Pass Marks: 09

I.	Content Based Experiments	=	4 marks
II.	Qualitative Inorganic Analysis	=	10 marks
III.	Volumetric Analysis	=	6 marks
IV.	Organic Analysis	=	6 marks
V.	Sessional Work and Viva Voce	=	4 marks

**DISTRIBUTION OF MARKS FOR EVALUATION**

<b>I.</b>	<b>Content Based Experiments (Any one)</b>		<b>(4 marks)</b>
(i)	Procedure	-	2 marks
(ii)	Completion of experiment	-	1 mark
(iii)	Nature of Product	-	1 mark

*\*Students will write in answer sheet only the procedure.*

**II. Qualitative Inorganic Analysis (10 marks)**

- |       |   |     |         |
|-------|---|-----|---------|
| (i)   | Physical characteristics of the sample              | -   | 1 mark  |
| (ii)  | Dry test for acid radical                           | - - | 1 mark  |
| (iii) | Wet test for acid radical                           | - - | 2 marks |
| (iv)  | Dry test for basic radical                          | - - | 1 mark  |
| (v)   | Group separation                                    | - - | 2 marks |
| (vi)  | Group analysis/conformatory test                    | -   | 2 marks |
| (vii) | Conclusion with correct symbolic formula and charge |     | 1 mark  |

*\*Students will report/write in answer sheet as per above serial order. Except for item no. (i), (v) and (vii), the negative test may not be written or no marks may be deducted for not writing all negative test.*

**III. Volumetric Analysis (6 marks)**

- |      |                                    |     |         |
|------|------------------------------------|-----|---------|
| (i)  | Writing chemical equation involved | -   | 1 mark  |
| (ii) | Completion of experiment           | - - | 1 mark  |
| (i)  | Correct procedure for calculation  | -   | 1 mark  |
| (ii) | Result/Accuracy                    | - - | 3 marks |

**IV. Organic Analysis (6 marks)**

- |       |   |     |         |
|-------|---|-----|---------|
| (i)   | Physical characteristics of the sample<br>(Physical state, colour, odour, solubility)                     | -   | 1 mark  |
| (ii)  | Aromaticity/Unsaturation  | - - | 1 mark  |
| (iii) | Detection of element  | - - | 1 mark  |
| (iv)  | Functional group  | - - | 2 marks |
| (v)   | Conclusion (mentioning the element and<br>functional group detected with correct chemical representation) | -   | 1 mark  |

**V. Sessional Work and Viva Voce (4 marks)**

- |      |   |     |         |
|------|---|-----|---------|
| (i)  | Sessional Work (Based on Practical Record Book) |     | 2 marks |
| (ii) | Viva – Voce                                     | - - | 2 marks |

**I. Content Based Experiments:**

- |       |   |
|-------|---|
| (i)   | Preparation of double salt of ferrous ammonium sulphate or potash alum  |
| (ii)  | Preparation of potassium ferric oxalate                                 |
| (iii) | Preparation of acetanilide  |
| (iv)  | Preparation of one lyophilic solution<br>– Starch or egg albumin or gum |

- (v) Preparation of one lyophobic solution  
– Aluminium hydroxide or ferric hydroxide or arsenious sulphide.

## II. Qualitative Inorganic Analysis

Detection of one cation and one anion in a given salt from the following:

Cations:  $\text{Pb}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{Cd}^{2+}$ ,  $\text{Al}^{3+}$ ,  $\text{Fe}^{2+}/\text{Fe}^{3+}$ ,  $\text{Mn}^{2+}$ ,  $\text{Cr}^{3+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Co}^{2+}$ ,  $\text{Sr}^{2+}$ ,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{K}^+$ ,  $\text{NH}_4^+$

Anions:  $\text{CO}_3^{2-}$ ,  $\text{SO}_4^{2-}$ ,  $\text{S}^{2-}$ ,  $\text{SO}_3^{2-}$ ,  $\text{NO}_3^-$ ,  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$

(Note: Insoluble salts excluded)

## III. Volumetric Analysis

Determination of concentration/molarity of solution by titration against standard solution:

- A. Acid – Base Titration** - (a)  $\text{Na}_2\text{CO}_3$  vrs  $\text{HCl}$  (b)  $\text{NaOH}$  vrs Oxalic acid  
**B. Redox Titration** - (a) Oxalic Acid vrs  $\text{KMnO}_4$  (b) Mohr's salt vrs  $\text{KMnO}_4$   
**C. Iodimetry** - Iodine solution vrs Hypo solution

## IV. Organic Analysis

- 1) Detection of elements – N, S, Cl, Br, I
- 2) Detection of Aromaticity/Aliphatic/Unsaturation
- 3) Test for the following functional Groups –  
*Phenolic ( $-\text{OH}$ ), Aldehyde, Ketone, Carboxylic acid and Primary Aromatic amine.*

## RECOMMENDED TEXTBOOK: Chemistry for Class XII

- Published by Ratna Sagar (P) Ltd.,  
60, Dr. Sundari Mohan Avenue,  
Kolkata – 700014.

## REFERENCE BOOKS:

1. Chemistry Textbook for Class XII (Latest Edition) NCERT Publications.
2. Pradeep's New Course Chemistry, XII, Pradeep Publications.
3. Modern's abc of Chemistry for Class XII, Modern Publishers.
4. Comprehensive Chemistry for Class XII, Laxmi Publications.
5. Conceptual Chemistry, XII, S. Chand & Co.
6. Dinesh Companion Chemistry, XII, S. Dinesh & Co.

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**BIOLOGY**  
**CLASS – XI**

**BIO-BOTANY (THEORY)**

**DISTRIBUTION OF MARKS**

Theory – 35 Marks  
Practical – 15 Marks

**I. Diversity In Living World**

Diversity of living organisms (plant species) classification of living organisms (five) kingdom classification, major groups and principles of classification within each kingdom except Animalia systematics and binomial system of nomenclature Salient features of plant major groups; Angiosperms upto subclass.

**II. Structural Organization In Plants**

Tissues in plants, Morphology, anatomy and functions of different parts of flowering plants: Root, stem, leaf, inflorescence, flower, fruit and seed.

**III. Cell: Structure And Function**

Cell: Cell wall, Cell membrane and cell organelles (plastids, mitochondria, endoplasmic reticulum, Golgi bodies, dictyosomes, ribosomes, lysosomes, vacuoles, centrioles and nuclear organization).

