

# Revised Curricula and Syllabi

*for*

Higher Secondary Final Year

**SCIENCE STREAM**

**2014**

*(To be effective from 2014-2015 Academic Sessions)*



**ASSAM HIGHER SECONDARY EDUCATION COUNCIL**

**Bamunimaidam : Guwahati - 21**

***Revised Syllabi for Higher Secondary Course for Final year class (Effective from 2014-2014 academic session respectively)***

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***Note*** : The Assam Higher Secondary Education Council reserves the right to ammend syllabi and course as and when it deems necessary.

***Published by*** : Dr. B. Talukdar  
Secretary, Assam Higher Secondary Education Council, Bamunimaidam,  
Guwahati - 21

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অসম উচ্চতৰ মাধ্যমিক শিক্ষা সংসদৰ হকে  
জ্যোতি প্ৰকাশন  
পাণবজাৰ, গুৱাহাটী-৭৮১০০১

## PREFACE

The Assam Higher Secondary Education Council has the responsibility to take different steps to promote quality education to the learners of +2 stage in order to expose the learners to a suitable academic atmosphere through which they can get quality education. The quality education comes from the effective learning process which is based on the curriculum, syllabus and the textbooks. Hence, the revision of Curriculum, Syllabi and Textbook is a continuous and time demanding process to keep the learners well acquaint with the rapid development in different areas.

Keeping conformity with the National Curriculum Framework, 2005(NCF-2005), the Assam Higher Secondary Education Council has taken up the task of updating and revision of the Syllabus and textbooks of all subjects of different academic streams in phased manner. Initially, to maintain the uniformity with the National standard and with a view to provide a wide platform to our learners, the Council has adopted/adapted 14(fourteen) subjects from NCERT and it has already been implemented from the academic session 2010-2011. In addition to it, the Council has developed syllabus and textbooks on Education, Logic & Philosophy. Home Science, Environmental Education and some of the MIL subjects on the basis of NCF-2005.

It is expected that the teachers and students will derive maximum benefit and enrich qualities by interacting with the revised Curricula and Syllabi.

Suggestions from concerned bodies and persons will be highly appreciated for further improvement in the succeeding years.



(Dr. Bhupen Talukdar)  
Secretary

Assam Higher Secondary Education Council  
Bamunimaidam, Guwahati-21

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# ASSAM HIGHER SECONDARY EDUCATION COUNCIL

BAMUNIMADAM, GUWAHATI-21

## Revised curriculum (Scheme of studies) for +2 stage

(to be effective from 2014-2015 Academic session)

### A. CORE SUBJECTS :

1. A Student of the H.S Programme of the Council shall have to offer subjects as specified hereunder:
  - (i) **English** : 200 marks (with two papers of 100 marks each-100 marks in HS First Year Examination and 100 marks in HS Final Examination).
  - (ii) **Modern Indian Language** : 200 marks (with two papers of 100 marks each-100 marks in the H.S. First Year Examination and 100 marks in the H.S. Final Examination).

**Note** : A student may offer Alternative English in lieu of the MIL.

### 2. PATTERN OF EXAMINATION :

#### B. H.S. Final Examination :

1. English : one paper of 100 marks.
2. MIL/Alt. English : one paper of 100 marks.
- 3 (a) Elective subjects (three) : 100 marks each  $\times 3 = 300$  marks. (In case of subjects having practical parts 70 marks will be allocated to the Theory part and the rest 30 will be allocated to the practical part or the marks division of theory and practical part will be as indicated in the syllabus of concerned subject.)
  - (i) The HS Final Examination will be held at the end of second year and shall be conducted by the Council at the centres of Examination recognized by the Council.
  - (ii) The HS Final Examination will be conducted in February/ March every year.
  - (iii) The results of the HS Final Examination will be determined on the basis of marks obtained in HS Final Examination only. (Performance of a student in the HS First year Examination shall not be taken into account while declaring the performance of the student in the HS Final Examination).

### 3. PASS MARKS :

- (a) A student shall be declared pass only when he/she secures the minimum marks prescribed in each of the two core and three elective subjects. The pass marks shall be 30% of the total marks for subjects having no practical parts. For a subject having practical parts the minimum pass marks shall be 30% of the marks allocated to the theory part and 40% of the marks allocated in the practical part and a student must pass in the theory part and in the practical part separately. In the case of candidate offering four elective subjects, the marks secured in three subjects where the candidate's performance is better shall be taken into account for determining pass, rank, division, distinction and star marks. The marks secured in the fourth elective subject (with poorest performance) will however, be shown in the marks-sheet. The marks secured in the fourth elective subject will not be taken into

account for awarding rank, division, distinction (80% and above in a subject) and star (75% and above in aggregate). Conditions for award of division, distinction and star are given hereunder in clause (b), (c) and (d).

- (b) A successful candidate obtaining 60% and above marks in aggregate will be placed in First Division. Those obtaining 45% and above but less than 60% marks in aggregate will be placed in Second Division. Other successful candidates obtaining less than 45% marks in aggregate will be placed in Third Division.
- (c) If a successful candidate obtains 80% or more marks he/she will be declared to have secured 'DISTINCTION' in that subject.
- (d) A candidate obtaining 75% or above of the total allotted marks (in two core and three elective subjects) will be declared to have secured 'STAR MARKS'.

**4. (A) List of Modern Indian Language (MIL) Subjects:**

Anyone of the following:-

- a) Assamese
- b) Bengali
- c) Bodo
- d) Hindi
- e) Nepali
- f) Urdu
- g) Khasi
- h) Garo
- i) Mizo
- j) Manipuri
- k) Hmar

A student may offer 'Alternative English' in lieu of an MIL subjects as a part of core subjects.

**(B) List of Elective Subjects (SCIENCE STREAM) :**

- i) Physics
- ii) Chemistry
- iii) Mathematics
- iv) Biology
- v) Geology or Geography
- vi) Statistics
- vii) Anthropology
- viii) Computer Science & Application
- ix) Home Science
- x) Economics
- xi) Logic & Philosophy
- xii) Engineering Drawing
- xiii) Multimedia & Web Technology
- xiv) Biotechnology
- xv) Entrepreneurship Development
- xvi) Sanskrit

**Note :** A student of Science stream who desires to go for Ayurvedic Course may offer 'Sanskrit' as the fourth elective subject with specific permission from the AHSEC on express recommendations of the Principal of the concerned institution. However, marks obtained in this subject (Sanskrit) will not be taken into account for the purpose of determination of pass, rank and division etc.

**(C) List of Elective Subjects (ARTS STREAM) :**

- i) Economics
- ii) History
- iii) Political Science
- iv) Logic & Philosophy or Psychology
- v) Education
- vi) Sociology or Anthropology
- vii) Statistics
- viii) Mathematics
- ix) Home Science
- x) (a) One of the following classical languages :
  - 1) Arabic
  - 2) Persian
  - 3) Sanskrit

*OR*

 (b) One of the following advance languages :
  - 1) Advance Assamese
  - 2) Advance Bengali
  - 3) Advance Hindi
  - 4) Advance Manipuri
  - 5) Advance Bodo
- xi) Geography
- xii) Computer Science & Application
- xiii) Sattriya Dance
- xiv) Fine Arts
- xv) Entrepreneurship Development
- xvi) Multimedia & Web Technology

**(D) List of Elective Subjects (COMMERCE STREAM) :**

- (a) Compulsory subjects–
  - i) Business studies
  - ii) Accountancy
- (b) Optional electives subjects
  - (i) Economics
  - (ii) Salesmanship and Advertising
  - (iii) Insurance
  - (iv) Banking
  - (v) Economic Geography
  - (vi) Computer Science & Application
  - (vii) Statistics.

- (viii) Commercial Mathematics and Statistics or Mathematics
- (ix) Entrepreneurship Development
- (x) Multimedia & Web Technology

- Note :**
- Syllabi for Statistics, Mathematics, Economics, Computer Science & Application, Entrepreneurship Development, Multimedia & Web Technology of Commerce stream are same as those of Science and Arts Stream.
  - It is desired that students of all streams shall choose their elective subjects keeping in view their future courses of higher studies in general and other professional courses in particular.
5. Every learner at the +2 stage would be required to participate compulsorily in an area of co-curricular activities (CCA) out of NCC, NSS, Rover/Ranger, Games and Sports (Any one from Athletic and other team games), cultural and literary, Debating and quiz.
  6. A student must attend the minimum number of classes as specified under the Regulations to become eligible for admission into HS First Year or HS Final Year Examination as the case may be.
  7. It is desirable that for ensuring adequate exposure to the prescribed laboratory techniques practical classes may be started in HS First year class.
  8. The Council desires that Unit test be held regularly as indicated in the Academic Calendar.

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## ASSAMESE (MIL)

### SYLLABUS FOR HIGHER SECONDARY COURSE

#### অসমীয়া বিষয়ৰ পাঠ্যক্রম

#### ভাষা-শিক্ষাৰ উদ্দেশ্য :

ভাষা মানৱ সভ্যতাৰ অপৰিহাৰ্য অংগ। সকলো মানুহে বিভিন্ন উদ্দেশ্যত ভাষা ব্যৱহাৰ কৰে। ভাষা হ'ল মানুহৰ মনৰ ভাব আদান-প্ৰদানৰ মাধ্যম। কেৱল আদান-প্ৰদানৰ মাধ্যমেই নহয়, ভাষা আয়ত্তৰ জৰিয়তে জ্ঞান আহৰণৰ পথো প্ৰশস্ত হৈ থাকে। জন্মৰ পিছৰ পৰা শিশুৱে ভাষা আয়ত্ত কৰে। শিক্ষাগত অৰ্হতা গ্ৰহণৰ বাবে বিদ্যালয়লৈ যোৱাৰ পিছৰে পৰা ভাষা শিক্ষাৰ বিশেষ দিশ উন্মোচিত হয়। সামাজিক প্ৰাণীৰূপে মানুহে ভাষা আয়ত্ত কৰে বিভিন্ন ক্ষেত্ৰত বিভিন্ন ধৰণে। ছাত্ৰ-ছাত্ৰীক ভাষা-শিক্ষা প্ৰদানৰ উদ্দেশ্য হৈছে বিভিন্ন পাঠৰ জৰিয়তে জীৱন আৰু জগত সম্পৰ্কে অৱগত কৰোৱা। ভাষা-শিক্ষা এক জটিল প্ৰক্ৰিয়া। উচ্চতৰ মাধ্যমিক স্তৰত ছাত্ৰ-ছাত্ৰীক ভাষা-শিক্ষা প্ৰদান কৰোতে বিভিন্ন পদ্ধতি আৰু কৌশল অৱলম্বন কৰিব লাগিব।

#### ভাষা-শিক্ষাৰ কৌশল :

ভাষা শিক্ষাৰ ক্ষেত্ৰত কেইবাটাও কৌশল অৱলম্বন কৰা হয়। প্ৰধানভাৱে পঠন, লিখন, শ্ৰৱণ আৰু কথন— এইকেইটা কৌশল প্ৰধান। অৱশ্যে উচ্চতৰ মাধ্যমিক স্তৰত আন কেতবোৰ কৌশলৰ প্ৰতিও সজাগ হ'ব লাগিব। ইয়াৰ ভিতৰত কথোপকথনৰ কৌশল, উচ্চস্তৰীয় লিখন কৌশল, টোকা প্ৰস্তুত, সাৰাংশ প্ৰস্তুত, ব্যাকৰণ জ্ঞান আহৰণ আদি অন্যতম।

#### বিশেষ গুৰুত্ব দিবলগীয়া দিশ :

উচ্চতৰ মাধ্যমিক শিক্ষাৰ স্তৰত পঠনৰ দিশত বিশেষ গুৰুত্ব দিয়া নহয় যদিও ইয়াৰ প্ৰয়োজন আছে। কাৰণ ব্যাকৰণৰ জ্ঞান আয়ত্ত কৰোতে অথবা সঠিক উচ্চাৰণৰ প্ৰতি লক্ষ্য ৰাখোতে পঠন অপৰিহাৰ্য। শ্ৰৱণ আৰু কথনৰ দিশতো গুৰুত্ব দিব লাগিব। ইয়াৰ লগে লগে অধিক গুৰুত্ব দিবলগীয়া বিষয়টো হ'ল লিখন। ব্যাকৰণৰ বিষয়বোৰ প্ৰস্তুত, পাঠ সম্বন্ধীয় প্ৰশ্নাৱলী প্ৰস্তুত, শ্ৰৱণ আৰু কথনৰ জৰিয়তে কথোপকথনৰ কৌশল আদি আয়ত্ত কৰাটো অতি আৱশ্যকীয়। ছাত্ৰ-ছাত্ৰীৰ (পাঠৰ) মৌখিক উপস্থাপন, সামূহিক পাৰস্পৰিক আলোচনা, পাঠৰ মূল বক্তব্যৰ প্ৰতি ছাত্ৰ-ছাত্ৰীৰ দৃষ্টি আকৰ্ষণ, টোকা সঠিকভাৱে প্ৰস্তুত, পাঠৰ লগত সংগতি থকা বিষয়ৰ অৱতাৰণা, ব্যাকৰণৰ জ্ঞান প্ৰদানৰ জৰিয়তে ভাষা-জ্ঞান বৃদ্ধি— এই বিষয়বোৰৰ প্ৰতি শিক্ষকে মনোনিবেশ কৰিব লাগিব। ৰচনা লিখন, পত্ৰ লিখন, সৃষ্টিধৰ্মী লিখন আদি বিষয়বোৰো ছাত্ৰ-ছাত্ৰীৰ ভাষা আহৰণৰ অন্যতম আহিলা। শিক্ষকে ছাত্ৰ-ছাত্ৰীক এই দিশত অনুশীলনৰ জৰিয়তে উপযুক্ত ভাবে গঢ় দিবলৈ সক্ষম হ'ব।

#### অসমীয়া (আধুনিক ভাৰতীয় ভাষা)

#### পটভূমি :

একাদশ আৰু দ্বাদশ শ্ৰেণীৰ ছাত্ৰ-ছাত্ৰীক অসমীয়া সাহিত্যৰ নিৰ্বাচিত পাঠ অধ্যয়নৰ জৰিয়তে ঐতিহ্যমণ্ডিত অসমীয়া ভাষা সাহিত্য সম্পৰ্কে সম্যক জ্ঞান দিব বিচৰা হৈছে। এই উদ্দেশ্য আগত ৰাখিয়ে অসমীয়া সাহিত্যৰ প্ৰাচীন, মধ্য আৰু আধুনিক যুগত ৰচিত নিৰ্বাচিত লেখকৰ পাঠ পাঠ্যক্রমত অন্তৰ্ভুক্ত কৰা হৈছে। ছাত্ৰ-ছাত্ৰীয়ে অসমীয়া ভাষা শুদ্ধ ৰূপত

শিকিব/লিখিব পৰাত সহায়ক হ'ব বুলি বিবেচনা কৰি আৱশ্যকীয় ব্যাকৰণ পাঠ্যক্রমত অন্তৰ্ভুক্ত কৰা হৈছে। লগতে চৰকাৰী নিৰ্দেশ মানি 'পৰিৱেশ আৰু দুৰ্যোগ ব্যৱস্থাপনা' আৰু 'মূল্যবোধ-শিক্ষা আৰু কৈশোৰ শিক্ষা' বিষয়ক চাৰিটা পাঠ অন্তৰ্ভুক্ত কৰা হৈছে।

### উদ্দেশ্য :

পাঠ্যক্রম যুগুত কৰোতে এই কথাকেইটালৈ দৃষ্টি ৰখা হৈছে :

- ❖ ছাত্ৰ-ছাত্ৰীয়ে পাঠ্যক্রমৰ অন্তৰ্ভুক্ত পাঠ যাতে সহজে আয়ত্ত কৰিব পাৰে।
- ❖ পাঠবোৰ যাতে ৰসাল হয়।
- ❖ পাঠ অধ্যয়নৰ ফলত ছাত্ৰ-ছাত্ৰীৰ মনত যাতে জাতীয় সংস্কৃতি ঐতিহ্যৰ ভাব জাগ্ৰত হয়।
- ❖ ছাত্ৰ-ছাত্ৰীয়ে নিজৰ ভাষাৰ উপৰি শ্ৰেণীকোঠাৰ বহুভাষিক বাস্তৱ পৰিস্থিতিৰ লগত খাপ খাব পৰা হোৱাকৈ পাঠ্যক্রম যুগুত কৰা।
- ❖ বিশ্লেষণাত্মক আৰু সৃষ্টিধৰ্মী দুয়োটা দিশতে গুৰুত্ব প্ৰদান কৰা।
- ❖ বিষয়বস্তু অনুসৰি ভাষাৰ স্তৰ যে বেলেগ তাৰ প্ৰতি দৃষ্টি দিয়া।
- ❖ লিখিত ভাষা যে ব্যাকৰণ, অভিধানৰ দ্বাৰা নিয়ন্ত্ৰিত সেই কথা জানিবৰ বাবে ব্যাকৰণ আৰু অভিধান চৰ্চা কৰিবলৈ উদগনি দিয়া।

## ASSAMESE (MIL)

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper

Time : Three Hours

Marks 100

#### Unitwise Distribution of Marks & Periods :

Unit	Topics	Marks	Periods
Unit-I	Prose	30	50
Unit-II	Poetry	25	40
Unit-III	(A) Adolescence Education (B) Value Education	10	15
Unit-IV	Grammar	20	25
Unit-V	Essay writing	15	10
Total		100	140

পাঠ্যপুথি : সাহিত্য সৌৰভ, অসম উচ্চতৰ মাধ্যমিক শিক্ষা  
সংসদৰ দ্বাৰা প্ৰকাশিত।

#### UNITWISE DISTRIBUTION OF COURSE CONTENTS :

**Unit-I :** (গোট-১) নিৰ্বাচিত গদ্য :

(Marks 30)

- |                         |                          |
|-------------------------|--------------------------|
| ১। মিলাৰামৰ আত্মজীৱনী   | : লক্ষ্মীনাথ বেজবৰুৱা    |
| ২। মগনিয়াৰ (কথা কবিতা) | : যতীন্দ্ৰ নাথ দুৱৰা     |
| ৩। আনন্দৰাম বৰুৱা       | : উপেন্দ্ৰ চন্দ্ৰ লেখাৰু |

- |  |                            |
|--|----------------------------|
| ৪। সমুদ্র মন্থন                        | : ত্রৈলোক্য নাথ গোস্বামী   |
| ৫। ভাৰতীয় আদৰ্শত বৈৰাগ্য              | : তীৰ্থনাথ শৰ্মা           |
| ৬। মিনতি (গল্প)                        | : ড° ভবেন্দ্ৰ নাথ শইকীয়া  |
| ৭। অসমীয়া কথাছবি                      | : ফণী তালুকদাৰ             |
| ৮। বৈজ্ঞানিক মানসিকতা কিদৰে গঢ়িব পাৰে | : ড° দীনেশ চন্দ্ৰ গোস্বামী |

**Unit-II : (গোট-২) নিৰ্বাচিত কবিতাঃ****(Marks 25)**

- |                                |                           |
|--------------------------------|---------------------------|
| ১। বৰগীত (আনন্দে গোবিন্দ বায়) | : শ্ৰীমন্ত শংকৰদেৱ        |
| ২। বিশ্ব খনিকৰ                 | : মফিজুদ্দিন আহমদ হাজৰিকা |
| ৩। শেষ অৰ্ঘ্য                  | : নলিনীবালা দেৱী          |
| ৪। জনতাৰ আহ্বান                | : জ্যোতিপ্ৰসাদ আগৰৱালা    |
| ৫। কাঠমিস্ত্ৰীৰ ঘৰ             | : ধীৰেন্দ্ৰ চন্দ্ৰ দত্ত   |
| ৬। আঘোণৰ কুঁৱলী                | : কেশৱ মহন্ত              |
| ৭। উভতি নহাৰ কবিতা             | : নৱকান্ত বৰুৱা           |
| ৮। কৰুণতম                      | : ড° নিৰ্মলপ্ৰভা বৰদলৈ    |

**Unit-III : (গোট-৩) :****(Marks 10)**

- |   |                         |
|---|-------------------------|
| ১। মূল্যবোধ শিক্ষা                      | : ড° দুৰ্লুমণি গোস্বামী |
| ২। কৈশোৰ কাল আৰু ইয়াৰ<br>উপযোগী শিক্ষা | : ড° স্বৰ্ণলতা দাস      |

**Unit-IV : (গোট-৪) Grammar :****(Marks 20)**

ব্যাকৰণ :

বিভক্তি, শব্দ বিভক্তি আৰু কাৰক বিভক্তি, পুৰুষবাচক প্ৰত্যয়, কৃৎ প্ৰত্যয়, তদ্ধিত প্ৰত্যয়, নিৰ্দিষ্টতাবাচক প্ৰত্যয়, খণ্ডবাক্য, জতুৱা ঠাঁচ।

**Unit-V : (গোট-৫) Essay Writing :****(Marks 15)**

ৰচনাৰ বাবে বিষয় :

- (ক) অসম আৰু ভাৰতৰ জাতীয় জীৱন আৰু ঐতিহ্য সম্পৰ্কীয়
- (খ) সাহিত্য, কলা-সংস্কৃতি সম্পৰ্কীয়
- (গ) বিজ্ঞান আৰু প্ৰযুক্তিবিদ্যা সম্পৰ্কীয়
- (ঘ) জনসংখ্যা, পাৰিপাৰ্শ্বিকতা সম্পৰ্কীয়
- (ঙ) সমাজ আৰু অৰ্থনীতি সম্পৰ্কীয়
- (চ) শিক্ষা আৰু ক্ৰীড়া সম্পৰ্কীয়
- (ছ) ভ্ৰমণ সম্পৰ্কীয়

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## BENGALI (MIL)

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

#### ভূমিকা :

উচ্চতর মাধ্যমিক স্তর হল বৃহত্তর কর্মক্ষেত্রে প্রবেশের দ্বার স্বরূপ। একাদশ ও দ্বাদশ শ্রেণির বাংলাভাষার পাঠ্যসূচিতে ছাত্র-ছাত্রীদের সাহিত্যের নির্বাচিত পাঠ অধ্যয়নের মাধ্যমে ঐতিহ্যমণ্ডিত বাংলাভাষা ও সাহিত্যের সম্যক পরিচয় দেবার জন্য প্রাচীন-মধ্য ও আধুনিকযুগের কবি সাহিত্যিকদের জীবনী ও তাঁদের রচনা অন্তর্ভুক্ত করা হয়েছে।

সাহিত্য জীবনেরই ছবি এবং জীবনকে অতিক্রম করে যেহেতু কোনো মানবিক অভিজ্ঞতা সম্ভব নয় তাই সাহিত্যপাঠ ব্যতীত ছাত্র-ছাত্রীদের সুস্থ মানসিকতা গঠন সম্ভব নয়। প্রণালীবদ্ধভাবে পঠন, শ্রবণ, কথন ও লিখনের ব্যবহার ও চর্চার দিকে নজর রেখে নির্বাচিত ব্যাকরণের অংশে সৃষ্টিধর্মী লিখন ও সৃজনশীল লিখন ইত্যাদি বিষয়ে একটি সুস্পষ্ট নিয়ম অনুসরণ করে পাঠ্যসূচি তৈরি করা হয়েছে।

রাষ্ট্রীয় পাঠ্যক্রম সংস্থার নির্দেশানুযায়ী পাঠনির্বাচনে কলা ও সংস্কৃতি, সামাজিক ও মানবিক মূল্যবোধ, পরিবেশ, জাতীয়তাবোধ ও কিশোরমনের উপযোগী পাঠ সন্নিবিষ্ট করা হয়েছে। পাঠ্যসূচি তৈরি করতে গিয়ে বিশেষভাবে নিম্নলিখিত বিষয়ের দিকে লক্ষ রাখা হয়েছে :

- ❖ ভাষা আয়ত্ব করে ব্যবহারিক জীবনে শুদ্ধ উচ্চারণ ও প্রয়োগ।
- ❖ সাহিত্য পাঠের মাধ্যমে বিভিন্নযুগের সংগে পরিচয় ঘটানো।
- ❖ ছাত্র-ছাত্রীরা যেন কেবল মুখস্থ বিদ্যার উপর নির্ভরশীল না হয়ে ব্যবহারিক জীবনে ও ভাষা প্রয়োগের ক্ষেত্রে উপযুক্ত হয়ে উঠতে পারে সেদিকে লক্ষ রেখে ব্যাকরণের ওপর জোর দেওয়া হয়েছে।
- ❖ মানসিক উৎকর্ষ ও কল্পনা শক্তির বিকাশ সাধন।
- ❖ ভবিষ্যতে ভাষাও সাহিত্য বিষয়ে চর্চা করতে আগ্রহ সৃষ্টি করা।

## BENGALI MIL

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper	Three Hours	Marks	100
<b>Unit wise Distribution of Marks and Periods</b>			
Unit No.	Title	Marks	Periods
Unit I :	Prose	25	45
Unit II :	Poetry	20	40
Unit III :	(A) Adolescence Education (B) Value Education	10	20
Unit IV :	Grammar	20	25
Unit V :	Essay writing and composition	25	10
Total		100	140

পাঠ্যপুথি : বাংলা সাহিত্য চয়নিকা  
অসম উচ্চতর মাধ্যমিক শিক্ষা-সংসদের দ্বারা প্রকাশিত

**Unitwise Distribution of Course contents :**

**Unit-I (Prose) নির্বাচিত গদ্যাংশ** (Marks-25)

1. বিড়াল— বংকিমচন্দ্র চট্টোপাধ্যায়
2. পরেশ— শরৎচন্দ্র চট্টোপাধ্যায়
3. মানুষের মন— বলাইচাঁদ মুখোপাধ্যায়
4. বৈজ্ঞানিক বুদ্ধি— রাজশেখর বসু

**Unit-II (Poetry) পদ্যাংশ** (Marks-20)

1. দুর্ভাগ্য দেশ— রবীন্দ্রনাথ ঠাকুর
2. সাম্যবাদী— কাজী নজরুল ইসলাম
3. বাঙলার মুখ আমি দেখিয়াছি— জীবনানন্দ দাশ
4. রূপাই— জসিমউদ্দিন

**Unit III** (Marks-10)

1. মূল্যবোধ শিক্ষা— সুজিত বর্ধন
2. বয়ঃসন্ধিকাল  
এবং এর উপযোগীশিক্ষা— কাবেরী সাহা

**Unit-IV ব্যাকরণ ও (Grammar)** (Marks-20)

পাঠ্যপুথিঃ আধুনিক বাংলা ব্যাকরণ : জগদীশ চন্দ্র ঘোষ

1. সন্ধি
2. সমাস
3. প্রত্যয়
4. প্রবাদ ও বাগবিধি

**Unit-V রচনা ও সৃষ্টিধর্মী লিখন (Essay and composition)** (Marks-15)

(ক) রচনা :

সাহিত্যবিষয়ক

বিজ্ঞান ও প্রযুক্তিবিদ্যাবিষয়ক

শিক্ষা ও ক্রীড়াবিষয়ক

জীবনীবিষয়ক

সামাজিক সমস্যা মূলক

জাতীয় জীবন বিষয়ক

অসমের প্রাকৃতিক সৌন্দর্য, সম্পদ, সংস্কৃতি, সমস্যা ইত্যাদি বিষয়ক।

(খ) শারাংশ

(Marks-10)

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## BODO (MIL)

### SYLLABUS FOR HIGHER SECONDARY COURSE

#### बर' आयदानि फराफारि

##### राव सोलोंनायनि थांखि :

रावआ सुबुं सोदोमस्रिनि गारनो हायि बाहागो । गासैबो मानसिआ बायदि थांखियाव राव बाहायो । रावआ जादों मानसिफोरनि गोसोनि साननाय हनायखौ फोरमायलायनायनि बिजों । खालि फोरमायलायनायनि बिजोंल' नड, राव रॉनायनि गेजेरजों गियान बुथुमनायनि लामायाबो जेंना गैयि जायो । जोनोमनि उननिफ्राय गथ'आ राव सोलोडे । सोलोंथाइयारि हारोंथाइ मोननो थाखाय फरायसालिसिम थांनायनि उननिफ्रायनो राव सोलोंनायनि जरखा बिथिं बेरखाडे । समाजारि जिब महरै मानसिआ राव सोलोडे बायदि थिलियाव बायदि रोखेमै । फरायसा-फोरखौ राव फोरॉनायनि थांखिआ जाबाय बायदि फरानि गेजेरजों जिउ-आरो मुलुगनि सोमोन्दै मिथिहोनाय । राव सोलोंनाया मोनसे गोख्रों फारिखान्थि । गोजौसिन गेजेरारि थाखोआव फरायसा-फोरखौ राव फोरॉनायाव बायदि आदब आरो खान्थि बाहायनांगौ ।

##### राव सोलोंनायनि आदब :

राव सोलोंनायनि बेलायाव गोबां आदब बाहायनाय जायो । गाहायै फरायनाय, लिरनाय, खोनासंनाय आरो बुंनाय । अदेबानि गोजौसिन गेजेरारि थाखोआव गुबुन माखासे आदबनि फारसेबो गोसो होनांगौ । बेनि गेजेराव रायलायनायनि आदब, जौगा थाखोनि लिरनायनि आदब, फोरमायथि लिरनाय, सार बाहागो लिरनाय, रावखान्थिनि गियान बुथुमनाय बायदिआनो गाहाइ ।

##### जर'खा गोसो होनो गोनां बिथिं :

गोजौसिन गेजेरारि सोलोंथाइनि थाखोआव महरारि बिथिडव गोसो होनाय जायाब्लाबो बेनिबो गोनांथि दं । मानोना रावखान्थिनि गियान बुथुमनायाव एबा थार रिसारनायनि फारसे गोसो होनायाव महरखौ गोनांथार । खोनासंनाय आरो बुंनायनि बिथिडवबो गोसो होनांगोन । बेजों लोगोसे गोसो होनो गोनांसिना जादों लिरनाया । रावखान्थिनि फराफोर जथायनाय, फरानि सोंथिफोर बानायनाय, खोनासंनाय आरो बुंनायनि गेजेरजों रायलायनायनि गोनांथार । फरायसाफोरआ फरानि खौमोन होनाय, जयै सावरायनाय, फरानि गुबै खोथानि फारसे फरायसाफोरखौ गोसो बोहोनाय, फोरमायथि बानायनाय, फराजों सोमोन्दो थानाय आयदा रायखंनाय, रावखान्थिनि गियान होनानै रावनि गियान बांहोनाय- बेफोर आयदाफोरनि फारसे फोरॉंगिरिया गोसो होनांगोन । रनसाय लिरनाय, लाइजाम लिरनाय, सोरजिथायारि लिरनाय बायदि आयदाफोराबो फरायसाफोरनि राव रॉनायनि मख'जाथाव आयजें । फोरॉंगिरिया फरायसाफोरखौ बे बिथिडव उन सोलोंथिनि हेफाजाबै मोजाडै गायसननो हागोन ।

#### बर' ( गोदान भारतारि राव )

##### बिथा :

जिसे आरो जिने थाखोनि फरायसाफोरखौ बर' थुनलाइनि सायख'जानाय फरा फरायहोनायनि हेफाजाबै बर' थुनलाइनि सोमोन्दै गियान होनो नाजानाय जादों । बे थांखिखौ सिगाडव लानानै बर' थुनलाइनि गोजाम, गेजेर आरो गोदान मुगायाव लिरनाय माखासे लिरगिरिफोरनि लिरथाइखौ फराफारियाव सोनाय जादों । फरायसफोरआ बर' रावखौ गेबेडै सोलोंनो/ लिरनो हानायाव हेफाजाब होगोन होनना सानना नानायबादियै रावखान्थिनि आयदाबो फराफारियाव थिस'ननाय जादों । लोगोसेनो सोरखारनि बिथोन बादियै 'आबहावा आरो खैफोद राहा' आरो 'बेसेनथियारि सोलोंथाइ आरो सेंग्रासा सोलोंथाइ'नि सायाव मोनब्रै फरा सोनाय जादों ।

**थांखि :**

फराफारि बानायनायाव बे खोथाफोरखौ गोसोआव लानाय जादो :

- ◆ फरायसाफोरा फराफारिनि फराफोरखौ जाहाथे गोरलैयै बुजिनो हायो।
- ◆ फराफोरा जाहाथे बिदै गोनां जायो।
- ◆ फराखौ फरायनायनि गेजेरजों फरायसाफोरनि गोसोआव जाहाथे हारिमायारि हारिमुनिफारसे सांग्रां जायो।
- ◆ बिजिरथायारि आरो सोरजिलु मोननैबो बिथिडव गोसो होनाय जादों।
- ◆ आयदा लाना रावनि थाखोआदि जुदा जायो बेखौ गोसो होनाय जादों।
- ◆ लिरनाय रावादि रावखान्थि, सोदोब बिहुंजों दैदेनजानाय बे खोथाखौ मिथिहोनो थाखाय रावखान्थि आरो सोदोब बिहुं बाहायनो थाखाय थुलुंगा होनाय।

**BODO (MIL)****SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE****Unitwise Distribution of Marks & Periods :****One paper****Three hours****Marks - 100****Unitwise Distribution of marks and periods****Unit No. Topics****Marks****Periods**

Unit-I	Prose	20	50
Unit-II	Poetry	25	40
Unit-III	(a) Adolescence Education (b) Value Education	10	20
Unit-IV	Grammar	20	25
Unit-V	Essay writing	15	10
		100	140

**Unitwise Distribution of course contents****Unit-I ( खोन्दो-1 ) : Prose ( रायथाइ ) - 30****Text book : Sujunai Bijab : Edited by - Editorial Board (AHSEC)**

फरा बिजाब : सुजुनाय बिजाब - सुजुगिरि : सुजु आफाद

( आसाम गोजौसिन गेजेरारि सोल्लोथाइ ग'थुम )

1. एण्डेल मुगानि बर' थुनलाइ - बिहुराम बर'
2. आलारि दामब्रा - खुगा सल'
3. गोनोखोआरि गोसो माबोरै दानो हायो - ड° दीनेश ग'स्वामी  
राव सोलायगिरि : बिरुपाक्ष गिरि बसुमातारी
4. बुथुवा थुंग्रि - नीलकमल ब्रह्म
5. बर' राव थुनलाइयाव प्रम'द चन्द्र ब्रह्मनि बिहोमा - मंगलसिं हाज'वारी
6. जारिमिन आरो बर' माहारि - कामेश्वर ब्रह्म

7. कासारनि हरिटिकर – म 'हिनी म 'हन ब्रह्म  
8. खेराइ मोसानायाव फावथिना नायबिजिरनाय – धिरेश्वर बर' नार्जी

**Unit-II ( खोन्दो-2 ) : Poetry ( खन्थाइ ) - 25**

1. छरखौ जं नायन बान – मदाराम ब्रह्म  
2. संसारनि अन्नाइ – प्रम 'द चन्द्र ब्रह्म  
3. बेसे गोजोन बेसे गोजों – नीलेश्वर ब्रह्म  
4. सम बेसम – अरबिन्द उजिर  
5. मोनाबिलि – समर ब्रह्म चौधुरी  
6. गोथां गाब गाथोंसै – अनजु  
7. दावदो दे दाव बर' हारि – नन्देश्वर बर'  
8. मोदै – धरणीधर औवारि