Mitosis, Meiosis, Cell Cycle.

**IV. Plant Physiology**

Movement of water, food, nutrients and gases

Plants and water

Mineral nutrition

Respiration

Photosynthesis

Plant growth and development

**PRACTICALS**

1. Study of a compound microscope

2. Study of the specimens and identification with reasons – Bacteria, Oscillatoria, Spirogyra, Rhizopus, mushroom. Yeast, liverwort, moss, fern, Pinus, one monocotyledon and one dicotyledon and one lichen.
3. Study of tissues and diversity in shapes and sizes of plant cells (e.g. palisade cells, guard cells, parenchyma, collenchyma, sclerenchyma, xylem, phloem).
4. Study of mitosis in onion root tip cells from permanent slides.
5. Study of different modifications in root, stem and leaves.
6. Study and identify different types of inflorescences.
7. Study and describe three common flowering plants (Solanaceal, Fabaceal and Liliaceal).
8. Preparation and study of t.s. dicot and monocot roots and stems (normal).
9. Study of osmosis by potato osmometer.
10. Study of plasmolysis in epidermal peels (e.g. Rhoea leaves).
11. Study of imbibition in seeds/rains.
12. Study of distribution of stomata in the upper and lower surface of leaves.
13. Separate plant pigments through paper chromatography.
14. Study rate of respiration in flower buds/leaf tissue and germinating seeds.
15. Observation and comments on the experimental set up on:
  - a) Anaerobic respiration
  - b) Phototropism
  - c) Apical bud removal
  - d) Suction due to transpiration

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## **BIO-ZOOLOGY (THEORY)**

### **DISTRIBUTION OF MARKS**

Theory – 35 Marks  
Practical – 15 Marks

#### **I. Diversity Of Living World**

Diversity of living organisms (animal species). Classification of the living organisms (five kingdom classification, major groups and principles of classification within Animalia kingdom. Salient features of Animal (Non chordates upto phylum level and chordates upto class level) Zoological parks and museums.

#### **II. Structural Organization In Plants**

Tissues in animals.

Morphology, anatomy and functions of different systems of an annelid (earthworm), an insect (cockroach) and an amphibian (frog).

#### **III. Cell: Structure And Function**

Basic chemical constituents of living bodies structure and functions of carbohydrates, proteins, lipids and nucleic acids. Enzymes – types, properties and function.

#### **IV. Human Physiology**

Digestion and absorption  
Breathing and respiration  
Body fluids and circulation  
Excretory products and elimination  
Locomotion and movement  
Control and coordination

## **PRACTICALS**

1. Study parts of a compound microscope

2. Study of specimens and identifications with reasons – Amoeba, Hydra, Liverfluke, Ascaris, Leech, Earthworm, Prawn, Silkworm, Honeybee, Snail, Starfish, Shark, Rohu, Frog, Lizard, Pigeon and Rabbit.
3. Study of tissues and diversity in shapes and sizes of animal cells (e.g. squamous epithelium, muscle fibres and mammalian blood smear) through temporary/permanent slides.
4. Study of meiosis in animal cells (grasshopper) from permanent slides.
5. Study of external morphology of earthworm, cockroach and frog through models.
6. Test for the presence of sugar, starch, proteins and fats. Detect them in suitable plant and animal materials.
7. Study the effect of temperature on the activity of salivary amylase on starch.
8. To test the presence of urea in urine.
9. To detect the presence of sugar in urine/blood sample.
10. To detect the presence of albumin in urine.
11. To detect the presence of bile salts in urine.
12. To study human skeleton and different types of joints.

**Book Recommended:**

Published by -

**(a) Textbook of Biology XI**

S. Chand & Company Ltd.,  
Publishers & Distributors (An ISO 9001; 2000 company)  
Dilip Commercial 1<sup>st</sup> Floor, M. N. Road, Pan Bazar,  
Guwahati – 781001.

***Reference Books:***

1. Modern's abc of Biology (Class XI) by B. B. Arora and A. K. Sabharwal – Published by Modern Publisher, New Delhi.
2. Comprehensive Biology (Class XI) by J. P. Sharma & H. K. Bhatia – Published by Laxmi Publication, New Delhi.
3. Modern Biology Vol. I & II by V. B. Rastogi – Published by Pitambar Publishing Co. Pvt. Ltd., New Delhi.
4. Comprehensive Laboratory Manual in Biology (Class XI) – Published by Laxmi Publication, New Delhi.
5. APC Laboratory Manual Biology (Class XI) – Published by Arya Publication, New Delhi.



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**BIOLOGY**  
**CLASS – XII**

**BIO-BOTANY**  
**(THEORY)**

**One Paper**  
**Unit**

**Full Marks – 35**  
**Time 1½ hours**

1. Sexual Reproduction
2. Genetics and Evolution
3. Biology and Human Welfare
4. Biotechnology and its Applications
5. Ecology and Environment

**I. Sexual Reproduction**

Pollination and fertilization in flowering plants.

Development of seeds and fruits.

**II. Genetics and Evolution**

Chromosome theory of inheritance, deviations from Mendelian ratio (gene interaction - Incomplete dominance, co-dominance, complementary genes, multiple alleles), Mutation DNA: replication, transcription, translation, Gene expression and regulation.

**III. Biology and Human Welfare**

Plant breeding, tissue culture, food production.

Microbes in household food processing, industrial production, sewage treatment and energy generation.

**IV. Biotechnology and its Applications**

Genetically modified (G. M.) organisms, biosafety issues, Insulin and Bt cotton.  
Agriculture and Industry.

**V. Ecology and Environment**

Ecosystems: - Components, types and energy flow.  
Species, population and community.  
Ecological adaptations.

**BIO-BOTANY**

**Full Marks – 15  
Time 1½ hours**

**(PRACTICALS)**

1.	Two experiments	Marks 4
2.	Slide preparation	Marks 2
3.	Spotting	Marks 4
4.	Investigatory project and Viva based on the project	Marks 2
5.	Record and Viva based on the experiment	Marks 3
		<hr/> <b>Marks 15</b>

**List of Experiments**

1. Study of the reproductive parts of different flowers.
2. Study of percent pollen germination on a slide.
3. Study the PH and water holding capacity of soil. Correlate with the kinds of plants found in them.
4. Study plants found in dry and aquatic conditions. Comment on their adaptation/eco-systems.
5. Study of plant population frequency by quadrat method.