**Unit-III ( खोन्दो-3 ) : (a) Adolescence Education (b) Value Education - 10**

1. बेसेन मोन्दांथिनि सोलोंथाइ – ड° दुलुमणि ग 'स्वामी  
राव सोलायगिरि : बिरुपाक्ष गिरि बसुमातारी  
2. लाइमोन बैसो आरो बेनि गोनां सोलोंथाइ – ड° स्वर्णलता दास  
राव सोलायगिरि : उमेश बर'

**Unit-IV ( खोन्दो-4 ) : Grammar ( रावखान्थि ) - 20**

बेखेवफा, सोदोब बेखेवफा आरो मावरिजा बेखेवफा, दाजाबदा थारजा दाजाबदा, बां सानराय दाजाबदा, थि फोरमायग्रा दाजाबदा, बाथ्रा खोन्दोब, बाथ्रा फान्दाय, बाथ्राफाव ।

फरायनो गोनां बिजाब :

1. गोजौ रावखान्थि – मधुराम बर'  
2. गोनां रावखान्थि – कमल कुमार ब्रह्म

**Unit-V ( खोन्दो-5 ) : Essay writing ( रनसाय ) - 15**

रनसायनि आयदा :

- क) आसाम आरो भारतारि हारियारि जिउनि सोमोन्दै  
ख) थुनलाइ आरो हारिमुनि सोमोन्दै  
ग) बिगियान आरो जुन्थियारि बिद्यानि सोमोन्दै  
घ) सुबुं अनजिमा आरो भारत हादर  
ङ) समाज आरो रांखान्थियारि हालसालनि सोमोन्दै  
च) सोलोंथाइ आरो गेलेनायनि सोमोन्दै  
छ) दावबायनायनि सोमोन्दै

फरायनो गोनां बिजाब :

1. राव आरो रनसाय – मधुराम बर'  
2. रनसाय बिथुन – नीलकमल ब्रह्म

## HINDI (MIL)

### SYLLABUS FOR HIGHER SECONDARY COURSE

#### प्रस्तावना

दसवी कक्षा तक हिंदी का अध्ययन करने वाला विद्यार्थी समझते हुए पढ़ने व सुनने के साथ-साथ हिंदी में सोचने और उसे मौखिक एवं लिखित रूप में व्यक्त कर पाने की सामान्य दक्षता अर्जित कर चुका होता है। उच्चतर माध्यमिक स्तर पर आने के बाद इन सभी दक्षताओं को सामान्य से ऊपर उस स्तर तक ले जाने की दरकार होती है, जहाँ भाषा का इस्तेमाल भिन्न-भिन्न व्यवहार-क्षेत्रों की मांगों के अनुरूप किया जा सके। आधार पाठ्यक्रम साहित्यिक बोध के साथ-साथ भाषाई दक्षता के विकास को ज्यादा अहमियत देता है। यह पाठ्यक्रम उन विद्यार्थियों के लिए उपयोगी साबित होगा, जो आगे विश्वविद्यालय में अध्ययन करते हुए हिंदी को एक बिषय के रूप में पढ़ेंगे या विज्ञान-समाजविज्ञान के किसी विषय को हिंदी माध्यम से पढ़ना चाहेंगे। यह उनके लिए भी उपयोगी साबित होगा, जो उच्चतर माध्यमिक स्तर की शिक्षा के बाद किसी तरह के रोजगार में लग जाएंगे। वहाँ कामकाजी हिंदी का आधारभूत अध्ययन काम आएगा। जिन विद्यार्थियों की दिलचस्पी जनसंचार माध्यमों में होगी, उनके लिए यह पाठ्यक्रम एक आरंभिक पृष्ठभूमि निर्मित करेगा। इसके साथ ही यह पाठ्यक्रम सामान्य रूप से तरह-तरह के साहित्य के साथ विद्यार्थियों के संबंध को सहज बनाएगा। विद्यार्थी भाषिक अभिव्यक्ति के सूक्ष्म एवं जटिल रूपों से परिचित हो सकेंगे, वे यथार्थ को अपने विचारों में व्यवस्थित करने के साधन के तौर पर भाषा का अधिक सार्थक उपयोग कर पाएंगे और उनमें जीवन के प्रति मानवीय संवेदना एवं सम्यक दृष्टि का विकास हो सकेगा।

#### उद्देश्य

- ❖ इन माध्यमों और विधाओं के लिए उपयुक्त भाषा, प्रयोग की इतनी क्षमता उनमें आ चुकी होगी कि वे स्वयं इससे जुड़े उच्चतर पाठ्यक्रमों को समझ सकेंगे।
- ❖ सामाजिक हिंसा की भाषिक अभिव्यक्ति को समझें।
- ❖ भाषा के अंदर सक्रिय सत्ता संबंध की समझें।
- ❖ सृजनात्मक साहित्य को सराह पाने और उसका आनंद उठाने की क्षमता का विकास तथा भाषा में सौंदर्यात्मकता उत्पन्न करने वाली सृजनात्मक युक्तियों की संवेदना का विकास।
- ❖ विद्यार्थियों के भीतर सभी प्रकार की विविधताओं (धर्म, जाति, जेंडर, क्षेत्र भाषा संबंधी) के प्रति साकारात्मक एवं विवेकपूर्ण रवैये का विकास।
- ❖ पठन-समाग्री को भिन्न-भिन्न कोणों से अलग-अलग सामाजिक, सांस्कृतिक चिंताओं के परिप्रेक्ष्य में देखने का अभ्यास कराना तथा नजरिये की एकांगिकता के प्रति आलोचनात्मक दृष्टि का विकास करना।
- ❖ विद्यार्थी में स्तरीय साहित्य की समझ और उसका आनंद उठाने की स्फूर्ति, विकास, उसमें साहित्य को श्रेष्ठ, बनाने वाले तत्वों की संवेदना का विकास।
- ❖ विभिन्न ज्ञानानुशासनों के विमर्श की भाषा के रूप में हिंदी की विशिष्ट प्रकृति और उसकी क्षमताओं का बोध।
- ❖ कामकाजी हिंदी के उपयोग के कौशल का विकास।

- ❖ संचय माध्यमों (प्रिंट और इलेक्ट्रॉनिक) में प्रयुक्त हिंदी की प्रकृति से परिचय और इन माध्यमों की मांगों के अनुरूप मौखिक एवं लिखित अभिव्यक्ति का विकास।
- ❖ विद्यार्थी में किसी भी अपरिचित विषय से संबंधित प्रासंगिक जानकारी के स्रोतों का अनुसंधान और उन्हें व्यवस्थित ढंग से उनकी मौखिक और लिखित प्रस्तुति करने की क्षमता का विकास।

## शिक्षण-युक्तियाँ

- ❖ कुछ बातें इस स्तर पर हिंदी शिक्षण के लक्ष्यों के संदर्भ में सामान्य रूप से कही जा सकती हैं। एक तो यही कि कक्षा में दबाव एवं तनाव मुक्त माहौल होने की स्थिति में ही ये लक्ष्य हासिल किए जा सकते हैं। चूँकि इस पाठ्यक्रम में तैयारशुदा उत्तरों को कंटस्थ कर लेने की कोई अपेक्षा नहीं है, इसलिए चीजों को समझने और उस समझ के आधार पर उत्तर को शब्दबद्ध करने की योग्यता विकसित करना ही हमारा काम है। इस योग्यता के विकास के लिए कक्षा में विद्यार्थियों और शिक्षक के बीच निर्बाध संवाद जरूरी है। विद्यार्थी अपनी शंकाओं और उलझनों को जितना ही अधिक व्यक्त करेंगे, उतनी ही ज्यादा सफाई उनमें आ पाएगी।
- ❖ भाषा की कक्षा से समाज में मौजूद विभिन्न प्रकार के द्वंद्वों पर बातचीत का मंच बनाना चाहिए। उदाहरण के लिए संविधान में शब्द विशेष के प्रयोग पर मनाही को चर्चा का विषय बनाया जा सकता है। यह समझ जरूरी है कि छात्रों को सिर्फ सकारात्मक पाठ देने से नहीं काम चलेगा बल्कि उन्हें समझाकर भाषिक यथार्थ का सीधे सामना करवाने वाले पाठों से परिचय होना जरूरी है।
- ❖ शंकाओं और उलझनों को रखने के अलावा भी कक्षा में विद्यार्थियों को अधिक-से-अधिक बोलने के लिए प्रेरित किया जाना जरूरी है। उन्हें यह अहसास कराया जाना चाहिए कि वे पठित सामग्री पर राय देने का अधिकार और उसकी काबिलियत रखते हैं। उनकी राय को तवज्जो देने और उसे बेहतर तरीके से पुनर्प्रस्तुत करने की अध्यापकीय शैली यहां बहुत उपयोगी होगी।
- ❖ विद्यार्थियों को संवाद में शामिल करने के लिए यह भी जरूरी होगा कि उन्हें एक नामहीन समूह न मानकर अलग-अलग व्यक्तियों के रूप में अहमियत दी जाए। शिक्षक को अक्सर एक कुशल संयोजक की भूमिका में स्वयं को देखना होगा, जो किसी भी इच्छुक व्यक्ति को संवाद का भागीदार बनने से वंचित नहीं रखता, उसके कच्चे-पक्के वक्तव्य को मानक भाषा-शैली में ढाल कर उसे एक आभा दे देता है और मौन को अभिव्यंजना मान बैठे लोगों को मुखर होने पर बाध्य कर देता है।
- ❖ अप्रत्याशित विषयों पर चिंतन करने और सोचे हुए की मौखिक व लिखित अभिव्यक्ति करने की योग्यता का विकास शिक्षक के सचेत प्रयास से ही संभव है। इसके लिए शिक्षक को एक निश्चित अंतराल पर नए-नए विषय प्रस्तावित कर लेख एवं अनुच्छेद लिखने तथा संभाषण करने के लिए पूरी कक्षा को प्रेरित करना होगा। यह अभ्यास ऐसा है, जिसमें विषयो की कोई सीमा तय नहीं की जा सकती। विषय की निस्सीम संभावना के बीच शिक्षक यह सुनिश्चित कर सकता है कि उसके विद्यार्थी किसी निबंध-संकलन या कुंजी से तैयारशुदा सामग्री को उतार भर न ले। तैयारशुदा सामग्री के लोभ से, बाध्यतावश ही सही मुक्ति पाकर विद्यार्थी नये तरीके से सोचने और उसे शब्दबद्ध करने के यत्न में सन्नद्ध होंगे। मौखिक अभिव्यक्ति पर भी विशेष ध्यान देने की जरूरत है, क्योंकि भविष्य में साक्षात्कार संगोष्ठी जैसे मौकों पर यही योग्यता विद्यार्थी के काम आती है। इसके अभ्यास के सिलसिले में शिक्षक को उचित हावभाव, मानक उच्चारण, पाँज, बलाघात, हाजिरजवाबी इत्यादि पर खास बल देना होगा।

- ❖ मध्य कालीन काव्य की भाषा के मर्म से विद्यार्थी का परिचय कराने के लिए जरूरी होगा कि किताबों में आए काव्यांशों की संगीतबद्ध प्रस्तुतियों के ऑडियो-विडियो कैसे तैयार किए जाएं। अगर आसानी से कोई गायक-गायिका मिले तो कक्षा में मध्यकालीन साहित्य के अध्यापन-शिक्षण में उससे मदद ली जानी चाहिए।
- ❖ वृत्तचित्रों और फीचर फिल्मों को शिक्षण सामग्री के तौर पर इस्तेमाल करने की जरूरत है। इनके प्रदर्शन के क्रम में इन पर लगातार बातचीत के जरिए सिनेमा के माध्यम से भाषा के प्रयोग की विशिष्टता की पहचान कराई जा सकती है और हिंदी की अलग-अलग छटा दिखाई जा सकती है। विद्यार्थियों को स्तरीय परीक्षा करने को भी कहा जा सकता है।
- ❖ कक्षा में सिर्फ एक पाठ्यपुस्तक की भौतिक उपस्थिति से बेहतर यह है कि शिक्षक के हाथ में तरह-तरह की पाठ्यसामग्री को विद्यार्थी देख सकें और शिक्षक उनकी कक्षा में अलग-अलग मौकों पर इस्तेमाल कर सकें।
- ❖ भाषा लगातार ग्रहण करने की क्रिया में बनती है, इसे प्रदर्शित करने का एक तरीका यह भी है कि शिक्षक खुद यह सिखा सके कि वे भी सन्दर्भग्रंथ की लगातार मदद ले रहे हैं। इससे विद्यार्थियों में इसका इस्तेमाल करने को लेकर तत्परता बढ़ेगी। अनुमान के आधार पर निकटतम अर्थ तक पहुंचकर संतुष्ट होने की जगह वे सही अर्थ की खोज करने का अर्थ समझ जाएंगे। इससे शब्दों की अलग-अलग रंगत का पता चलेगा और उनमें संवेदनशीलता बढ़ेगी। वे शब्दों के बारीक अंतर के प्रति और सजग हो पाएंगे।
- ❖ कक्षा-अध्यापन के पूरक कार्य के रूप में सेमिनार, ट्यूटोरियल कार्य, समस्या-समाधान कार्य, समूह चर्चा, परियोजना कार्य, स्वाध्याय आदि पर बल दिया जाना चाहिए। पाठ्यक्रम में जनसंचार माध्यमों से संबंधित अंशों को देखते हुए यह जरूरी है कि समय-समय पर इन माध्यमों से जुड़े व्यक्तियों और विशेषज्ञों को भी स्कूल में बुलाया जाए तथा उनकी देख-रेख में कार्यशालाएं आयोजित की जाएं।

## HINDI (MIL)

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

**One Paper**

**Three Hours**

**Marks 100**

#### **Unitwise Distribution of Marks and Periods :**

Unit No.	Title	Marks	Periods
<b>Unit-I</b>	अपठित बोध (गद्यांश और काव्यांश-बोध)	15+5=20	25
<b>Unit-II</b>	रचनात्मक लेखन एवं जन-संचार माध्यम अभिव्यक्ति औ माध्यम (प्रिंट माध्यम, संपादकीय, रिपोर्ट, आलेख, फीचर-लेखन)	5+5+5+5+5=25	40
<b>Unit-III</b>	पाठ्य पुस्तक : आरोह (भाग-2)	40	60

(काव्यांश-20, गद्यांश-20)

पूरक पुस्तक : वितान (भाग-2)	15	10
Total	100	135

**Unitwise Distribution of Course contents :****Unit-I : अपठित बोध :** **20**

1. काव्यांश-बोध पर आधारित पाँच लघुतरात्मक प्रश्न (1×5) 5
2. गद्यांश-बोध पर आधारित बोध, प्रयोग, रचनांतरण, शीर्षक आदि पर लघुतरात्मक प्रश्न) 15

**Unit-II : रचनात्मक लेखन एवं जन-संचार माध्यम :** **25**

1. निबंध (किसी एक विषय पर) 10
2. कार्यालयी पत्र (विकल्प सहित) 5
3. ❖ प्रिंट माध्यम, संपादकीय, रिपोर्ट, आलेख आदि पर पाँच अतिलघुतरात्मक प्रश्न पूछें जाएंगे  
❖ आलेख (किसी एक विषय पर) 5
4. फीचर लेखन (जीवन-संदर्भों से जुड़ी घटनाओं और स्थितियों पर फीचर लेखन-विकल्प सहित) 5

**Unit-III : आरोह भाग-2 (काव्य भाग और गद्य भाग) 20 + 20 = 40**

1. दो काव्यांशों में से किसी एक पर अर्थ ग्रहण के चार/पाँच प्रश्न 8
2. काव्यांश के सौंदर्यबोध पर दो काव्यांशों में विकल्प दिया जाएगा तथा किसी एक काव्यांश के तीनों प्रश्नों के उत्तर देने होंगे। 6
3. कविताओं को विषय-वस्तु से संबंधित तीन में से दो लघुतरात्मक प्रश्न 3 + 3 = 6
4. दो में से किसी एक गद्यांश पर आधारित अर्थ-ग्रहण के चार प्रश्न 2 + 2 + 2 + 2 = 8
5. पाठों की विषय-वस्तु पर आधारित पाँच में से चार बोधात्मक प्रश्न 3 + 3 + 3 + 3 = 12

**पूरक पुस्तक : वितान भाग-2 15**

1. पाठों की विषयवस्तु पर आधारित तीन में से दो बोधात्मक प्रश्न 3 + 3 = 6
2. विचार/संदेश पर आधारित तीन में से दो लघुतरात्मक प्रश्न 2 + 2 = 4
3. विषयवस्तु पर आधारित दो में से एक निबंधात्मक प्रश्न 5

**निर्धारित पुस्तकें :****(i) आरोह-भाग-2**

एन.सी.ई.आर.टी. द्वारा विकसित और असम राष्ट्रभाषा प्रचार समिति, गुवाहाटी द्वारा प्रकाशित

**(ii) बितान भाग-2**

एन.सी.ई.आर.टी. द्वारा विकसित और असम राष्ट्रभाषा प्रचार समिति, गुवाहाटी द्वारा प्रकाशित

**(iii) अभिव्यक्ति और माध्यम**

एन.सी.ई.आर.टी. द्वारा विकसित और असम राष्ट्रभाषा प्रचार समिति, गुवाहाटी द्वारा प्रकाशित