**Study observation of the following (Spotting)**

1. Study of Mendelian inheritance using seeds of different colour/size of any plant.
2. Study analogous and homologous organs in various plants.

## **BIO-ZOOLOGY**

**Full Marks – 35**  
**Time 1½ hours**

### **(THEORY)**

#### **One Paper**

1. Sexual reproduction
2. Genetics and evolution
3. Biology and Human Welfare
4. Biotechnology and its applications
5. Ecology and environment

#### **1. Sexual Reproduction**

Human reproduction: reproductive system in male and female, menstrual cycle.  
Production of gametes, fertilization, implantation, embryo development, pregnancy and parturition.

#### **2. Genetics and Evolution**

Mendelian inheritance.

Sex determination in human beings: xx, xy.

Linkage and crossing over.

Inheritance pattern of haemophilia and blood groups in human beings.

Evolution: Theories and evidences.

#### **3. Biology and Human Welfare**

Animal husbandry.

Basic concepts of immunology, vaccines.

Pathogens, Parasites.

Reproductive health – birth control, contraception and sexually transmitted diseases.

Cancer and AIDS.

Adolescence and drug/alcohol abuse.

**4. Biotechnology and its applications**

Recombinant DNA technology, Genome and Human Genome Project.

DNA fingerprinting.

Ethics in Biotechnology.

**5. Ecology and Environment**

Centres of diversity and conservation of biodiversity, National Parks and Sanctuaries.

Environmental issues.

**BIO-ZOOLOGY**

**Full Marks – 15  
Time 1½ hours**

**(PRACTICALS)**

1.	One experiment	6 marks
2.	Spotting	4 marks
3.	Viva	2 marks
4.	Record books	3 marks
<b>Total =</b>		<b>15 marks</b>

**List of Experiments:**

1. Study of Mitosis & Meiosis from onion root tips and grasshopper testes respectively.
2. Study animals found in aquatic and dry conditions. Comment on their adaptation/eco-system.

3. To count at least two types of white blood cells in a microscopic field from blood smear.
4. Study of soil texture and moisture content collected from different sites.

**Study/observation of the following (Spotting)**

1. Study and identify stages of gamete development in T. S. Testis and T. S. Ovary through permanent slide.
2. Study of T. S. of Blastula through permanent slide.
3. Study prepared pedigree charts of genetic traits such as rolling of tongue, blood groups, widow's peak, colour blindness.
4. To identify common diseases – causing organisms like Ascaris, Entamoeba, Plasmodium. Comment on symptoms of diseases that they cause.
5. Study analogous and homologous organs in various animals.

**Recommended Textbook:**

**A Textbook of Biology for Class XII**

- Published by S. Chand & Co. Ltd., Dilip Commercial,  
1<sup>st</sup> Floor, M.N. Road, Pan Bazar, Guwahati- 781001.

**Reference Books:**

1. Biology for Class XII by NCERT.
2. Modern's abc of Biology for Class XI & XII by Dr. B. B. Arora and A. K. Sabharwal.
3. A Textbook of Biology for Class XI & XII by P. S. Verma & B. P. Pandey, S. Chand & Co.
4. Comprehension Biology for Class XI & XII, Laxmi Publications.
5. Modern Biology Vol. I & II by V. B. Rastogi – Pitambar Publishing Co. Pvt. Ltd., New Delhi.

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**ACCOUNTANCY**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

<b>Financial Accounting I</b>		<b>50 Marks</b>	<b>Period = 104</b>
<b>Unit</b>	<b>Title</b>	<b>Marks</b>	<b>Periods</b>
I	Introduction to Accounting	6	12
II	Theory Base of Accounting	6	12
III	Recording of Business Transaction	10	20
IV	Trial Balance and Rectification of Errors	8	20
V	Depreciation, Provisions and Reserves	10	20
VI	Accounting for Bills of Exchange Transactions	10	20
		<b>Total = 50</b>	<b>104</b>
<b>Financial Accounting II</b>		<b>50 Marks</b>	<b>Period = 104</b>
<b>Unit</b>	<b>Title</b>	<b>Marks</b>	<b>Periods</b>
VII	Financial Statements	16	38
VIII	Accounts from Incomplete Records	14	30
IX	Computers in Accountancy	10	18
X	Accounting and Database System	10	18
		<b>Total = 50</b>	<b>104</b>

***Financial Accounting – I***

***(Periods 104)***

**Unit I            Introduction to Accounting**

**(Marks: 6)**

**(Periods 12)**

- Accounting – meaning, objectives, Accounting as source of information, internal and external users of Accounting information and their needs.
- Qualitative characteristics of Accounting, information-reliability, relevance, understandability and comparability.

- |   |  |                                     |
|---|--|-------------------------------------|
| <b>Unit II</b>  | <b>Theory Base of Accounting</b>                 | <b>(Marks: 6)<br/>(Periods 12)</b>  |
| <ul style="list-style-type: none"><li>➤ Accounting Principles – meaning and nature.</li><li>➤ Accounting Concepts: Entity, Money Measurement, Going Concern, Accounting Period, Cost Concept, Dual Aspect. Revenue Recognition (Realisation), Matching, accrual</li><li>➤ Full Disclosure, Consistency, Conservatism, Materiality.</li><li>➤ Accounting standards – concept and list of Indian Accounting Standards.</li><li>➤ Accounting Mechanism – Single Entry and Double Entry;</li><li>➤ Process of accounting – from recording of business transactions to preparation of trial balance.</li><li>➤ Bases of Accounting – Cash Basis, Accrual Basis.</li></ul>  |  |                                     |
| <b>Unit III</b>   | <b>Recording of Business Transactions</b>        | <b>(Marks: 10)<br/>(Periods 20)</b> |
| <ul style="list-style-type: none"><li>➤ Voucher and Transactions: Origin of Transactions – source Documents and Vouchers, preparation of Vouchers; Accounting Equation Approach – Meaning and Analysis of transactions using Accounting Equation; Rules of Debit and Credit.</li><li>➤ Recording of Transactions: Books of original entry – Journal, Special Purpose Books: i) Cash Book – Simple, Cashbook with Bank column and Petty Cashbook, ii) Purchase Book, Sales Book, Purchase Returns Book, Sales Returns Book; Ledger meaning, utility, format; posting from Journal and Subsidiary books; Balancing of Accounts.</li><li>➤ Bank Reconciliation Statement: Meaning, Need and Preparation, Correct Cash Balance.</li></ul> |  |                                     |
| <b>Unit IV</b>  | <b>Trial Balance and Rectification of Errors</b> | <b>(Marks: 8)<br/>(Periods 20)</b>  |
| <ul style="list-style-type: none"><li>➤ Trial Balance: meaning, objectives and preparation.</li><li>➤ Errors: Types of Errors; errors affecting Trial Balance; errors not affecting Trial Balance.</li><li>➤ Detection and Rectification of Errors (One Sided and Two Sided); use of suspense Account.</li></ul>  |  |                                     |
| <b>Unit V</b>   | <b>Depreciation, Provisions and Reserves</b>     | <b>(Marks: 10)<br/>(Periods 20)</b> |
| <ul style="list-style-type: none"><li>➤ Depreciation: Meaning and need for charging depreciation, factors affecting depreciation, methods of depreciation-Straight Line method, Written Down Value method (excluding change in method), Method of recording depreciation-charging to asset account, creating provision for depreciation/accumulated depreciation account; Treatment of disposal of asset.</li></ul>   |  |                                     |