The following prose & Portry pieces are prescribed for H.S. Final year course in Hindi

**काव्य खंड**

- |                            |                       |
|----------------------------|-----------------------|
| 1. दिन जल्दी-जल्दी ढलता है | -हरिवंशराय बच्चन      |
| 2. कविता के बहाने          | -कुँवर नारायण         |
| 3. कमरे में बंद अपाहिज     | -रघुवीर सहाय          |
| 4. सहर्ष स्वीकारा है       | -गजानन माधव मुक्तिबोध |
| 5. उषा                     | -शामशेर बहादुर सिंह   |
| 6. कवितावली                | -तुलसीदास             |
| 7. रूबाइयाँ                | -फिराक गोरखपुरी       |
| 8. छोटा मेरा खेत           | -उमाशंकर जोशी         |

**गद्य खंड**

- |                               |                       |
|-------------------------------|-----------------------|
| 9. बाजार दर्शन                | -जैनेंद्र कुमार       |
| 10. काले मेघा पानी दे         | -धर्मवीर भारती        |
| 11. चार्ली चैप्लिन यानी हम सब | -विष्णु खरे           |
| 12. नमक                       | -रजिया सज्जाद जहीर    |
| 13. शिरीष के फूल              | -हजारीप्रसाद द्विवेदी |

**पूरक पुस्तक**

- |                      |                   |
|----------------------|-------------------|
| 1. सिल्वर वैडिंग     | -मनोहर श्याम जोशी |
| 2. अतीत में दबे पाँव | -ओम थानवी         |

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## NEPALI (MIL)

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper Three Hours Marks 100

#### Unitwise Distribution of Marks and Periods :

Unit No.	Title	Marks	Periods
Unit-1	Prose (Essay + Short Story)	35	50
Unit-2	Poetry	30	45
Unit-3	Grammar	20	30
Unit-4	Essay Writing	15	10
Total		100	135

*Textbooks* : NEPALI SAHITYA SUMAN

(Published by Assam Higher Secondary Education Council)

*Grammar* : SARAL NEPALI VYAKARAN RA RACHANA

–Raj Narayan Pradhan, Mesars Printed, Gangtok

#### Unitwise Distribution of Course contents :

Unit	Contents	Marks
<b>Unit-1 : Prose (Essay + Short Story)</b>		<b>35</b>
I.	Sahitya Ek Bibechna : Lil Bahadur Chetry	
II.	Assame Nepali Sanskriti : Durga Prasad Ghimire	
III.	Bharatiya Sanghati Ka Adharharu : Tarapati Upadhyaya	
IV.	Bigyan Ko Pragati Ra Adhunik Bharat : Tilak Sarmah (Lamsal)	
V.	Mera Barika Bhatekarela : Chandra Kumar Sarma	
VI.	Bidhwastha Jiwan : Rupnarayan Sinha	
VII.	Abstract Art : Shiva Kumar Rai	
VIII.	Mero Euta Naga Huki : Hariprasad 'Gorkha' Rai	
<b>Unit-2 : Poetry</b>		<b>30</b>
I.	Sundarkanda Ramayan : Bhanubhakta Acharya	
II.	Pikdut : Motiram Bhatta	
III.	Kaal Mahima : Lekhnath Poudyal	
IV.	Karma : Balkrishna Sama	
V.	Bholi Udaune Surya Lai : Agam Sing Giri	
VI.	Tihar : Puspallal Upadhyaya	
<b>Unit-3 : Grammar</b>		<b>20</b>
Pada, Karak Ra Bibhakti, Samas, Sandhi, Pratyaya, Upasarga, Linga, Vachan Ra Purush, Ukhan Ra Tukka.		
<b>Unit-4 : Essay Writing (Unseen)</b>		<b>15</b>
I.	Sahitya	
II.	Sanskriti	
III.	Science & Environmental Studies	
IV.	Sports	
V.	Current Affairs	

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## URDU (MIL)

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper Three Hours Marks 100

#### Unitwise Distribution of Marks and Periods :

Unit No. Title	Marks	Periods
Unit-1 : Prose	30	45
Unit-2 : Poetry	25	45
Unit-3 : Biographies and Grammar	20	20
Unit-4 : Translation from English to Urdu	10	10
Unit-5 : Essay Writing	15	20
Total	100	140

#### Unitwise Distribution of Course contents :

Following lessons and pieces of poem are to be read from the book "Urdu Ki Nai Kitab" for class XII published by NCERT, New Delhi in the year 1996 except item No. IV(a) of unit 2 which can be had from Assam Higher Secondary Education Council, Bamunimaidam, Guwahati-21.

**Unit: 1 : Prose :** 30 Marks

##### Lessons

- |                             |                       |
|-----------------------------|-----------------------|
| (a) Marhoom ki yad main     | : Written By          |
| (b) Chirya Chirye Ki Kahani | : Petros Bokhari      |
| (c) Mirza Zahirdar Beg      | : Abul Kalam Azad     |
| (d) Bhoola                  | : Dr. Nazir Ahmed     |
|                             | : Rajendra Singh Bedi |

**Unit-2 : Poetry :** 25 Marks

##### Pieces of Poem

- |  |   |
|--|---|
| (i) Ghazals                            | : Name of Poet                            |
|  | (a) Kwaja Mir Dard                        |
|  | (b) Sheikh Ibrahim Zauq                   |
|  | (c) Mohd. Shad Azimabadi                  |
|  | (d) Firaq Gorakhpoori                     |
| (ii) Mathonawi (Duniya ki Be-thibati)  | : Nawab Mirza Shauq Lakhnavi              |
| (iii) Marthia (Garmi-e-Dast-e-Karbala) | : Mir Babur Ali Anis                      |
| (iv) Nazam                             |   |
| (a) Tarana-e-A'sam                     | : Anjum Shujabadi (Abul Hussain Mazumder) |
| (b) Shuay-e-Ummid                      | : Dr.Mohd. Iqbal                          |

**Unit-3: Biographies :** 10 Marks

##### Grammar :

- |                         |          |
|-------------------------|----------|
| (i) Fail and its kind   | 10 Marks |
| (ii) Jumla and its kind | 10 Marks |
| (iii) Jins and Adad     |          |
| (iv) Muhawara           |          |

**Unit-4 : Translation (Tarjuma) from English to Urdu :** 10 Marks

**Unit-5 : An Essay on general topics :** 15 Marks

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## KHASI (MIL)

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

**One Paper** **Three Hours** **Marks 100**

**Unitwise Distribution of Marks and Periods :**

Unit No.	Title	Marks	Periods
Unit-I	Prose	35	35
Unit-II	Poetry	30	35
Unit-III	Grammar	20	30
Unit-IV	Essay Writing	15	15
Total		100	115

**Unitwise Distribution of Course contents :**

**Unit I : Prose :** **35 Marks**

*Textbook :* (1) Phuit ka Sabuit, *Author :* S. J. Duncan

Selected Pieces :

- 1) Ka Akor Kaba Tam
- 2) U Men Mali

*Textbook :* (2) Katto Katne Shaphang ka sonnet

Selected Pieces :

Lynnong I & II

**Unit II : Poetry :** **30 Marks**

*Textbook :* Ki Poetry Khasi, *Author :* V. G. Bareh

Selected Pieces :

- 1) U Tiewdohmaw Ha Shiteng Riat
- 2) Ka Wah Umkhrah
- 3) Hapdeng Ki Law Kynjah Ka Tlang

*Textbook :* Ha Ki Sur Ka Poetry, *Author :* S. S. Majaw

Selected pieces

Ka Shnong Jingthala

**Unit III : Grammar :** **20 Marks**

*Textbook :* Ka Grammar by H. W. Sten

Pieces : Lynnong II, IV, VI, VIII

**Unit IV : Essay Writing :** **15 Marks**

To write a topical essay on the subjects other than political and religious.

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## GARO (MIL)

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

**One Paper** **Three Hours** **Marks 100**

#### **Unitwise Distribution of Marks and Periods :**

Unit No.	Title	Marks	Periods
Unit-1 :	Prose	40	40
Unit-2 :	Poetry	30	35
Unit-3 :	Essay	15	20
Unit-4 :	Composition	15	20
Total		100	115

#### **Unitwise Distribution of Course contents :**

**Unit -1 : Prose :** **40 Marks**

Pieces to be read :

- |       |                               |               |
|-------|-------------------------------|---------------|
| (i)   | Kitap Seani                   | : H.K. Sangma |
| (ii)  | Katchaani Chimik              | : S.G. Momin  |
| (iii) | Ang Aganronggipa Kattarang    | : S.K. Marak  |
| (iv)  | Bipana Krakra                 | : B.S. Momin  |
| (v)   | Lekka Pora aro Gisik Bimik    | : K.A. Momin  |
| (vi)  | Gital Chasongo Janggi Tangani | : L.R. Marak  |

*Textbook* : A Chikni Chanchibewale Seanirang,  
*Edited By* K.M. Momin

**Unit-2 : Poetry :** **30 Marks**

Pieces to be read :

- |       |                              |                     |
|-------|------------------------------|---------------------|
| (i)   | Anga Mechik                  | : J.D. Shira        |
| (ii)  | A chik A song                | : B.Bangshall       |
| (iii) | Do Kru                       | : J.D. Shira        |
| (iv)  | Tingtotsa Chi                | : Noho B. Sangma    |
| (v)   | Seng nat                     | : H.D. Momin        |
| (vi)  | Waimong Bri, Matchuni Simchi | : Herilla Rechil    |
| (vii) | Dongsogimin Rasong           | : Thakdir N. Sangma |

*Textbook* : A chik Poedorang, *Compiled By* L.D. Shira

**Unit - 3 : Essay :** **15 Marks**

Unseen - Topics may be on contemporary problems or issues on Assam and India like Arts, Culture, Economy, Science, Technology etc.

**Unit - 4 : Composition :** **15 Marks**

*Book recommended* : A chik composition *by* K.M. Momin

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## MIZO (MIL)

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper

Three Hours

Marks 100

#### Unitwise Distribution of Marks and Periods :

Unit No.	Title	Marks	Periods
Unit-1 :	Prose	25	25
Unit-2 :	Poetry	25	25
Unit-3 :	Fiction	15	15
Unit-4 :	Drama	15	15
Unit-5 :	Grammar and Composition	20	20
Total		100	100

#### Unitwise Distribution of Course Contents :

##### Unit-1 : Prose (THU) :

25 Marks

- (i) Hnam inpumkhatna kawnga  
tawng pawimawhna : PC. Biaksiama
- (ii) Mizo inneih dan : B. Lalthangliana
- (iii) Mizo nula huaisen pahnih : R.L. Thanmawia
- (iv) Val upa : Darchhawna
- (v) Lung in malsawmna : H. Lallungmuana
- (vi) Tu nge Mizo : Z. T. Sangkhuma
- (vii) Zoram indopui pahnihua : C. Chhuanvawra
- (viii) Tlangvalte u, nangmahni khawvel a nei : P.L. Liandinga (Lehlin)
- (ix) Lungphang lo la : L. Keivom
- (x) Thlaa lawn : A. Sawihlira

##### Unit-2 : Poetry (HLA) :

25 Marks

- (i) Pi pu chhuahtlang hlui : Liandala
- (ii) Lungdawh hla : V. Hawla
- (iii) Kan ram nuaruah : Rokunga
- (iv) Piallci hmun rem kan bel e : Dozinga
- (v) Tleitirah : Dura Chongthu
- (vi) Awkhawhar lenkawla ka han thlir a : Vankhama
- (vii) Zun phur thing par : Damhauhva
- (viii) Takhlai ni kawlkung : Romani
- (ix) Khuavel i la chhing ngei ang : V. Thangzama
- (x) Panlai kei ka ram tuanna : Lalsangzuali Sailo
- (xi) Phungrual an tin ang a : Laithangpuia
- (xii) Ka tan ni leh thla reng a eng tawh lo : Taivela

**Unit-3 : Fiction** : **15 Marks**

(i) Lali Biakliana

**Unit-4 : Drama :** **15 Marks**

(i) Chharmawia : Laltluangliana Khiangte

(ii) Zothangsangi : Vanneihluanga

**Unit-5: Grammar and Composition :** **20 Marks**

(i) Precis ziak

(ii) Prefix and Suffix

(iii) Essay Ziak

(iv) Tawng upa

*Prescribed Textbook :* Mizo (core) XII by MBSE, Aizawl  
Mizo Grammar and Composition for  
class XI and XII By MBSE, Aizawl.

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## MANIPURI (MIL)

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper

Three Hours

Marks 100

#### Unitwise Distribution of Marks and Periods :

Unit No.	Topic	Marks	Periods
Unit-1	Prose	30	50
Unit-2	(A) Adolescence Education & (B) Need for Value Education	15	25
Unit-3	Poetry	25	35
Unit-4	Grammar	15	25
Unit-5	Essay Writing	15	10
Total		100	145

#### Unitwise Distribution of Course Contents :

*Textbook* : Anouba Manipuri Wareng -Sheireng

(MIL, Final Year Higher Secondary)

*Published by* : Assam Higher Secondary Education Council, Guwahati.

#### Unit-1 : Prose

(30 Marks)

Pieces to be read

- ১। মণিপুরী লোকসাহিত্য : অশংবম মীনকেতন
- ২। হৌজিকী মণিপুরী বারেং : এলাংবম নীলকান্ত
- ৩। মৈতৈ নুপী : এস, কৃষ্ণমোহন
- ৪। ইলিশা অমগী মহাও : এন, কুঞ্জমোহন

#### Unit-2 : (ক) এডোলেসেন্স এডুকেশন

অমসুং

(15 Marks)

(খ) ভেলু এডুকেশনগী তঙায়ফদবা

- ১। এডোলেসেন্স এডুকেশন : ওরাই, তোমচৌ
- ২। ভেলু এডুকেশনগী তঙায়ফদবা : এন, জি, ইবেতোস্বী

#### Unit-3 : Peotry (শৈরেং) :

(25 Marks)

Pieces to be read

- ১। মৈতৈ চনু : লমাবম, কমল
- ২। পুন্দি হিদোম : হুৰাইবম নবদ্বীপচন্দ্র
- ৩। কমলদা : অশাংবম মীনকেতন

- ৪। মণিপুর : এ, নীলকান্ত  
 ৫। লৈলাংবা : লাইশ্রম সমরেন্দ্র  
 ৬। মঙাল : এস, ধবল

**Unit-4 : Grammar****(15 Marks)***Recommended Books*

1. Miteirongi Wahouron : N. Amusana Singha  
 2. Manipuri Grammar : Published by : Council of Higher  
 Secondary Education, Manipur.

- ১। সমাস;  
 ২। কারক;  
 ৩। বিভক্তি;  
 ৪। উপসর্গ;  
 ৫। প্রত্যয়;

**Unit-5 : Essay Writing****(15 Marks)**

Preferable Topics -

- ১। আসাম, মণিপুর অমসুং ভারতকী মীওইবগী পুলি অমসুং পরম্পরা;  
 ২। সাহিত্য, কলা অমসুং নাৎ (সংস্কৃতি) গা মরী লৈনবা;  
 ৩। সাইন্স অমসুং টেকনোলজিগা মরী লৈনবা;  
 ৪। মীশিং (Population);  
 ৫। অকোয়বগী ফিভম (Environment);  
 ৬। সমাজ অমসুং অর্থনীতিগা মরী লৈনবা;  
 ৭। মইহে-মশীং অমসুং শাল্ল-খোৎনবগা মরী লৈনবা;  
 ৮। লমকোয়বগা মরী লৈনবা;

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## HMAR (MIL)

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper Three Hours Marks 100

#### Unitwise Distribution of Marks & Periods :

Unit	Topics	Marks	Periods
Unit-1	Prose	40	45
Unit-2	Poetry	25	35
Unit-3	Grammar & Composition	25	50
Unit-4	Essay	10	10
Total		100	130

#### Unitwise Distribution of Course Contents :

##### Unit-1 : Prose : Marks-40

i)	Lachit Barphukan	: Thangnuntluong Ralsun	15
ii)	Sinlung	: Dr. Lal Dena	5
iii)	Chulram Fang	: H F Nghakaka	5
iv)	Mithi Sm'Ingbawl Dan	: H V Vara	5
v)	Khuongpuitlur	: S N Ngurte	5
vi)	Dr. Ambedkar	: R Tawna Khawbung	5

##### Unit-2 : POETRY Marks-25

###### *Classical :*

i)	Chawn Lam	: Folk song	5
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###### *Modern :*

ii)	Sawrthlapui	: W. R. Pudaite	4
iii)	Zo Tlangsangah	: L. Keivom	4
iv)	Thangvan Sang	: Kama Sungte	4
v)	Zion Khawvar Nghaktuhai	: Pautinkhup	4
vi)	Aw Kan Hmar Ram	: Lalkhum Keivawm	4

##### Unit-3 : Grammar & Composition Marks-25

i)	Parts of Speech	2
ii)	Noun	2
iii)	Verb	2
iv)	Tawng Upa (Idioms & Phrases)	2
v)	Thumal Iniaichin Bikhai	3
vi)	Ziek Kawp le Ziek Kawp Lo Ding	3
vii)	Thumal Pahni Hmang Kawkal Awlhai	3
viii)	Hmar Tawng Ziek Dik Dan	3
ix)	Tawngkasuok le A Hrilfiena	2
x)	Idiomatic Phrase le Tawng Upa	3

##### Unit-4 :Essay Marks-10

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## ALTERNATIVE ENGLISH

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper

Three Hours

Marks 100

Unitwise Distribution of Marks and Periods :

Unit No.	Topic	Marks	Periods
Unit-I :	Prose	35	50
Unit-2 :	Poetry	30	30
Unit-3 :	Grammar	20	20
Unit-4 :	Composition	15	20

Textbook : 'Effusions' published by Oxford University Press

Unitwise Distribution of Course Contents :

Unit-I : Prose :

1	Who is a Great Man?	Dr. B.R. Ambedkar
2	The Testament of a Walker	R K Narayan
3	A Letter to the Mahatma	Jawaharlal Nehru
4	Two Cheers for Democracy	E.M. Forster
5	The Scientific Technique	Bertrand Russell

Unit-II: Poetry :

6	In Time of 'The Breaking of Nations'	Thomas Hardy
7	Talking Leave of a Friend	Ezra Pound
8	Sita	Toru Dutt
9	Rickshaw-wallah	A.K. Ramanujan

Unit-III : Grammar :

(i)	Transformation of Sentences (affirmative, interrogative, negative)
(ii)	Question Tags
(iii)	Use of Prepositions
(iv)	Use of Tenses

Unit-IV : Composition :

Composition based on a given conversational piece.

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## ENGLISH (Core)

### SYLLABUS FOR HIGHER SECONDARY COURSE

#### Background :

Students are expected to have acquired a reasonable degree of language proficiency in English by the time they come to class XII, and the course will aim, essentially, at promoting the higher-order language skills.

For a large number of students, the higher secondary stage will be a preparation for the university, where a fairly high degree of proficiency in English may be required. But for another large group, the higher secondary stage may be a preparation for entry into the world of work. The Core Course should cater to both groups by promoting the language skills required for academic study as well as the language skills required for the workplace.

#### Objectives :

The general objectives at this stage are :

- ❖ to listen to and comprehend live as well as recorded oral presentations on a variety of topics,
- ❖ to develop greater confidence and proficiency in the use of language skills necessary for social and academic purposes.
- ❖ to participate in group discussions/interviews, making short oral presentations on given topics.
- ❖ to perceive the overall meaning and organisation of the text (i.e., the relationships of the different “chunks” in the text to each other).
- ❖ to identify the central/main point and supporting details, etc.
- ❖ to build communicative competence in various registers of English.
- ❖ to promote advanced language skills with an aim to develop the skills of reasoning, drawing inferences, etc. through meaningful activities.
- ❖ to translate texts from mother tongue (s) into English and vice versa.
- ❖ to develop ability and knowledge required in order to engage in independent reflection and enquiry.
- ❖ to develop the capacity to appreciate literary use of English and also use English creatively and imaginatively.

**At the end of this stage, learners will be able to do the following:**

- ❖ Read and comprehend extended texts (prescribed and non-prescribed) in the following genres: fiction, science fiction, drama, poetry, biography, autobiography, travel and sports literature, etc.
- ❖ Text-based writing (i.e., writing in response to questions or tasks based on prescribed or unseen texts)
- ❖ Understand and respond to lectures, speeches, etc.
- ❖ Write expository/argumentative essays of 250-500 words, explaining or developing a topic, arguing a case, etc.
- ❖ Write formal/informal letters and applications for different purposes.
- ❖ Write items related to the workplace (minutes, memoranda, notices, summaries, reports; filling up of forms, preparing CVs, etc.).
- ❖ Taking/making notes from reference materials, recorded talks etc.

#### Language Items :

The Core Course should draw upon the language items meant for their language proficiency. Particular attention may, however, be given to the following areas of grammar:

The uses of different tense forms for different kinds of narration.

The use of passive forms in scientific and innovative writings.

Converting one kind of sentence/clause into a different kind of structure as well as other items to exemplify stylistic variations in different discourses.

A conscious knowledge of some grammatical rules and sound patterns may be useful and interesting at this stage.

### Methods and Techniques :

The techniques used for teaching should promote habits of self-learning and reduce dependence on the teacher. In general, we recommend a multi-skill, learner-centred, activity based approach, of which there can be many variations. The core classroom activity is likely to be that of silent reading of prescribed/selected texts for comprehension, which can lead to other forms of language learning activities such as role play, dramatization, group discussion, writing, etc. although many such activities could be carried out without the preliminary use of textual material. It is important that students be trained to read independently and intelligently, interacting actively with texts, with the use of reference materials (dictionaries, thesauruses, etc.) where necessary. Some pre-reading activity will generally be required, and the course books should suggest suitable activities, leaving teachers free to devise other activities when desired. So also, the reading of texts should be followed by post reading activities. It is important to remember that every text can generate different readings. Students should be encouraged to interpret texts in different ways.

Group and pair activities can be resorted to when desired, but many useful language activities can be carried out individually.

In general, teachers should encourage students to interact actively with texts and with each other. Oral activity (group discussion, etc.) should be encouraged.

## ENGLISH (Core)

### SYLLABUS FOR HIGHER SECONDARY SECOND YEAR COURSE

One paper

3 Hours

Marks : 100

Unit wise Weightage :

	Unit/Areas of Learning	Marks
A.	<b>Section-A</b> <b>Reading Skills</b> Reading unseen prose passage	<b>10</b>
B.	<b>Section-B</b> <b>Advanced Writing Skills</b>	<b>25</b>
C.	<b>Section : C</b> <b>Grammar</b>	
	(i) Narration : Direct and Indirect	4marks
	(ii) Voice	3marks
	(iii) Tenses	5marks
	(iv) Preposition	4marks
	(v) Transformation of Sentences	4marks
D.	<b>Section-D (Prescribed Books)</b>	
	(i) Flamingo	<b>30</b>
	(ii) Vistas	<b>15</b>

**SECTION - A****Reading unseen Passage****10 Marks 10 Periods**

Reading unseen prose passage for comprehension.

The total length of the passage will be between 500-800 words. The passages may be one of the following:

- (a) Factual Passages e.g. instructions, descriptions, reports.
- (b) Discursive passage involving opinion e.g. argumentative, persuasive or interpretative text.
- (c) Literary passage e.g. extract from fiction, drama, poetry, essay or biography.

**SUMMARY - H.S. Final year**

	<b>Unseen Passages</b>	<b>No of words</b>	<b>Testing Areas</b>	<b>Marks allotted</b>
1		500-800	Short answer type questions to test local, global and inferential comprehension	07
			Vocabulary	03

**SECTION - B****Advanced Writing Skills****25 Marks**

- 2. One out of two short compositions of not more than 50 words each e.g. advertisement and notices, designing or drafting posters, writing formal and informal invitations and replies. 05
- 3. A report or a factual description based on verbal input provided (one out of two) (100-125 words) 10
- 4. Writing one out of two letters based on verbal input. Letter types include : 10
  - (a) **Business or official letters** (for making enquiries, registering complaints, asking for and giving information, placing orders and sending replies):
  - (b) **Letters to the editor** (giving suggestions on an issue)
  - (c) **Application for a job**

**SECTION-C-Grammar****20 Marks**

- 5.
  - 1. Narration : Direct and Indirect 4marks
  - 2. Voice 3marks
  - 3. Tenses 5marks
  - 4. Preposition 4marks
  - 5. Transformation of Sentences 4marks

**SECTION-D****Textbooks****45 Marks****Prescribed Books :****Flamingo****30 marks****Selected Text****1. The Last Lesson****Alphonse Daudet**

2. **Memoirs of Chota Sahib**
3. **Lost Spring**
4. **Indigo**
5. **Going places**

**John Rowntree**  
**Anees Jung**  
**Louis Fischer**  
**A.R. Barton**

### **Poetry**

1. **My Mother At Sixty Six**
2. **Keeping Quite**
3. **A Thing of beauty**
4. **A Roadside Stand**

**Kamala Das**  
**Pablo Neruda**  
**John Keats**  
**Robert Frost**

- |     |  |        |
|-----|--|--------|
| 6.  | <b>One</b> out of two extracts based on poetry from the text to test comprehension and appreciation  | 4      |
| 7.  | <b>Three</b> out of four short questions from the poetry section to test local and global comprehension of text.   | 2×3=6  |
| 8.  | <b>Five very</b> Short answer questions out of seven questions based on the lessons from prescribed text.  | 1×5=5  |
| 9.  | <b>Five</b> short answer questions out of seven questions based on the lessons from prescribed text  | 2×5=10 |
| 10. | <b>One</b> out of two long answer type questions based on the text to test global comprehension and extrapolation beyond the set text. (Expected word limit about 80-100 words each) | 5      |

### **VISTAS**

**15**

#### **Selected Pieces**

1. The Tiger King
2. Journey to the end of the Earth
3. On the Face of it
4. Memories of Childhood

- |     |   |    |
|-----|---|----|
| 11. | <b>One</b> out of two long answer type question based on Supplementary Reader to test comprehension and extrapolation of theme, character and incidents (Expected word limit about 125-150 words) | 07 |
| 12. | <b>Four</b> short answer questions from the Supplementary Reader (2x4)  | 08 |

#### **Prescribed books :**

1. **Flamingo** : English Reader *published by Assam Higher Secondary Education Council, Bamunimaidam, Guwahati-21.*
2. **Vistas** : Supplementary Reader *published by Assam Higher Secondary Education Council, Bamunimaidam, Guwahati-21.*

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## PHYSICS

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper

Time : Three Hours

Marks 70

#### Unitwise Distribution of Marks and Periods :

Unit No.	Title	Marks	Periods
Unit-I	Electrostatics	08	25
Unit-II	Current Electricity	07	22
Unit-III	Magnetic Effects of Current and Magnetism	08	25
Unit-IV	Electromagnetic Induction and Alternating Currents	08	20
Unit-V	Electromagnetic Waves	03	04
Unit-VI	Optics	14	30
Unit-VII	Dual Nature of Matter and Radiation	04	08
Unit-VIII	Atoms and Nuclei	06	18
Unit-IX	Electronic Devices	07	18
Unit-X	Communication System	05	10
Total		70	180

#### Unitwise Distribution of Course contents :

##### Unit-I : ELECTROSTATIC

Electric charges and their conservation. 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 dipole, electric field due to dipole; torque on a dipole in a uniform electric field.

Electric field lines; 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 charges and of electric dipoles in an electrostatic field.

Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarisation, 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

Electric current, flow of electric charges in a metallic conductor, drift velocity and 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 cells in series and in parallel.

Kirchhoff's laws and simple applications. Wheatstone bridge, metre bridge.

Potentiometer– principle and applications to measure potential difference, and for comparing emf of emfs cell'S; measurement of internal resistance of a cell.

### **Unit-III : MAGNETIC EFFECTS OF CURRENT AND MAGNETISM**

Concept of Magnetic field, Oersted's experiment.

Biot-Savart law and its applications to current carrying circular loop (both at centre and at axial point), finite straight conductor.

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. Lorentz force Cyclotron.

Force on a current-carrying conductor in a uniform magnetic field. Force between two parallel current-carrying conductors–definition of one ampere current. Torque experienced by a current loop in a Uniform magnetic field; moving coil galvanometer– its current sensitivity and voltage 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. Magnetic Hysteresis Electromagnets and factors affecting their strengths. Permanent magnets.

### **Unit-IV : ELECTROMAGNETIC INDUCTION AND ALTERNATING CURRENTS**

Faraday's Expt, Magnetic flux, Electromagnetic induction; Growth and decay of currents in DC LR, RC circuits, Faraday's law, induced emf and current; Lenz's Law, Eddy currents. Self and mutual inductance.

Alternating currents voltage, peak and rms value of alternating current/voltage power; 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**

Electromagnetic waves and their characteristics (qualitative ideas only). Transverse nature of electromagnetic waves. Need for displacement current.

Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, x-rays, gamma rays) including elementary facts about their uses.

### **Unit-VI : OPTICS (Follow NC Convention wherever necessary)**

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, lensmaker'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 : Wavefront and Huygens' principle, reflection and refraction of plane wave at a plane surface using wavefronts. 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**

Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation– particle nature of light.

Matter waves– wave nature of particles, de Broglie relation. Davisson-Germer experiment.

#### **Unit-VIII : ATOMS AND NUCLEI**

Alpha– particle scattering experiment; Rutherford's atomic model; Bohr model, energy levels, hydrogen spectrum.

Composition and size of a 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**

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 SYSTEM**

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.

## **SYLLABUS FOR PHYSICS PRACTICAL**

**Total Marks- 30**

### **Section-A**

Every student will perform 10 experiments (5 from each section) & 8 activities (4 from each section) during the academic year.

#### **Experiments :**

1. To observe the variation of potential difference (V) across a given resistor by changing the current (I) through it. Draw I-V graph and find the value of the given resistance from the graph.
2. To find the value of a given resistance by using a metre bridge.

3. Construct a potential divider with the help of a rheostat and a battery (or cell) and use it to verify, Ohm's Law.
4. To determine the internal resistance of given primary cell using potentiometer.
5. To locate the poles of a long bar magnet and to find the ratio of magnetic to geometric length.
6. Place a bar magnet in the magnetic meridian and draw the field lines with its
  - (i) *North-pole pointing towards the geographical north pointing.*
  - (ii) *South pole pointing towards the geographical north* on one side of the magnet and to locate the position of the neutral point.

**Activities :**

1. To observe deflection of a magnetic needle placed near a conductor carrying current.
2. To measure resistance, dC voltage, dC current and check continuity of a given electric circuit using multimeter.
3. To assemble a household circuit comprising three bulbs, three on/off switches a fuse and a power source.  
*or*, Assemble an extension board with an indicator, a fuse, three plug points and three on/off switches.
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. Assemble an electric circuit comprising of atleast a battery, rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also draw the correct circuit diagram.

**Section-B****Experiments :**

1. To find the focal length of a convex lens by plotting graphs between  $u$  and  $v$  [Taken three readings making  $u > v$  and three readings making  $u < v$ .]
2. To find the focal length of a concave lens using a convex lens.
3. To find the angle of minimum deviation for a given equilateral prism by plotting a graph between the angles of incidence ( $i$ ) and corresponding angles of deviation ( $\delta$ ). Determine the refractive index of the material of the prism. [Take angles of incidence as  $35^\circ$ ,  $40^\circ$ ,  $45^\circ$ ,  $50^\circ$ ,  $55^\circ$ ,  $60^\circ$ ]
4. Measure the angles of incidence ( $i$ ) and corresponding angles of refraction ( $r$ ) for a glass slab by pin method. Draw  $\sin i - \sin r$  graph and find the refractive index of the material of the glass slab from the graph.
5. To find refractive index of a given liquid with the help of a travelling microscope.
6. Draw the I-V characteristics graph of a p – n junction in forward bias. Find the dc forward resistance of the diode from the graph.
7. Draw the output characteristic graphs of an n – p – n transistor in common emitter configuration. Find the value of  $\beta$  from the graphs.

**Activities :**

1. To identify resistance from resistance colour codes and to verify the values using a multimeter.
2. To identify a diode, an LED, a transistor, a resistor, a capacitor and an IC from a mixed collection of such items using a multimeter.
3. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
4. To observe polarization of light using two polaroids.
5. Identify a concave and a convex mirror by observing the images formed by the mirrors.
6. To study the nature and size of the image formed by (i) convex lens (ii) concave mirror, using an optical bench.

7. Identify a concave and a convex mirror by the image formed by the mirrors.

**Suggested Investigatory Projects : (Students and teachers are free to design other project.)**

1. To investigate whether the energy of a simple pendulum is conserved.
2. To investigate changes in the velocity of a body under the action of a constant force and determine its acceleration.
3. To compare effectiveness of different materials as insulators of heat.
4. To study various factors on which the internal resistance/emf of a cell depends.
5. To study infrared radiations emitted by different sources using photo-transistors.
6. To compare effectiveness of different materials as absorbers of sound.
7. To design an automatic traffic signal system using suitable combination of logic gates.
8. To compare the Young's modulus of elasticity of different specimens of rubber and also draw their elastic hysteresis curve.
9. To study collision of two balls in two dimensions.

**Evaluation Scheme for Practical Examination :**

* One experiment from any one section	<b>12 marks</b>
* One activity (from any one section) and one investigatory project	
Or	<b>4+4=8 marks</b>
Two activities (maximum one from each section)	
* Practical record (experiments, activities and projects)	<b>6 marks</b>
* Viva voce on activities, experiments and projects	<b>4 marks</b>
<b>Total</b>	<b>30 marks</b>

**Recommended Textbooks.**

1. Physics Part I, Textbook for Class XII, Published by NCERT
2. Physics Part II, Textbook for Class XII, Published by NCERT

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# CHEMISTRY

## SYLLABUS FOR HIGHER SECONDARY COURSE

### Rationale :

Higher Secondary is the most crucial stage of school education because at this juncture specialized discipline based, content-oriented courses are introduced. Students reach this stage after 10 years of general education and opt for Chemistry with a purpose of pursuing their career in basic sciences or professional courses like medical, engineering, technology and study courses in applied areas of science and technology at tertiary level. Therefore, there is a need to provide learners with sufficient conceptual background of Chemistry, which will make them competent to meet the challenges of academic and professional courses after the higher secondary stage.

The new and updated curriculum is based on disciplinary approach with rigour and depth taking care that the syllabus is not heavy and at the same time it is comparable to the international level. The knowledge related to the subject of Chemistry has undergone tremendous changes during the past decade: Many new areas like synthetic materials, bio-molecules, natural resources, industrial chemistry are coming in a big way and deserve to be an integral part of chemistry syllabus at senior secondary stage. At international level, new formulations and nomenclature of elements and compounds, symbols and units of physical quantities floated by scientific bodies like IUPAC and CGPM are of immense importance and need to be incorporated in the updated syllabus. The revised syllabus takes care of all these aspects. Greater emphasis has been laid on use of new nomenclature, symbols and formulations, teaching of fundamental concepts, applications of concepts in chemistry to industry/ technology, logical sequencing of units, removal of obsolete content and repetition etc.