<b>Unit IX</b>	<b>Computers in Accounting</b>	<b>(Marks: 10)</b> <b>(Periods 18)</b>
<ul style="list-style-type: none"> <li>➤ Introduction to Computer and Accounting Information System (AIS)</li> <li>➤ Applications of computers in accounting:             <ul style="list-style-type: none"> <li>- Automation of accounting process, designing accounting reports, MIS reporting, data exchange with other information systems.</li> </ul> </li> <li>➤ Comparison of accounting processes in manual and computerized accounting, highlighting advantages and limitations of automation</li> </ul>		



- Sourcing of accounting systems: readymade and customized and tailor – made accounting system. Advantages and disadvantages of each option.

**Unit X                      Accounting and Database System**

**(Marks: 10)**

**(Periods 18)**

- Accounting and Database Management System.
- Concept of Entity and Relationship: Entities and relationship in an Accounting system: Designing and creating Simple Tables, Forms, Queries and Reports in the Context of Accounting System.

**Textbook Prescribed:**

- 1.            Comprehensive Financial Accountancy Class XI**  
Published by – Laxmi Publications (P) Ltd.,  
Hemsen Complex, M. D. Shah Road, Paltan Bazar,  
Guwahati – 781008.
- 2.            Reference Book – Tulsian’s Accountancy XI**  
Published by – Ratna Sagar (P) Ltd.,  
60, Dr. Sundari Mohan Avenue, Kolkata – 700014.

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**ACCOUNTANCY**  
**CLASS – XII**

**COURSE STRUCTURE**

**One Paper** **3 hours** **80 marks**

**Part A: Accounting for Not-For-Profit Organizations,  
Partnership Firms and Companies**

<b>UNIT</b>		<b>Periods</b>	<b>Marks</b>
1.	Accounting for Not-For-Profit organizations	22	10
2.	Accounting for Partnership Firms	14	5
3.	Reconstitution of Partnership	34	18
4.	Accounting for Share Capital and Debenture	54	27
		<b>124</b>	<b>60</b>

**Part B: Financial Statement Analysis**

<b>UNIT</b>			
5.	Analysis of Financial Statements	33	12
6.	Cash Flow Statement	33	8
7.	Project Work (To be assessed internally)	18	20
		<b>84</b>	<b>40</b>

**PART – A**

**ACCOUNTING FOR NOT-FOR-PROFIT ORGANIZATIONS, PARTNERSHIP  
FIRMS AND COMPANIES**

**Unit 1: Accounting for Not – For – Profit Organization (22 Periods) (Marks: 10)**

- Not for profit organization: Meaning and examples.
- Receipts and payments: Meaning and concept of fund based accounting.
- Preparation of Income and Expenditure Account and Balance Sheet from Receipt and Payment Account with additional information.

## **Unit 2: Accounting for Partnership Firms**

**(14 Periods) (Marks: 5)**

- Nature of Partnership firm: Partnership Deed – meaning, importance.
- Final Accounts of Partnership: Fixed v/s Fluctuating Capital, Division of Profit among partners, Profit and Loss Appropriation Account.

## **Unit 3: Reconstitution of Partnership**

**(34 Periods) (Marks: 18)**

Changes in Profit Sharing Ratio among the existing partners – Sacrificing Ratio and Gaining Ratio.

- Accounting for Revaluation of Assets and Liabilities and distribution of reserves and Accumulated Profits.
- Goodwill: Nature, Factors affecting and methods of valuation: Average profit, Super profit, and Capitalization methods.
- Admission of a Partner: Effect of Admission of Partner, Change in Profit Sharing Ratio, Accounting Treatment for Goodwill, Revaluation of Assets and Liabilities, Reserves (Accumulated Profits) and Adjustment of Capitals.
- Retirement/Death of a Partner: Change in Profit Sharing ratio, accounting treatment of Goodwill, Revaluation of Assets and Liabilities, Adjustment of accumulated Profits (Reserves) and capitals.

## **Unit 4: Accounting for Share and Debenture Capital**

**(54 Periods) (Marks: 27)**

- Share Capital: Meaning, Nature and Types.
- Accounting for Share Capital: Issue and Allotment of Equity and Preference Shares; Private placement of shares, meaning of employee stock option plan, public subscription of shares; over subscription and under subscription; Issue at par, premium and at discount; Calls in arrears, Issue of Shares for consideration other than cash.
- Forfeiture of Shares: Accounting Treatment, Re-issue of Forfeited Shares.
- Presentation of Share Capital and Debenture in company's Balance Sheet.
- Issue of debenture – at par and premium; issue of debenture for consideration other than cash.
- Redemption of debenture.
- Out of proceeds of fresh issue, accumulated profits and sinking fund

## **PART – B**

## **FINANCIAL STATEMENT ANALYSIS**

### **Unit 5: Analysis of Financial Statements**

**(33 Periods) (Marks: 12)**

- Financial Statements of a Company: Preparation of simple balance sheet of a company in the prescribed form with major headings only.
- Financial Statement Analysis: Meaning, significance and purpose, limitations.
- Tools for Financial Statement Analysis: Comparative Statements, Common Size Statements.
- Accounting Ratios: Meaning and objectives, types of ratios:
  - Liquidity Ratios:* Current Ratio, Liquidity Ratio.
  - Solvency Ratios:* Debt to Equity, Total Assets to Debt, Proprietary Ratio.
  - Activity Ratios:* Inventory Turnover, Debtors Turnover, Payables Turnover, Working Capital Turnover, Fixed Assets Turnover, Current Assets Turnover.
  - Profitability Ratio:* Gross Profit, Operating Ratio, Net Profit Ratio, Return on Investment, Earning Per Share, Dividend per Share, Profit Earning Ratio.