### Objectives :

The broad objectives of teaching Chemistry at Senior Secondary Stage are to help the learners:

- ❖ To promote understanding of basic facts and concepts in chemistry while retaining the excitement of chemistry.
- ❖ To make students capable of studying chemistry in academic and professional courses (such as medical, engineering, technology) at tertiary level.
- ❖ To expose the students to various emerging new areas of chemistry and apprise them with their relevance in their future studies and their application in various spheres of chemical sciences and technology.
- ❖ To equip students to face various changes related to health, nutrition, environment, population, weather, industries and agriculture.
- ❖ To develop problem solving skills of students.
- ❖ To expose the students to different processes used in industries and their technological applications.
- ❖ To apprise students with interface of chemistry with other disciplines of science such as physics, biology, geology, engineering etc.
- ❖ To acquaint students with different aspects of chemistry used in daily life.
- ❖ To develop an interest in students to study chemistry as a discipline.



**Unit-5 Surface chemistry**

*Adsorption* : Physisorption and chemisorption; factors affecting adsorption of gases on solids; catalysis: homogenous and heterogeneous, activity and selectivity: enzyme catalysis; colloidal state: distinction between true solutions, colloids and suspensions; lyophilic, lyophobic multimolecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation; emulsions - types of emulsions.

**Unit-6 General principles and processes of Isolation of Elements**

*Principles and methods of extraction* : concentration, oxidation, reduction electrolytic method and refining; occurrence and principles of extraction of aluminium, copper, zinc and iron.

**Unit-7 p-Block Elements**

*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); Phosphorous - allotropic forms, compounds of phosphorous : preparation and properties of phosphine, halides ( $\text{PCl}_3$ ,  $\text{PCl}_5$ ) 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 or halogens (structures only).

*Group 18 elements* : General introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.

**Unit-8 : d and f Block Elements**

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-9 : Coordination Compounds**

*Coordination compounds* : Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds, bonding; Werner's theory, VBT, CFT; isomerism, importance of coordination compounds (.in qualitative analysis, extraction of metals and biological systems).

**Unit-10 Haloalkanes and Haloarenes**

*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 mono-substituted compounds only).

Uses and environmental effects of-dichloromethane, trichloromethane, tetrochloromethane, iodoform, freons, DDT.

**Unit-11 : Alcohols, Phenols and Ethers**

*Alcohols* : Nomenclature, methods of preparation, physical and chemical properties (primary alcohols only); identification of primary, secondary and tertiary alcohols; mechanism of dehydration of alcohol uses, some important compounds– methanol and ethanol.

*Phenols* : Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenols, electrophilic substitution reactions, uses of phenols.

*Ethers* : Nomenclature, methods of preparation, physical and chemical properties, uses.

**Unit-12 : Aldehydes, Ketones and Carboxylic acids**

*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-13 : Organic Compounds containing Nitrogen**

*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-14 Biomolecules**

*Carbohydrates* : Classification (aldoses and ketoses), monosaccharides (glucose and fructose), oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); importance.

*Proteins* : Elementary idea of a - amino acids, peptide bond, polypeptides, proteins, primary structure, secondary structure, tertiary structure and quaternary structure (qualitative idea only), denaturation of proteins; enzymes.

**Hormones-Elementary idea (excluding structures)**

*Vitamins* : Classification and functions.

*Nucleic Acids* : DNA and RNA.

**Unit-15 Polymers**

*Classification* : Natural and synthetic, methods of polymerization (addition and condensation), copolymerization. Some important polymers: natural and synthetic like polythene, nylon, polyesters, bakelite, rubber.

**Unit-16 : Chemistry in Evelyday life**

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.

**SYLLABUS FOR CHEMISTRY PRACTICAL****Total Marks- 30****Total Periods 60**

Microchemical methods are available for several of the practical experiments. Wherever possible such techniques should be used.

**A. Surface Chemistry**

- (a) Preparation of one lyophilic and one lyophobic sol.  
*Lyophilic sol* : starch, egg albumin and gum.  
*Lyophobic sol* : aluminium hydroxide, ferric hydroxide, arsenious sulphide.
- (b) Dialysis of sol prepared in (a) above.
- (c) Study of the role of emulsifying agent in stabilizing the emulsions of different oils.

**B. Chemical Kinetics**

- (a) Effect of concentration and temperature on the rate of reaction between sodium thiosulphate and hydrochloric acid.
- (b) Study of reaction rates of any one of the following :
  - (i) Reaction of iodide ion with hydrogen peroxide at room temperature using different concentration of iodide ions.
  - (ii) Reaction between potassium iodate ( $\text{KIO}_3$ ) and sodium sulphite ( $\text{Na}_2\text{SO}_3$ ) using starch solution as indicator (clock reaction).

**C. Thermochemistry**

Any one of the following experiments :

- (a) Enthalpy of dissolution of copper sulphate or potassium nitrate.
- (b) Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).
- (c) Determination of enthalpy change during interaction (Hydrogen bond formation) between acetone and chloroform.

**D. Electrochemistry**

Variation of cell potential in  $\text{Zn}/\text{Zn}^{2+}/\text{Cu}^{2+}/\text{Cu}$  with change in concentration of electrolytes ( $\text{CuSO}_4$  or  $\text{ZnSO}_4$ ) at room temperature.

**E. Chromatography**

- (a) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of  $R_f$  values.
- (b) Separation of constituents present in an inorganic mixture containing two cations only (constituents having wide difference in  $R_f$  values to be provided)

**F. Preparation of Inorganic Compounds**

- (a) Preparation of double salt, ferrous ammonium sulphate or potash alum.
- (b) Preparation of potassium ferric oxalate.

**G. Preparation of Organic Compounds**

Preparation of any one of the following compounds :

- (a) Acetanilide
- (b) Di-benzal acetone
- (c) *p*-Nitroacetanilide.
- (d) Aniline yellow or 2-Naphthol aniline dye.

**H. Test for the Functional Groups Present in Organic Compounds**

Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (primary) groups.

**I. Study of Carbohydrates, Fats and Proteins in pure form and detection of their presence in given Food Stuffs****J. Determination of Concentration/Molarity of  $\text{KMnO}_4$  Solution by Titrating it against a Standard Solution of**

(a) Oxalic acid

(b) Ferrous ammonium sulphate

(Students will be required to prepare standard solutions by weighing themselves).

**K. Qualitative Analysis**

Determination of one anion and one cation in a given salt.

Cations–  $\text{Pb}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{As}^{3+}$ ,  $\text{Al}^{3+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Mn}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Co}^{2+}$ ,  $\text{Ca}^{2+}$ ,  $\text{Sr}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{NH}_4^+$

Anions–  $\text{CO}_3^{2-}$ ,  $\text{S}^{2-}$ ,  $\text{SO}_3^{2-}$ ,  $\text{SO}_4^{2-}$ ,  $\text{NO}_2^-$ ,  $\text{NO}_3^-$ ,  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$ ,  $\text{PO}_4^{3-}$ ,  $\text{C}_2\text{O}_4^{2-}$ ,  $\text{CH}_3\text{COO}^-$

(Note : Insoluble salts excluded)

**L. Projects**

Scientific investigation involving laboratory testing and collecting information from other sources.

- ❖ Study of presence of oxalate ions in guava fruit at different stages of ripening.
- ❖ Study of quantity of casein present in different samples of milk.
- ❖ Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.
- ❖ Study of the effect of potassium bisulphate as food preservative under various conditions (temperature, concentration, time etc.)
- ❖ Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
- ❖ Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice etc.
- ❖ Extraction of essential oils present in *Saunf* (aniseed), *Ajwain* (carum), *Illaicbi* (cardamom).
- ❖ Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chilli powder and pepper.

**Note :** Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

**Evaluation Scheme for Practical Examination****Marks**

<b>1. Volumetric analysis</b>	<b>6</b>
(i) Completion of experiment	
(ii) Results and calculation	
<b>2. Qualitative analysis</b>	<b>10</b>
(i) Acid radicals	
(ii) Basic radicals	
<b>3. Content based experiment</b>	<b>4</b>
(One experiment out of F, G, H, I)	
<b>4. Project works</b>	<b>5</b>
Or	
Any three experiments from A to E	
(To be written in separate note book and submit in examination)	
<b>5. Laboratory note book + Viva voce</b>	<b>5</b>

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## MATHEMATICS

### SYLLABUS FOR HIGHER SECONDARY COURSE

The Syllabus in the subject of Mathematics has undergone changes from time to time in accordance with growth of the subject and emerging needs of the society. Senior Secondary stage is a launching stage from where the students go either for higher academic education in Mathematics or for professional courses like engineering, physical and Bioscience, commerce or computer applications. The present revised syllabus has been designed in accordance with National Curriculum Frame work 2005 and as per guidelines given in Focus Group on Teaching of Mathematics 2005 which is to meet the emerging needs of all categories of students. Motivating the topics from real life situations and other subject areas, greater emphasis has been laid on application of various concepts.

#### Objectives

The broad objectives of teaching Mathematics at senior school stage intend to help the pupil:

- ❖ To acquire knowledge and critical understanding, particularly by way of motivation and visualization, of basic concepts, terms, principles, symbols and mastery of underlying processes and skills.
- ❖ To feel the flow of reasons while proving a result or solving a problem.
- ❖ To apply the knowledge and skills acquired to solve problems and wherever possible, by more than one method.
- ❖ To develop positive attitude to think, analyze and articulate logically.
- ❖ To develop interest in the subject by participating in related competitions.
- ❖ To acquaint students with different aspects of mathematics used in daily life.
- ❖ To develop an interest in students to study mathematics as a discipline.
- ❖ To develop awareness of the need for national integration, protection of environment, observance of small family norms, removal of social barriers, elimination of sex biases.
- ❖ To develop reverence and respect towards great Mathematicians for their contributions to the field of Mathematics.

## MATHEMATICS

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper

Time : Three Hours

Marks 100

Unitwise Distribution of Marks and Periods :

Unit No.	Title	Marks	Periods
Unit-I	Relations and Functions	10	28
Unit-II	Algebra	13	40
Unit-III	Calculus	44	72
Unit-IV	Vectors Algebra and Three-Dimensional Geometry	17	25
Unit-V	Linear Programming	06	15
Unit-VI	Probability	10	20
Total		100	200

**APPENDIX :****1. Proofs in Mathematics :****2. Mathematical Modelling :****Unitwise Distribution of Course contents :****Unit-I RELATIONS AND FUNCTIONS****(i) Relations :**

Types of relations : (Empty, universal, identity, reflexive, symmetric, antisymmetric and transitive relations in a set) Equivalence relation and equivalence class in a set.

**(ii) Functions :**

Types of functions : (injective, surjective and bijective functions) Composition of functions Invertible function Binary operation.

**(iii) Inverse Trigonometrical functions Basic concepts :**

(domain, co-domain, range (principal value branches) and graphs of inverse trigonometric functions) Properties of inverse trigonometric functions.

**Unit-II ALGEBRA****(i) Matrices**

Concept of a matrix and its notation and order :

Types of matrices (row, column, square, diagonal, scalar identity and zero matrices) Equality of matrices, Operation on matrices (addition of matrices, multiplication of a matrix by a scalar, multiplication of matrices)

Properties of matrix addition, scalar multiplication of a matrix and multiplication of matrices Transpose of a matrix symmetric and skew symmetric matrices. Elementary row and column operations of a matrix. Invertible matrices.

**(ii) Determinants :**

Determinant of a square matrix (up to  $3 \times 3$  matrices), properties of determinants, Area of a triangle, Minors and co-factors, Adjoint and inverse of a matrix. Applications of Determinants and matrices.

**Unit-III CALCULUS****(i) Continuity and Differentiability :**

Continuity, differentiability, derivative of composite functions, (chain rule), Derivatives of implicit function, Exponential and logarithmic functions and its differentiation, Logarithmic differentiation, derivatives of functions in parametric forms, second order, derivative, Roll's and Lagrange's mean value theorem (without proof) and their geometrical interpretations.

**(ii) Application of Derivatives :**

Rate of Change of quantities, increasing and decreasing functions, tangents and normals, approximation, maxima and minima.

**(iii) Integrals :**

Integration as an inverse process of differentiation. Integration by substitution, Integration using trigonometric identities. Integration by partial fractions and integration by parts. Evaluation of the integrals of the type–

$$\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c},$$

$$\int \frac{dx}{\sqrt{ax^2 + bx + c}}, \int \frac{(px + q) dx}{ax^2 + bx + c}, \int \frac{(px + q) dx}{\sqrt{ax^2 + bx + c}},$$

$\int \sqrt{a^2 \pm x^2} dx$ , and  $\int \sqrt{x^2 - a^2} dx$  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.

(iv) **Applications of the Integrals :**

Area under simple curves

Area between two curves.

(v) **Differential Equations :**

Concepts of differential equation, concept of order and degree of a differential equation. General and particular solutions of a differential equation. Formation of a differential equation whose primitive is given. Solution of differential equation with variables separable, solution of homogeneous differential equations of first order and first degree. Solutions of linear differential equation of the type.

$\frac{dy}{dx} + Py = Q$ , where P and Q are constants or functions of  $x$  only.

**Unit-IV VECTOR ALGEBRA AND THREE-DIMENSIONAL GEOMETRY**

1. **Vector Algebra :**

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 :**

Direction cosines/ ratios of a line joining two points. Cartesian and vectors 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**

Introduction, 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, optimal feasible solutions (up to three non-trivial constraints).

**Unit-VI PROBABILITY**

Multiplication theorem on probability. Conditional probability, independent events, total probability, Baye's theorem. Random variable and its probability distribution, mean and variance of random variable. Repeated independent (Bernoulli) trials and Binomial distribution.

**Appendix**

1. **Proofs in Mathematics :**

Through a variety of examples related to mathematics and 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 XI). However, now the models concerned would use techniques/ results of matrices, calculus and linear programming.

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## BIOLOGY

The present syllabus reinforces the ideas introduced in the lower classes while the students learn new concepts besides getting an exposure to contemporary areas of the subject. The syllabus also aims at emphasizing on the underlying principles which are common to both animals and plants as well as highlighting the relationship of biology with other areas of knowledge. The format of the syllabus allows a simple, clear, consequential flow of concepts without any jarring jumps. The syllabus also stresses on the connection of the study of Biology to real life problems, use of biological discoveries/innovations in everyday life– in environment, industry, health and agriculture. The updated syllabus also focuses on reducing the curriculum load while ensuring that ample opportunities and scope for learning and appreciating basic concepts of the subject continue to be available within its framework.

The prescribed syllabus is expected to

- ❖ Promote understanding of basic principles of biology
- ❖ encourage learning of emerging knowledge and its relevance to individual and society
- ❖ Promote rational/specific attitude to issues related to population, environment and development
- ❖ Enhance awareness about environmental issues and problems and the appropriate solutions
- ❖ Create awareness amongst the learners about variations amongst the living, and developing respect for the diversities and to appreciate that the most complex biological phenomena are also built on essentially simple processes.

It is expected that the students would get an exposure to various branches of Biology in the syllabus in a more contextual and friendly manner as they study its various units.

## BIOLOGY

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

**One Paper** **Time : Three Hours** **Marks 70**

**Unitwise Distribution of Marks and Periods :**

Unit No.	Title	Marks	Periods
<b>Group-A : BOTANY</b>			
Unit-6	Sexual Reproduction (1, 2)	6	17
Unit-7	Genetics and Evolution (7)	5	9
Unit-8	Biology and Human Welfare (9, 10)	7	19
Unit-9	Biotechnology and its application (11, 12)	12	30
Unit-10	Ecology (13, 16)	5	15
<b>Group-B : ZOOLOGY</b>			
Unit-6	Reproduction (3, 4)	5	18
Unit-7	Genetics and Evolution (5, 6)	15	36
Unit-8	Biology and Human Welfare (8, 9)	5	16
Unit-9	Biotechnology and its Application (12)	1	2
Unit-10	Ecology (14, 15, 16, 17)	9	20
Total		70	180

**Unitwise Distribution of Course contents :****Unit-VI : Reproduction :**

- Chapter 1 : Reproduction in Organisms :** (i) Asexual Reproduction; (ii) Sexual Reproduction
- „ **2 : Sexual Reproduction in Flowering Plants :** (i) Flower-A fascinating Organ of Angiosperms; (ii) Pre-fertilization: Structures and Events; (iii) Double Fertilization; (iv) Post-fertilization: Structures and Events; (v) Apomixis and Polyembryony.
- „ **3 : Human reproduction :** (i) The Male Reproductive System; (ii) The Female Reproductive System; (iii) Gametogenesis; (iv) Menstrual Cycle; (v) Fertilization and Implantation; (vi) Pregnancy and Embryonic Development; (vii) Parturition and Lactation.
- „ **4 : Reproductive Health :** (i) Reproductive Health-Problems and Strategies; (ii) Population Explosion and Birth Control; (iii) Medical Termination of Pregnancy; (iv) Sexually Transmitted Diseases; (v) Infertility.

**Unit-VII : Genetics and Evolution**

- Chapter 5 : Principles of Inheritance and Variation :** (i) Mendel's Laws of Inheritance; (ii) Inheritance of One Gene; (iii) Inheritance of Two Genes; (iv) Sex Determination; (v) Mutation; (vi) Genetic Disorders.
- „ **6 : Molecular Basis of Inheritance :** (i) The DNA; (ii) The Search for Genetic Material; (iii) RNA World; (iv) Replication; (v) Transcription; (vi) Genetic Code; (vii) Translation; (viii) Regulation of Gene Expression; (ix) Human Genome Project; (x) DNA Fingerprinting.
- „ **7 : Evolution :** (i) Origin of Life; (ii) Evolution of Life Forms- A Theory; (iii) Evidences for Evolution; (iv) Adaptive Radiation; (v) Biological Evolution; (vi) Mechanism of Evolution; (vii) Hardy- Weinberg Principle; (viii) A Brief account of Evolution; (ix) Origin and Evolution of Man.

**Unit-VIII : Biology in Human Welfare**

- Chapter 8 : Human Health and Diseases :** (i) Common Diseases in Humans; (ii) Immunity; (iii) AIDS; (iv) Cancer; (v) Drugs and Alcohol Abuse.
- „ **9 : Strategies for Enhancement in Food Production :** (i) Animal Husbandry; (ii) Plant Breeding; (iii) Single Cell Protein; (iv) Tissue Culture
- „ **10 : Microbes in Human Welfare :** (i) Microbes in Household Products; (ii) Microbes in Industrial Products; (iii) Microbes in Sewage Treatment; (iv) Microbes in Production of Biogas; (v) Microbes as Biocontrol Agents; (vi) Microbes as Biofertilisers.

**Unit-IX : Biotechnology**

- Chapter 11 : Biotechnology; Principles and Processes :**  
(i) Principles of Biotechnology; (ii) Tools of recombinant DNA Technology; (iii) Processes of Recombinant DNA Technology.
- „ **12 : Biotechnology and its Application :**  
(i) Biotechnological Applications in Agriculture;  
(ii) Biotechnological Applications in Medicine;  
(iii) Transgenic Animals; (iv) Ethical Issues.

**Unit-X : Ecology**

- Chapter 13 : Organisms and Populations :** (i) Organism and its Environment; (ii) Populations.
- „ **14 : Ecosystems :** (i) Ecosystem- Structure and Function; (ii) Productivity; (iii) Decomposition; (iv) Energy Flow; (v) Ecological Pyramids; (vi) Ecological Succession; (vii) Nutrient Cycling; (viii) Ecosystem Services.
- „ **15 : Biodiversity and Conservation :** (i) Biodiversity; (ii) Biodiversity Conservation; (iii) National Park and Sanctuaries of Assam with special reference to conservation of endangered species.

- „ **16 : Bioresources of Assam :** (i) Medicinal and Timber Yielding Plants; (ii) Sericogenic Resources (Muga and Eri)
- „ **17 :Environmental Issues :** (i) Air Pollution and its Control; (ii) Water Pollution and its Control; (iii) Solid Wastes; (iv) Agro-chemicals and their effects; (v) Radioactive Wastes; (vi) Greenhouse Effect and Global Warming; (vii) Ozone Depletion in the Stratosphere; (viii) Degradation by Improper Resource Utilization and Maintenance; (ix) Deforestation.

## SYLLABUS FOR BOTANY PRACTICAL

(Marks-15)

1. Study of the reproductive parts of different flowers.
2. Study of flowers adapted to pollination by different agencies (wind, insect).
3. Study of percentage of pollen germination on a slide.
4. To study pollen tube growth on the stigma.
5. To study fruits and seeds of any common fruit (e.g. legume) at different stages of development.
6. To study mitosis in onion root tips (preparation).
7. To study meiosis in onion buds (permanent slide)
8. Exercise on controlled pollination– emasculation, tagging and bagging.
9. Stain tissue section for nucleic acid (aceto carmine stain).
10. To study the pH and water holding capacity of soil. Correlate with the kinds of plants found in them.
11. Study plants found in dry conditions. Comment ‘on their adaptations/ ecosystems.
12. To study plants of aquatic conditions. Comment on their adaptations/ ecosystems.
13. Study of plant population density by quadrat method.
14. Study of plant population frequency by quadrat method.
15. To study analogous and homologous organs in various plants.

## SYLLABUS FOR ZOOLOGY PRACTICAL

(Marks-15)

1. Study and identify stages of gamete development in T.S. of testis and T.S. of ovary.
2. Study of meiosis in grasshopper testis (through permanent slides)
3. Study of T.S. of blastula through permanent slide.
4. Study of Mendelian inheritance using seeds of different colours/ size of any plant.
5. Prepare pedigree charts for genetic traits such as rolling of tongue, blood groups, widow’s peak, colourblindness.
6. To identify common ‘disease causing organisms’ like Ascaris, Entamoeba, Plasmodium, Microsporium. Comment on the symptoms of the disease that they cause.
7. Collect and study soil from different sites and study them for texture and moisture content.
8. Study of animals found in dry conditions. Comment on their adaptations/ ecosystems.
9. Study of animals of aquatic conditions. Comment on their adaptations/ ecosystems.
10. Collect water from different water bodies around you and study them for pH, clarity and presence of any living organisms.
11. Study the amount of suspended particulate matter in air at the two widely different sites.
12. To study analogous and homologous organs in various animals.

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# GEOGRAPHY

## SYLLABUS FOR HIGHER SECONDARY COURSE

### Rationale :

Geography is introduced as an elective subject at the higher secondary stage. After ten years of general education, students branch out at the beginning of this stage and are exposed to the rigours of the discipline for the first time. Being an entry point for the higher education, students choose geography for pursuing their academic interest and, therefore, need a broader and deeper understanding of the subject. For others, geographical knowledge is useful in daily lives because it is a valuable medium for the education of young people. Its contributions lie in the content, cognitive processes, skills and values that geography promotes and thus helps the students explore, understand and evaluate the environmental and social dimensions of the world in a better manner.

Since geography explores the relationship between people and their environment, it includes studies of physical and human environments and their interactions at different scales– local, state/region, nation and the world. The fundamental principles responsible for the varieties in the distributional pattern of physical and human features and phenomena over the earth's surface need to be understood properly. Application of these principles would be taken up through selected case studies from the world and India. Thus, the physical and human environment of India and study of some issues from a geographical point of view will be covered in greater detail. Students will be exposed to different methods used in geographical investigations.

Common Core Components (NPE 1986) such as India's common cultural heritage, equality of sexes, protection of environment, observance of the small family norm and inculcation of scientific temper will be reflected in the geography syllabus.

The geography course will incorporate some issues of NCF–2005 such as making children sensitive to environment and its protection to nature and preserve the environment, and using geographical knowledge in understanding various environmental and socio-economic issues of the community, region and the country, e.g. gender and marginalised groups.

### Objectives :

#### The course in geography will help learners :

- ❖ Familiarise themselves with the terms, key concepts and basic principles of geography;
- ❖ Search for, recognise and understand the processes and patterns of the spatial arrangement of the natural as well as human features and phenomena on the earth's surface;
- ❖ Understand and analyse the inter-relationship between physical and human environments and their impact;
- ❖ Apply geographical knowledge and methods of inquiry to new situations or problems at different levels– local/regional, national and global;
- ❖ Develop geographical skills, relating to collection, processing and analysis of data/information and preparation of report including maps and graphics and use of computers wherever possible; and
- ❖ Utilize geographical knowledge in understanding issues concerning the community such as environmental issues, socio-economic concerns, gender and become responsible and effective member of the community.



- ❖ Secondary activities– concept; manufacturing : agro-processing, household, small scale, large scale; people engaged in secondary activities– some examples from selected countries;
- ❖ Tertiary activities– concept; trade, transport and communication; services; people engaged in tertiary activities– some examples from selected countries;
- ❖ Quaternary activities– concept; knowledge based industries; people engaged in quaternary activities– some examples from selected countries.

#### **Unit IV : Transport, Communication and Trade**

- ❖ Land transport– roads, railways– rail network; trans– continental railways;
- ❖ Water transport– inland waterways; major ocean routes;
- ❖ Air transport– Intercontinental air routes;
- ❖ Oil and gas pipelines;
- ❖ Satellite communication and cyber space;
- ❖ International trade– Basis and changing patterns; ports as gateways of international trade, role of WTO in international trade.

#### **Unit V : Human Settlements**

- ❖ Settlement types– rural and urban; morphology of cities (case study); distribution of mega cities; problems of human settlements in developing countries.

### **B. INDIA : PEOPLE AND ECONOMY**

#### **Unit I : People**

- ❖ Population– distribution, density and growth; composition of population : linguistic and religious; rural-urban population change through time– regional variations; occupation;
- ❖ Migration : international, national– causes and consequences;
- ❖ Human development– selected indicators and regional patterns;
- ❖ Population, environment and development.

#### **Unit II : Human Settlements**

- ❖ Rural settlements– types and distribution;
- ❖ Urban settlements– types, distribution and functional classification

#### **Unit III : Resources and Development**

- ❖ Land resources– general land use; agricultural land use– major crops; agricultural development and problems, common property resources;
- ❖ Water resources– availability and utilization– irrigation, domestic, industrial and other uses; scarcity of water and conservation methods– rain water harvesting and watershed management (one case study related with participatory watershed management to be introduced);
- ❖ Mineral and energy resources– metallic and non-metallic minerals and 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, sugar, petrochemicals and knowledge based industries; impact of liberalisation, privatisation and globalisation on industrial location;
- ❖ Planning in India– target area planning (case study); idea of sustainable development (case study).

**Unit IV : Transport, Communication and International Trade**

- ❖ Transport and communication– roads, railways, waterways and airways; oil and gas pipelines; national electric grids; communication networkings– radio, television, satellite and internet;
- ❖ International trade– changing pattern of India’s foreign trade; sea ports and their hinterland and airports.

**Unit V : Geographical Perspective on Selected Issues and Problems****(One case study to be introduced for each topic)**

- ❖ Environmental pollution; urban-waste disposal;
- ❖ Urbanisation-rural-urban migration; problem of slums;
- ❖ Land Degradation.

**C. ASSAM– LAN PEOPLE AND ECONOMY****Unit I : Physiography, Drainage Climat.****Unit II : People : Composition, Distribution, Density****Unit III : Economy : Agriculture and Industrial base and Development****Unit IV : Transport and Communication****D. PRACTICAL WORKS****Unit I : Processing of Data and Thematic Mapping**

- ❖ Sources of data;
- ❖ Tabulating and processing of data; calculation of averages, measures of central tendency, deviation and rank correlation;
- ❖ Representation of data– construction of diagrams : bars, circles and flowchart; thematic maps; construction of dot; choropleth and isopleth maps.
- ❖ Use of computers in data processing and mapping.

**Unit II : Field Study or Spatial Information Technology (Periods 25)**

Field visit and study : map orientation, observation and preparation of sketch; survey on any one of the local concerns : population, ground water changes, land use and land-use changes, poverty, energy issues, soil degradation, drought and flood impacts (any one topic of local concern may be taken up for the study; observation and questionnaire survey may be adopted for the data collection; collected data may be tabulated and analysed with diagrams and maps).

**OR****Spatial Information Technology**

Introduction to GIS; hardware requirements and software modules; data formats : raster and vector data, data input, editing and topology building; data analysis; overlay and buffer.

**Note :** There will be six textbooks, two for theory and one for practical work for each class.

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## **GEOLOGY**

### **SYLLABUS FOR HIGHER SECONDARY COURSE**

#### **Objectives :**

1. To explain the basic concept of Geology.
2. To acquire the fundamental knowledge of different branches of Geology with their specific importance.
3. To develop an interest to nature and its processes.
4. To develop interest towards the constitution of the Earth's crust.
5. To increase the awareness of the problems of environment due to mining and industrial activity and its remedial measures.
6. To develop an ability to use and interpret a geological map.
7. To know the importance of Geology contributing towards the national development especially the Engineering Projects.

## **GEOLOGY**

### **SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE**

**One Paper**

**Time : Three Hours**

**Marks 70**

#### **Unitwise Distribution of Marks and Periods :**

<b>Unit No.</b>	<b>Title</b>	<b>Marks</b>	<b>Periods</b>
Unit-1	Petrology	20	30
Unit-2	Indian Stratigraphy	15	20
Unit-3	Economic geology	15	30
Unit-4	Ground Water and Engineering geology	10	15
Unit-5	Palaeontology	10	25
<b>Total</b>		<b>100</b>	<b>120</b>

#### **Unitwise Distribution of Course contents :**

##### **Unit-1 Petrology :**

Rocks, its definition and types (igneous, sedimentary and metamorphic), their distinguishing characters.

- (i) Igneous: Its definition and composition, Forms of igneous rock. Differentiation of magma. Texture and structure of igneous rock. Texture (Porphyritic, Poikilitic, Ophitic, Coarse, Fine and Glassy). Structure (columnar, flow, pillow, vesicular, sheet, amygdaloidal). Classification of igneous rocks on the basis of texture, mineralogical composition and color. Study of the following rocks with respect to their mineralogical composition and texture:-Granite, Pegmatite, Rhyolite, Gabbro, Dolerite, Basalt.
- (ii) Sedimentary: Texture and structure of sedimentary rocks. Processes of formation of sedimentary rocks. Study of the following rocks:- Conglomerate, Grit, Sandstone, Shale, Lime stone.

- (iii) Metamorphic: Definition, agents and types of metamorphism. Depth zones of metamorphism (epizone, mesozone, katazone). Study of the following rocks with respect to their mineralogical composition and texture and structure:- Schist, Gneiss, Marble, Slate and Quartzite.

**Unit-2 : Indian Stratigraphy :**

Precambrian and Mesozoic stratigraphy of N.E. India. Precambrian of Karnataka and Vindhyan. An outline of the tertiary stratigraphy of the N.E. with emphasis on its lithology, paleontology and economic importance.

**Unit-3 : Economic Geology :**

Definition of ore. Elementary idea of the processes of formation of mineral deposits. Origin and mode of occurrence of coal and petroleum. Mode of occurrence, distribution in India and uses of the following in the N.E.- Coal, Petroleum, Silliminite, Limestone.

**Unit-4 : Ground Water and Engineering Geology :**

*Ground Water* : Definition, elementary idea of hydrologic cycle, porosity, permeability, aquifers, water table.

*Engineering geology* : Selection of bridge site and Dam site, Flood- its geological causes, prevention with a view to proper utility.

**Unit-5 : PALEONTOLOGY :**

*Fossil* : Definition, mode of preservation, uses. An outline of the important forms of life (plant and animal) through geological ages. A brief morphological study of the phylum/class Brachiopoda, Lamellibranchia and Gastropoda.

## SYLLABUS FOR GEOLOGY PRACTICAL

### Total Marks- 30

- |   |                |
|---|----------------|
| <b>Unit-1 : Crystallography :</b>   | <b>Marks 3</b> |
| Symmetry elements, Identification of the crystal forms of the normal class of the isometric, tetragonal and hexagonal system with their general symbols.  |                |
| <b>Unit-2 : Measurements :</b>  | <b>Marks 4</b> |
| Measurement of specific gravity of minerals. Determination of hardness of minerals using Moh's scale of hardness.   |                |
| <b>Identification :</b>   | <b>Marks 6</b> |
| Identification of the following Minerals :  |                |
| Quartz, Orthoclase, Microcline, Garnet, Calcite, Muscovite, Biotite, Tourmaline, Galena, Haematite, Pyrite, Magnetite, Malachite, Bauxite, Silliminite, Asbestos, Cuprite, Gypsum, Hornblende, Kyanite. |                |
| <b>Unit-3 : Identification of the following Rocks :</b>   | <b>Marks 6</b> |
| Granite, Basalt, Pegmatite, Dolerite, Sandstone, Limestone, Conglomerate, Quartzite, Marble, Slate, Granite-gneiss, Biotite-schist, Muscovite-Schist, Amphibolites.                                     |                |
| <b>Unit-4 : Drawing and interpretation of simple Geologic Maps.</b>   | <b>Marks 8</b> |
| <b>Unit-5 : Specimen collection and Laboratory note book.</b>   | <b>Marks</b>   |
| Total Periods 50 each of 45 minutes duration.   |                |

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## STATISTICS

### SYLLABUS FOR HIGHER SECONDARY COURSE

#### Objectives :

The main objectives of the course are to enable students ..

- To acquire knowledge on basic statistical concepts.
- To acquire the skill of statistical analysis of data from real life situation in a scientific manner.
- To acquire knowledge on the basic aspects of statistical reasoning and drawing conclusions.
- To create an aptitude for Statistics for those students who show a promise for higher studies and creative work in Statistics.
- To develop aptitude for applications of statistical techniques in Biological Sciences, Social sciences, Education and Psychology.

## STATISTICS

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

**One Paper** **Three Hours** **Marks 100**

#### Unitwise Distribution of Marks and Periods :

Unit No.	Title	Marks	Periods
Unit-1	Calculus of Finite difference	20	20
Unit-2	Theory of Probability	40	60
Unit-3	Elementary Theory of Sampling and Test of Significance	25	30
Unit-4	Sample Survey	15	20
Total		100	130

#### Unitwise Distribution of Course contents :

##### Unit-1 : Calculus of Finite Difference :

Operators A and E. Construction of diagonal Difference tables. Estimation of missing values, Idea of interpretation. Statements and applications of Newtons Forward, Backward and Longranges interpolation formulae. Idea of numerical integration, General quadrature formula. Statement and applications of trapezoidal rule, Simpsons

$\frac{1}{3}$ rd rule and Simpsons  $\frac{3}{8}$  th rule along with the conditions under which they are derived.

##### Unit-2 : Theory of Probability :

Basic concepts of Random experiment, Sample point, Sample space and Event occurrence of an event, Union and intersection of events. Complement of an event. Certain and null events. Exhaustive, Mutually exclusive and equally likely events. Probability of an event. Classical, Emperical and axiomatic (without introducing idea of measure theory). Unconditional probability, conditional probability, Dependent and independent events. Addition rule of

Probability, Generalized Addition rule of probability (upto three events). Statements and application of multiplication rule of Probabilities.