### **Unit 6: Cash Flow Statement**

**(33 Periods) (Marks: 8)**

- Cash Flow Statement: Meaning and objectives, preparation, adjustments related to depreciation, dividend and tax, sale and purchase of non-current assets (as per revised standard issued by ICAI)

### **Unit 7: Project Work in Accounting (To be assessed internally)**

**(18 Periods) (Marks: 20)**

#### ***RECOMMENDED TEXTBOOK:***

#### **Accountancy for Class XII**

- Published by Laxmi Publications (P) Ltd.,  
Hemsen Complex, M. D. Shah Road,  
Paltan Bazar, Guwahati – 781008.

#### ***REFERENCE BOOKS:***

- i) Accountancy (Partnerships and Company Accounts) published by NCERT (Latest Edition).
- ii) Accountancy (Analysis of Financial Statements) published by NCERT (Latest Edition).

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**BUSINESS STUDIES**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

<b>Foundations of Business</b>		<b>50 Marks</b>	<b>Period = 104</b>
<b>Unit</b>	<b>Title</b>	<b>Marks</b>	<b>Periods</b>
I	Nature and Purpose of Business	10	20
II	Forms of Business Organisations	12	24
III	Private, Public and Global Enterprises	7	14
IV	Business Services	8	18
V	Emerging Modes of Business	7	14
VI	Social Responsibility of Business Ethics	6	14
		<b>Total = 50</b>	<b>104</b>
<b>Corporate Organisation, Finance and Trade</b>		<b>50 Marks</b>	<b>Period = 104</b>
<b>Unit</b>	<b>Title</b>	<b>Marks</b>	<b>Periods</b>
VII	Formation of a Company	8	16
VIII	Sources of Business Finance	12	24
IX	Small Business	8	20
X	Internal Trade	10	20
XI	Internal Business	12	24
		<b>Total = 50</b>	<b>104</b>

**Foundations of Business**

**(Periods 104)**

**Unit I: Nature and purpose of Business**

**(Marks: 10)**

**(Periods 20)**

- Concept and characteristics of business;
- Business, profession and employment – distinctive features;

- Objectives of business – economic and social, role of profit in business.
- Classification of business activities; Industry and Commerce
- Industry – types: primary, secondary, tertiary
- Commerce: Trade and Auxiliaries
- Business risks – nature and causes.

**Unit II:           Forms of Business Organisations** **(Marks: 12)**  
**(Periods 24)**

- Forms of Business Organizations
- Sole Proprietorship; Joint Hindu Family Business – meaning, features, merits and limitations;
  - Partnership – meaning, types, registration, merits, limitations, types of partners;
  - Cooperative Societies – types, merits and limitations
  - Company: Private Ltd., Public Ltd – merits, limitations;
  - Choice of form of business organizations
  - Starting a business – Basic factors

**Unit III:         Private, Public & Global Enterprises** **(Marks: 7)**  
**(Periods 14)**

- Private Sector and Public sector
- Forms of Organising public sector enterprises
  - Departmental Undertaking
  - Statutory Corporation
  - Government Company
- Changing role of public sector
- Global Enterprises (Multinational Companies): meaning and features, joint ventures – meaning, benefits.

**Unit IV:         Business Services** **(Marks: 8)**  
**(Periods 18)**

- Nature and types of Business services – Banking, Insurance, Transportation, Warehousing, Communication.
- Banking – types of Banks, Functions of Commercial banks, E-banking.
- Insurance: principles, types : life, fire and marine
- Postal and Telecom services.
- Warehousing: types and functions.

**Unit V:           Emerging Modes of Business** **(Marks: 7)**  
**(Periods 14)**

- E – Business – Meaning, scope and benefits, Resources requires for successful e – business implementations, On-line transactions, payment mechanism, security and safety of business transactions;

- Outsourcing – concept, need and scope.

**Unit VI: Social Responsibility of Business and Business Ethics (Marks: 6)  
(Periods 14)**

- Concept of social responsibility;
- Case for social responsibility;
- Responsibility towards different interest groups: owners, investors, employees, consumers, government, community and public in general;
- Business and environmental protection;
- Business ethics: concept and elements.

**Corporate Organisation, Finance and Trade (Periods 104)**

**Unit VII: Formation of a Company (Marks: 8)  
(Periods 16)**

Stages in the formation of a company:

- Promotion,
- Incorporation, and
- Commencement of business.

**Unit VIII: Sources of Business Finance (Marks: 12)  
(Periods 24)**

- Nature and significance.
- Financial requirements and sources: owners funds and borrowed funds
- Methods of raising Finance:
  - Equity and Preference shares
  - Debentures and Bond
  - Retained profits
  - Public deposits
  - Loan from Commercial Banks
  - Loan from Financial Institution
  - Trade Credit
  - Discounting of Bills of Exchange
  - Global Depository Receipt, American Depository Receipt.

**Unit IX: Small Business: (Marks: 8)  
(Periods 20)**

- Small Scale Industry; Tiny Sector; cottage and rural industry;
- Role of small business in rural India;
- Problems of small business in India.
- Government Assistance and Special Schemes for Industries in rural backward and hilly areas

**Unit X: Internal Trade (Marks: 10)**

**(Periods 20)**

- Meaning and types of internal trade: wholesale and retail;
- Services of a wholesaler and retailer
- Types of Retail Trade:
  - Itinerant retailers and fixed shops.
  - Departmental store, super market, malls, chain store, mail order business, consumer's cooperative store.
  - Automatic Vending Machine.
  - Role of Chambers of Commerce and Industry in promotion of internal trade.

**Unit XI: Internal Business**

**(Marks: 12)**

**(Periods 24)**

- Nature, Importance, scope, and complexities involve in International Business;
- Basic information about ways of entering into International Business;
- Contract manufacturing; licensing; franchising; Joint ventures and Setting up Wholly Owned Subsidiaries;
- Export-Import procedures and Documentation;
- Foreign Trade Promotion:- Organisational support and Incentives; Nature and Importance of Export Processing Zone/Special Economic Zones;
- International Trade Institutions and Agreement: WTO, UNCTAD, World Bank/IMF.

**Textbook Prescribed:**

**- Comprehensive Business Studies Class XI**  
Published by – Laxmi Publications (P) Ltd.,  
Hemsen Complex, M. D. Shah Road, Paltan Bazar,  
Guwahati – 781008.

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**BUSINESS STUDIES**  
**CLASS – XII**

**COURSE STRUCTURE**

<b>One Paper</b>		<b>3 hours</b>	<b>100 marks</b>
<b>Part A:</b>	<b>Principles and Functions of Management</b>		
<b>UNITS</b>		<b>Periods</b>	<b>Marks</b>
1.	Nature and Significance of Management	14	7
2.	Principles of Management	14	7
3.	Business Environment	10	7
4.	Planning	14	6
5.	Organizing	18	10
6.	Staffing	18	10
7.	Directing	20	8
8.	Controlling	12	5
		<b>120</b>	<b>60</b>
<b>Part B:</b>	<b>Business Finance and Marketing</b>		
<b>UNITS</b>			
9.	Financial Management	22	12
10.	Financial Markets	20	8
11.	Marketing	30	14
12.	Consumer Protection	16	6
		<b>88</b>	<b>40</b>

## **PART – A**

### **PRINCIPLES AND FUNCTIONS OF MANAGEMENT**

#### **Unit 1: Nature and significance of Management (14 Periods) (Marks: 7)**

- Management – concepts, objectives, importance.
- Nature of management – Management as Science, Art, Profession.
- Levels of management – top, middle supervisory (First level)
- Management functions – planning, organizing, staffing, directing and controlling.
- Coordination – nature and importance.

#### **Unit 2: Principles of Management (14 Periods) (Marks: 7)**

- Principles of Management – meaning, nature and significance
- Fayol's principles of management
- Taylor's Scientific Management – Principles and Techniques.

#### **Unit 3: Business Environment (10 Periods) (Marks: 7)**

- Business Environment – meaning and importance.
- Dimensions of Business Environment – Economic, Social, Technological, Political and Legal.
- Economic Environment in India; Impact of Government policy changes on business and industry, with special reference to adoption of the policies of liberalization, privatization and globalization.

#### **Unit 4: Planning (14 Periods) (Marks: 6)**

- Meaning, features, importance, limitations
- Planning process
- Types of Plans – Objectives, Strategy, Policy, Procedure, Method, Rule, Budget, Programme.

#### **Unit 5: Organising (18 Periods) (Marks: 10)**

- Meaning and importance
- Steps in the process of organising
- Structure of organization – functional and divisional
- Formal and informal organization
- Delegation: meaning elements and importance
- Decentralization: meaning and importance
- Difference between delegation and decentralization

**Unit 6: Staffing****(18 Periods) (Marks: 10)**

- Meaning, need and importance of staffing.
- Staffing as a part of Human Resource Management.
- Steps in staffing process
- Recruitment – meaning and sources
- Selection – meaning and process
- Training and Development – meaning and need, methods of training: job rotation, apprenticeship, vestibule and internship.

**Unit 7: Directing****(20 Periods) (Marks: 8)**

- Meaning, importance and principles
- Elements of Directing:
  - Supervision – meaning and importance.
  - Motivation – meaning and importance, Maslow's hierarchy of needs; financial and non-financial incentives.
  - Leadership – meaning, importance; qualities of a good leader
  - Communication – meaning and importance, formal and informal communication; barriers to effective communication.

**Unit 8: Controlling****(12 Periods) (Marks: 5)**

- Meaning and importance.
- Relationship between planning and controlling
- Steps in the process of control.
- Techniques of controlling: budgetary control.

**PART – B****BUSINESS FINANCE AND MARKETING****Unit 9: Financial Management****(22 Periods) (Marks: 12)**

- Meaning, role, objectives of financial management.
- Financial planning – meaning and importance;
- Capital Structure – meaning and factors
- Fixed and Working Capital – meaning and factors affecting its requirements

**Unit 10: Financial Markets****(20 Periods) (Marks: 8)**

- Concept of Financial Market: Money Market – nature instruments;

- Capital market: nature and types – primary and secondary market
- Distinction between capital market and money market
- Stock Exchange – meaning, functions, NSEI, OCTEI, Trading Procedure.
- Securities and Exchange Board of India (SEBI) – Objectives, Functions.

### **Unit 11: Marketing**

**(30 Periods) (Marks: 14)**

- Marketing – meaning, functions and role
- Distinction between marketing and selling
- Marketing mix – concept and elements
  - Products – nature, classification, branding, labeling and packaging
  - Physical distribution: meaning, role; Channels of distribution – meaning, types, factors determining choice of channels.
  - Promotion – meaning and role, promotion mix, Role of Advertising and personal selling; objections to Advertising
  - Price: factors influencing pricing.

### **Unit 12: Consumer Protection**

**(16 Periods) (Marks: 6)**

- Importance of consumer protection
- Consumer rights
- Consumer responsibilities
- Ways and means of consumer protection – Consumer awareness and legal redressal with special reference to Consumer Protection Act.
- Role of consumer organizations and NGOs

### ***RECOMMENDED TEXTBOOK:***

#### **Business Studies for Class XII**

- Published by Laxmi Publications (P) Ltd.,  
Hemsen Complex, M. D. Shah Road,  
Paltan Bazar, Guwahati – 781008.

### ***REFERENCE BOOKS:***

1. Business Studies – I published by NCERT (Latest Edition).
2. Business Studies – II published by NCERT (Latest Edition).

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**ENTREPRENEURSHIP**  
**CLASS – XI**

**DISTRIBUTION OF MARKS**

<b>Theory</b>		<b>70 Marks</b>	<b>Period = 84</b>
<b>Practical</b>		<b>30 Marks</b>	<b>Periods = 36</b>
<b>Unit</b>	<b>Title</b>	<b>Marks</b>	<b>Periods</b>
I	Entrepreneurship and Human Activities	30	36
II	Acquiring Entrepreneurial Value and Motivation	30	36
III	Introduction to Market Dynamics	10	12
		<b>Total = 70</b>	<b>84</b>

**Unit 1: Entrepreneurship and Human Activities                      30 Marks                      (Periods: 36)**

**A.      Entrepreneurship:**

- Concept, Functions and Need.
- Entrepreneurship Characteristics and Competency
- Relevance of Entrepreneurship to Socio – Economic Gain: generating National Wealth, creating Wage and Self – employment, Micro, Small and Medium Enterprise, optimising Human and Natural Resource and Solving Problems in the path of prosperity, building enterprising Personality and Society.
- Process of Entrepreneurship Development.

**B.      Entrepreneurial Pursuits and Human Activities:**

- Nature, Purpose and pattern of Human Activities: Economic and Non-Economic, Need for innovation
- Rationale and Relationship of Entrepreneurial pursuits

**Unit II: Acquiring Entrepreneurial Value and Motivation 30 Marks (Periods: 36)**

- Entrepreneurial Values, Attitude and Motivation – Meaning and concept.
- Developing Entrepreneurial Motivation and Competency – concept and process of Achievement Motivation, Self-efficacy, Creativity, Risk Taking, Leadership, Communication and Influencing Ability and Planning Action.
- Barriers to Entrepreneurship
- Help and support to Entrepreneurs

**Unit III: Introduction to Market Dynamics 10 Marks (Periods: 12)**

- Understanding a Market
- Competitive Analysis of the Market
- Patents, Trademarks and Copyright.

**PRACTICAL**

**30 Marks  
(Periods: 36)**

- I. Study visit by students to any enterprise of own choice. With the help of a schedule/questionnaire the students will record observation regarding-the background of entrepreneur, reasons for selecting the entrepreneurial career, starting the enterprise, the types of enterprise, the process of setting this enterprise, products/services, production process, investment, mode and marketing practices followed, profit or loss, growth and development, problems faced, institutions/organizations which offer support and entrepreneur's level and type of satisfaction.
- II. Preparation of a brief report based on the observations made during study-visit to an enterprise.

**Textbook Prescribed:**

**- A Textbook of Entrepreneurship Class XI**

Published by – S. Chand & Company Ltd.,  
7361, Ram Nagar, New Delhi – 110055.

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**ENTREPRENEURSHIP**  
**CLASS – XII**

**THEORY**

**Total marks: 70**

**Unit I: Entrepreneurial Opportunities and Enterprise Creation**  
**(20 Marks) (24 Periods)**

- Sensing Entrepreneurial Opportunities
- Environment Scanning
- Market Assessment
- Identification of Entrepreneurial Opportunities
- Selection of an Enterprise
- Steps in setting up an Enterprise

**Unit II: Enterprise Planning and Resourcing** **(20 Marks) (24 Periods)**

- Business Planning – Preparation of a Project Report
- Resource Assessment – Financial and Non-Financial
- Fixed and Working Capital Requirement, Funds, Flows, Profit Ratios, Break Even Analysis etc.
- Mobilising Resources – Sources and Means of Fund, Facilities and Technologies for starting an Enterprise.

**Unit III: Enterprise Management** **(30 Marks) (36 Periods)**

- (a) General management: Basic Management functions.
- (b) Organising/Production of goods and services – quality, quantity and flow of inputs.
- (c) Managing Market:
  - Meaning, Functions of Marketing, Marketing Mix.
  - Product

- Price
- Place
- Promotion (advertising and sales promotion)
- (d) Managing Finance – Sources of Long Term and Short Term Finances
  - Determination of Cost, Income, Calculation of Profit/Loss.
- (e) Managing Growth and Sustenance – Affecting Change, Modernisation, Expansion, Diversification and Substitution.
- (f) Entrepreneurial Discipline – Laws of Land, Ecology, Consumer's Concept, Adherence to Contract and Credits.

## **PRACTICAL**

### **Introduction:**

The main objective of the course in Entrepreneurship is to generate in the students initiative, self-reliance and enthusiasm so as to empower them to become entrepreneurs both in spirit and performance. A number of skills such as observation, evaluation, communication, resource mobilization and management, risk assessment, team building etc. are also to be developed in the students. Leadership qualities, sensitivity to business ethics and adherence to a positive value system are the core issues that the course highlights while presenting different concepts related to entrepreneurship.

Such a course should necessarily have a strong experimental component in the form of practical work. The objectives of the practical work are:

1. To introduce the students to the world of business by developing in them the core skills and competencies required for an entrepreneur.
2. To develop in the students qualities such as leadership, self-confidence, initiative, facing uncertainties, commitment, creativity, people and team building, integrity and reliability.
3. To enable the students to acquire the skills and knowledge needed for conducting surveys, collecting, recording and interpreting data and preparing simple estimates of demand for products and services.
4. To guide the students to prepare a Project Report.
5. To equip the students with knowledge and skills needed to plan and manage an enterprise through case studies conducted and recorded by the students in different fields such as resource assessment, market dynamics, finance management, cost determination, calculation of profit and loss etc.
6. To instill in the students important values and entrepreneurial discipline.



## FORMAT

**Total Marks: 30  
(36 Periods)**

1.	Project Report/Survey Report	10 Marks
2.	Viva-Voce on PW/SR	05 Marks
3.	Case Study	10 Marks
4.	Problem Solving	05 Marks

### **1. Project Report/Market Survey Report 10 Marks**

#### **a) Project Report:**

Preparation of a Project Report for an enterprise involving products/services.

Students may be provided adequate guidance to choose a project based on their interests and availability of information and authentic inputs in the locality. The specimen proforma of project report given in the textbook may be used for preparing the report. However, mechanical preparation of the report by filling in the information in the proforma should be discouraged. Further, as the students will be required to appear for a Viva-Voce on the basis of their projects, sufficient care should be taken by the students to prepare the report after studying the various aspects involved thoroughly. In a nutshell, the project report should lead to viable enterprise.

#### **b) Market Survey Report**

Market research is the process and technique of finding out who your potential customers are and what they want. The survey may be on products and services already available in the market or students may also conduct surveys for new products and services. The report of the survey should be organized under the following broad headings:

1. Objectives
2. Methods and tools (interviews, questionnaires etc.) to be used to collect information.
3. Records of data and information.
4. Analysis of data and information.
5. Interpretation and conclusion

For example, a survey may be conducted to find out the choice of households in toiletry soap, tooth paste etc.. The data may be analysed to establish a pattern that may be useful to an entrepreneur.

## **Guidelines for assessment of Project Report/Survey Report**

1. Presentation: Format, Clarity, Use of graphs, tables and other visuals, organisation, methodical recording of data and information and general neatness of execution.
2. Originality and Creativity
3. Authenticity of information and correctness of calculations and general feasibility of the project/sustainability of conclusion drawn in the survey.

### **2. Viva Voce on the Project/Market Survey Report**

**5 marks**

The questions should establish that the report is the original work of the student and that the student has a reasonably clear understanding of the work carried out by him/her.

Entrepreneurial qualities such as leadership, self-belief, creativity, originality, initiative etc. may also be assessed by asking a variety of questions related to the report.

### **3. Case Study**

**10 marks**

A case study is a focused research on an organisation, enterprise, practice, behaviour or person undertaken to highlight an aspect that the study attempts to examine. For instance, a case study may be conducted on the pollution control methods being employed by an industry. Or a successful industrialist may be chosen as a subject of a case study to analyze and understand the strategies that the industrialist adopted to achieve success.

Ideally, a case study should be conducted on subjects with the objectives of bringing to the fore beliefs, practices, strategies, values etc. that have made them what they are. Such studies help us to understand the way in which great minds think and operate. We may also conduct case studies on failures; why a company collapsed, how a service lost its market etc.. From both the types of case study, we learn lessons; how to do something or how not to do something. They also provide valuable insight into the processes involved in an enterprise.

A few topics are suggested for carrying out case studies:

- i. Drawing a profile of a successful entrepreneur.
- ii. Studying a public sector undertaking and highlighting its success/failure, by analysing the factors responsible.

- iii. Studying a small scale unit in the locality to bring out the procedures and processes adopted by the unit to become a feasible business venture.
- iv. A study of competition in business by choosing two or more rivals in the market and analysing their strengths and weaknesses.
- v. Take the school itself for a case study and analyze any two aspects of the school plant for chalking out a plan of action: infrastructure, academics, co-curricular activities etc.
- vi. A case study on a thriving fast food shop/restaurant in your locality. What makes it so popular?
- vii. A case study on the ways in which a business unit has mobilised its financial resources.
- viii. A case study on the enterprise management techniques adopted by a business house.
- ix. A case study on the marketing strategies of a successful consumer durable company.
- x. A case study on the financial management of a Public Limited Company.
- xi. A case study on any Specialized Institution that supports and guides the establishment of a small scale unit.
- xii. Studying the balance sheets of two big private companies to assess their trade and credit worthiness.
- xiii. Studying the inventory management of a large manufacturing industry to ascertain the processes involved for optimising cost.
- xiv. Carrying out a case study on an established industrial house/company to find out the value system of the company and how it fulfils its social commitment/obligations.
- xv. Carrying out a case study on an established industry to ascertain the processes followed to reduce/prevent pollution.
- xvi. Study on environment friendly companies and their contribution to preservation.

### **Assessment of Case Studies**

- i) Presentation: Format, accuracy, clarity, authenticity and general neatness
- ii) Analysis and Conclusions

#### **4. Problem Solving**

**5 marks**

In this session, the students will be required to solve a problem in the form of a written test. The examiner may choose any problem related to the units in Class XII Text Book and set it for the class. The problem may be in the following areas:

- a) How to scan the environment to establish the feasibility of a project.
- b) Given certain figures showing the consumption pattern of a product, drawing conclusions that have a bearing on similar products.
- c) Carrying out market assessment for a given product/service to ascertain the feasibility factor.
- d) Assessment of Working Capital.
- e) Calculation of total cost of production.
- f) Calculation of break-even point.
- g) Determining location of a manufacturing unit.
- h) Problems in inventory control (calculation of the Economic Order Quantity and carrying out ABC analysis)
- i) Applying Pricing methods to determine the price of a product or service.
- j) Applying promotion mix to plan a sales campaign for a product or service.
- k) Working out a simple budget for a given task or job.

#### **Assessment of Answers**

The examiner may prepare five problems which are solved by him/her before they are presented to the students. The student may choose any one of the problems and solve it, showing the different steps/different reasons involved in the solution. If the problem does not involve actual calculations, it may not have any one correct answer. So weightage should be given not only to the final answer but to the entire process of problem solving that the student has followed. Originality and innovative spirit should be rewarded. The students should not be penalized for spelling errors grammatical mistakes etc. as long as the answer is coherent. Where definite formulas are involved, accuracy should be given due weightage.

**RECOMMENDED TEXTBOOK: Textbook on Entrepreneurship for Class XII**

- Published by S. Chand & Co. Ltd.,  
Dilip Commercial 1<sup>st</sup> Floor, M. N. Road,  
Pan Bazar, Guwahati – 781001.

**REFERENCE BOOKS:**

1. Entrepreneurship – Class XII, C.B.S.E., Delhi.
2. Trainer's Manual on Developing Entrepreneurial Motivation, By M. M. P. Aukhori, S. P. Mishra and R. Sengupta, Pub. by (NEISBUD), NSIC-PATC Campus, Okhla.
3. Behavioral Exercises and games – manual for trainers, learning systems, by M. V. Despande, P. Mehta and M. Nandami.
4. Product Selection by Prof. H. N. Pathak, pub. by (NIESBUD), NSIC-PATC Campus, Okhla.
5. Entrepreneurial Development – Dr. S. Moharana and Dr. C. R. Dash, Pub. by RBSA Publishers, Jaipur.
6. Entrepreneurial Development by S. S. Khanna, Published by S. Chand & Company Ltd., Ram Nagar, New Delhi.
7. Entrepreneurial Development by C. B. Gupta and N. P. Srinivasan, Publisher Sultan Chand & Sons, 1992.
8. Entrepreneurial Development – Principles, Policies and Programmes by P. Saravanavel, Publishers Ess Pee Kay Publishing House, Madras.
9. Entrepreneurial, Growth and Development, by Rashi Ali, Pub. by Chugh Publications and Strech Road, Civil Lines, Post Box No. 101, Allahabad – 211001.

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