**Random Variable and Distribution :**

Random variable; Discrete and continuous distribution of a random variable, p.m.J. and p.d.f., density function. Representation of discrete probability distribution. Probability curve of a continuous distribution, Mathematical expectation of a random variable. Mathematical expectation of the function of a random variable. Theorems on expectation of the sum and product of random variables - only application (without derivation).

Idea of Bernoulli Trials; Binomial distribution; Mathematical form, occurrence of the distribution, Derivation of the distribution, Calculation of Mean and variance. Poisson distribution; Mathematical form, Occurrence of the distribution, derivation as a limiting form of Binomial distribution, calculation of mean and variance. Normal distribution, Mathematical form (without proof). Important properties and their applications. Derivation of distribution of standard normal variate and its applications.

**Unit-3 : Elementary Theory of Sampling and Test of Significance :**

Sample and Sampling. Random sampling, Parameter and Statistic.

Sampling distribution. Unbiased estimate of a parameter. Standard error of sampling mean and sample preparation for random sampling (without Derivation) - simple applications. Statistical hypothesis - Null hypothesis alternative hypothesis, Level of significance. Test (only two tailed test) for a hypothetical population mean on the basis of information supplied by a random sample drawn from a normal having known standard deviation (application only). Students 't' test (only two tailed test) for an assumed mean (examples only), Large sample test (only two tailed test) for proportion (examples only). Examples on use of frequency  $\chi^2$  for testing independence of attributes in  $2 \times 2$  table.

**Unit-4 : Sample Survey :**

Sample survey and complete enumeration. Basic principles of sample survey, validity of optimization. Principal steps in a survey, Errors in a survey. Sampling and non sampling errors. Advantage of sample survey over complete enumeration.

Simple random sampling with and without replacement - method of selection of SRS making use of Table of random number, Estimation Population mean and total, use of formula - mean and estimated population total. Limitations of SRS. Idea of stratified random sampling. Estimation of population mean (method of allocation not included). Preparation of Questionnaire and schedule. Idea of pilot survey.

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# ANTHROPOLOGY

## SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper Three Hours Marks 70

### Unitwise Distribution of Marks and Periods :

Unit No.	Title	Marks	Periods
Unit-I :	Physical Anthropology (ii)	15	20
Unit-2 :	Pre historic Archaeology (ii)	15	20
Unit-3 :	Material Culture and Economic Anthropology	10	15
Unit-4 :	Social Anthropology and Ethnography	20	25
Unit-5 :	Ecology	10	20
Total		70	100

### Unitwise Distribution of Course contents :

#### Unit-1 : Physical Anthropology (ii) :

- (i) Preliminary knowledge of Human genetics. Mendel's Laws of heredity Monohybrid and Dihybrid ratio.
- (ii) Definition of Race and Racial criteria, significance of skin color, Eye form and color, Head form, and ABO blood groups as racial criteria.
- (iii) Racial classification, distinctive physical features and geographical distribution of the major racial groups of man: Caucasoid, Mongoloid, Negroid and Australoid.

#### Unit-2 : Prehistoric Archaeology (ii) :

- (i) Tool Making: Techniques of manufacturing core and flake tools, primary and secondary flaking, pressure flaking, grinding and polishing. Materials used in making prehistoric tools.
- (ii) Tool families: Pebble tools, Hand axe, Cleaver, Scrapers, Microliths, Points, Blades, Awl, Graver, Celts, Sickles, Spear-head, Arrow-head and Bone tools.
- (iii) Prehistoric Cultures: A brief outline of the following prehistoric cultures of the Paleolithic, Mesolithic and Neolithic periods-
- (iv) A comparative study of the salient features of Paleolithic and Neolithic cultures.

#### Unit-3 : Material culture and economic Anthropology :

- (i) Economic life: meaning and aspects, characteristic features of primitive or simple economic system.
- (ii) Subsistence economy: domestication of animals-pastoralism, agriculture-shifting cultivation, horticulture, terrace cultivation and plough cultivation.
- (iii) Brief outline of the methods of hunting, fishing and agriculture with reference to Various communities of North East India as far as practicable.

#### Unit-4 : Social Anthropology and Ethnography :

A : *Social Anthropology* :

- (i) Family: Definition, forms and types: nuclear family, joint family, family of orientation, family of procreation, monogamous and polygamous (polygynous and polyandrous).

- (ii) Clustered relationship in nuclear family.
- (iii) Rules of residence: Patrilocal, matrilocal, neolocal, avunculocal, bi-local, matripatrilocal.  
Rules of descent: Patrilineal and matrilineal descent.
- (iv) Functions of family, social nature of family.

**B : Ethnography :**

- (i) A brief outline of the land and people of North-East India.
- (ii) Study of material culture and economic life of the following communities  
The Garo : Shifting or Jhum cultivation.  
The Mishing : Plough cultivation
- (iii) A study of social organization of the Ao Naga and the Apatani.

**Unit-5 : Ecology :**

- (i) Meaning and definition of ecology and environment.
- (ii) Elements of environment: Solid, liquid, and gas.
- (iii) Physical or abiotic environment, biological or biotic environment and sociocultural environment.
- (iv) Man as the main agent to disturb the ecological balance.

## SYLLABUS FOR ANTHROPOLOGY PRACTICAL

**Three Hours**

**Marks- 30**

**Unit-I: Physical Anthropology:**

**15 Marks**

**A. Osteology :**

- (i) Introduction to the subject
- (ii) Study and acquiring knowledge of anatomical position of the following Human bones-Frontal, Occipital, Parietal, Temporal, Mandible, Humerus, Radius, Ulna, Scapula, Innominate, Femur, Tibia, Fibula.

Students are required to draw the above bones (one each) proportionately Labeling the important features and to describe them.

Side identification of the following bones are to be made:Parietal, Scapula, Innominate, Femur.

**Unit-2 : Social Survey:**

**15 Marks**

- (a) Students are to be given very preliminary idea on anthropological field work and social survey in the classroom. The survey schedule to be used shall be explained to them.
- (b) The students are required to collect demographic data by using the survey schedule given in annexure "A" (at least 10 families each) in a neighboring area and the teacher/ teachers accompanying them will teach them the technique of collecting such data.
- (c) The collected data are to be tabulated, analyzed under the following heads:
  - (i) Age -sex distribution (taking age group of five years starting from 0 to 80)
  - (ii) Marital status (showing married, widow/ widower, divorced/ divorcee and unmarried)
  - (iii) Family type (primary family, joint family, polygamous family)
  - (iv) Educational standard.
  - (v) Occupation (showing primary and subsidiary)

Students are to prepare a model table for each of the above heads and fit/tabulate their data in them. Each table is to be followed by a short analysis of the same.

- (d) The survey schedules used by the students are to be varified and corrected by the teachers and the same are to be submitted along with the analysis of the survey data at the time of examination.

### Distribution of Marks in Practical Examination

1. Osteology	10
2. Note book on osteology	3
3. Viva Voce	2
4. Social Survey	10
5. Viva Voce on Social Survey	5

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Total	30
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### ANNEXURE : A

#### DEMOGRAPHIC SURVEY SCHEDULE

Serial No..... Tribe/Caste/Community... Name of the  
 House hold No. Religion..... Informant.....  
 Investigator..... ViII/Town.....  
 Date..... Police Station.....  
 District.....

SI No	Name of the family members	Sex	Age	Place of birth	Relation with head of the family	Mother tongue	Second-ary language	Education	Occupation		Marital status	Remark
									Primary	Secondary		
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

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# COMPUTER SCIENCE AND APPLICATION

## SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

Unit No.	Title	Marks	Periods (Theory +Prac.)	Total
Unit-1	Programming Methodology and Flowchart.	15	(24 + 24)	48
Unit-2	Programming in C++	30	(33 + 33)	66
Unit-3	Data Structures in C++	15	(15 + 15)	30
Unit-4	Introduction to computer Networking	10	(30 + 00)	30
Total		70	(102 + 72)	174
5.	Practical	30		
Total		100		

### Unitwise Distribution of Course contents :

#### Unit-1 : PROGRAMMING METHODOLOGY AND FLOW CHART (15 Marks)

**Flowcharts**– Various symbols, examples of flowcharts in simple problems.

Simple data types like Integer, Float, Character, constant and Variables.

**Operators**– Arithmetic operators, Unary Operators, Increment and Decrement operators, Relational operators, Logical Operators.

**Statements**- Assignments, variable initialization. Simple Input/Output statements, getch, puts, scanf, printf.

Flow control statements-If. then .. else, For... Do. while, Switch ... Case, Break, Exit etc. use of Arrays, Pointers & Simple Structures.

**Suggestion**– Use of a language like C is recommended under LINUX environment (Software is free). Practical periods should include familiarization with the LINUX environment, using editors for program entry, compilation and execution of programs, also simple operations like taking backup printout etc.should be taught. Also it will provide the necessary background for learning C++.

#### Unit-2: PROGRAMMING IN C++ (30 Marks)

Concepts of Class and objects-Data Members and Member Functions; C++ constructs for class and objects; Simple Input/Output Statement (cin/cout) :

Constructor and Destructor-Default Constructor, Parameterized constructor and constructor with default arguments.

Inheritance-Base and Derived class; public and private Access, Simple problems.

**Suggestion** : For C++ also, LINUX environment can be used (C++ compiler is built in with LINUX)

#### Unit-3: DATA STRUCTURES IN C++ (15 Marks)

Array-One and Two-dimensional Array; Algorithm for one dimensional array traversal, searching (linear and binary search), Insertion, Deletion and Sorting (Bubble sort).

Stack-Basic concept, Push and pop operations, Array implementation of Stack.

Queue- Basic concept, Insert and Delete operations in a Queue, Array implementation of Queue.

**Suggestion :** C++ should be used to implement all data structures.

#### **Unit-4: INTRODUCTION TO COMPUTER NETWORKING**

**(10 Marks)**

**(Theory only)**

Introduction to Computer Networking.

Need for Networking-Computational Speed up, resource sharing and Communications. Communication medium-Cables, wireless, Telephone network, Satellite, DSL, Powerline. Transmitting raw bits across a medium, transmitting packets across a network.

Hosts, Nodes, Links, Connectivity.

Different topologies-Star, Ring, Bus, Tree, Graph. Concepts of LAN, WAN, MAN.

Repeater Bridge, routes gateway, Modem, Hubs, Switch 7 layer OSI-ISO model 5 layer ICT/IP model.

Internet and its services, E-Mail.

File Transfer (FTPO, WWW, Remote login, Browsing on the Network, Network security, fire walls.

Client-Server Technology, Distributed Network.

**Suggestion :** Recommended to use a web browser and E-mail facility: Familiarize the students with the connectivity (LAN) of the Computing environment (cables, hub, switches etc.)

#### **GUIDELINES FOR PROJECTS :**

The Academic Course in Computer Science and Applications include one Project in 2nd year. The purpose behind this is to consolidate the concepts and practice imparted during the course and to serve as a record of competence.

A group of two students may be allowed to work in one project.

**PROJECT CONTENT** should be based on the study of the following topics.

- (a) Problem solving
- (b) Data structures.
- (c) Programming in C++
- (d) File Processing Algorithms

The aim of the project is to highlight the abilities of algorithmic formulation, program and data flow representation, modular programming, optimized code preparation, systematic documentation and other associated aspects of Software Development. The project may be developed in C/C++ MS-ACCESS.

The assessment should be through the project Demonstration and project report which should portray:

- (a) Programming Style, Structured Design
- (b) Good documentation of the code representation that ensures readability and ease of maintenance.
- (c) Test case samples, enough in number to adequately rule out the possible chances or errors.
- (d) User Manual.

**SYLLABUS FOR COMPUTER SCIENCE AND APPLICATION PRACTICAL****Total Marks- 30**

1. (A) Two programming problems in C++ to be solved during the examination on computer. Marks for the program are to be given on the basis of documentation/indentation, algorithm and result (out put)

**PRACTICAL FOR H.S. SECOND YEAR (SYLLABUS)****16 Marks**

1. Programs using problem mainly computational to illustrate expression and operator precedence.
2. Problem relating to sequence, selection and iteration.
3. Problems relating to arrays.
4. Problems which involve manipulation of two dimensional arrays such as addition, subtraction, multiplication and transpose.
5. Problems which make use of and manipulate arguments to main ( ).
6. Problems involving manipulation of arrays of structures.
7. Problems involving file manipulations.
8. Problems for dynamic storage allocation such as link list, Stack.

**1. (B) Project Work :****8 Marks**

Project must be taken up from the real life problems.

Marking schemes for the project.

- Programming styles, Structured Design
- Userfriendly Input/Output and online help
- Documentation (User Manual)

**I. (C) Viva-voce and Practical record file****6 Marks**

Records of at least 20 programs in C++ (with listing and outputs) based on programming' concepts.

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## HOME SCIENCE

### SYLLABUS FOR HIGHER SECONDARY COURSE

Home Science as a discipline aims to empower learners by developing an understanding in four different areas namely :

- Food and Nutrition
- Human Development
- Community Resource Management and Extension
- Fabric and Apparel Science

#### Objectives :

The Syllabus, at senior secondary level will help the learners to develop in the learners an understanding that the knowledge and skills acquired through the subject Home Science facilitates development of self, family and community. It endeavours to –

- ❖ acquaint learners with the basics of human development with specific reference to self and child.
- ❖ help to develop skills of judicious management of various resources.
- ❖ enable learners to become alert consumers.
- ❖ impart knowledge of nutrition and life styles to enable prevention and management of disease and also to inculcate healthy food habits.
- ❖ help develop understanding of textiles for selection and care of clothes.

## HOME SCIENCE

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

**One Paper** **Three Hours** **Marks 70**

#### Unitwise Distribution of Marks and Periods :

Unit No.	Title	Marks	Periods
Unit-I	Know Little Children	17	36
Unit-II	Nutrition for Self and Family	16	34
Unit-III.	Money Management and Consumer Education	16	34
Unit-IV	Our Apparel	16	34
Unit-V	Home Science : Its Application	5	6
Total		70	144

#### Unit-I : Know Little Children (0-3 years)

**Concept of Pre-natal period :** Concept; Stages of Prenatal Development Characteristics of babyhood.  
**Some specific characteristics :** Physical Development height, Weight, body proportions; Motor development during 0-3 months, 3-6 months, 6-9 months, 9-12 months and 1-3 years (Mile stones only); Social and emotional developments recognition of people around; Socialization, expression of emotions; Cognitive development; Stages of Cognitive Development.

**Protection from preventable diseases :** Definition of Disease, Different types of Childhood diseases and how they spread, Immunity and Immunization– concept and types (natural and acquired), breast feeding (One of the ways to develop natural immune) immunization chart symptoms of childhood diseases– TB, DPT, Polio, measles, cholera, diarrhoea.

**Special needs of disadvantaged and disabled children :** Concept different needs of children causes, Type of disabilities (Handicap)– Physical Neurological, Social Maladjustment Defect characteristics and needs.

**Substitute care at little children :** Concept, Different needs of children Kinds of Substitute child care, ICDS– Objective and functions.

#### **Unit-II Nutrition for Self and Family**

**Planning meals for the family :** Meaning and importance of meal planning principles and factors affecting meal planning, Planning meals for the family; Keeping in mind the needs of individual members, including children, pregnant women, lactating mother, members suffering from fever and diarrhoea; role and preparation of O.R.S.

**Ways to ensure good health for the family :** Water for Health, Function, Qualities, household method of making water safe for drinking– Chemical, Physical, Mechanical, Food adulteration– definition and meaning of food adulteration as given by PFA Common adulterants of different food stuff, Simple test for detection of the Adulteration ill effects of some of the adulterants present in the food, Kesari dal, metanil yellow, argemone seed.

#### **Unit-III. Money Management and Consumer Education**

**Family finance/ Management of family finance and consumer Education.**

**Family Income :** Definition, Types, Sources of family income supplementing family income need and ways.

**Management of family income :** Planning family budget– Objectives, importance, steps in planning budget. Types of budget, Record Keeping– Meaning, needs and importance procedure.

**Savings and Investment :** Meaning and importance of savings, investment– Institutions for savings and Investment banks, post-office, LIC, Units, P.P.F., P.F; – Basis for selection of method of investment– risk, security, profit, tax saving.

**Consumer Protection and Education :** Meaning, Rights Duties and Responsibilities, problems faced by consumer, Consumer Protection Act (1986) and Services; Consumer aids; Labels, standardization marks, advertising, guide books/ leaflets, consumer redresses forum.

#### **Unit-IV Our Apparel**

**Clothing and its relation to personality :** Elements of design– line, form, colour, texture, light; Principles of design : balance, rhythm, proportion, harmony emphasis; Factors influencing selection of clothes– Personality, age, climate, occupation, figure, occasion, fashion; purchase of fabrics– Purpose, quality, cost, season and Reliable shops (buying place).

**Selection of Readymade Garments :** Body measurement– needs and method; quality of Garment and Good Workmanship. Fabric, drape, design, seams, hem plackets and Pleats, Fasteners etc.

**Care of clothes :** General Principles and methods of washing, removing stains, finishing, cleaning, agents : Soap and detergent. Water, Storage of clothes– Importance, general rules and methods.

#### **Unit-V Application of Home Science Education**

**Knowledge of Home Science and its application in everyday life–**

Application of skill learnt through Home Science for supplementing family income– Needs and ways. Home Science related Vocations and careers.

Home Science as a subject in schools, college and institute– High School level, Higher Secondary level, College level, University, Institute provide certificate & Diploma ITI and Institution providing through Distance Education.

**SYLLABUS FOR HOME SCIENCE PRACTICAL**

Time: 3 Hours

30 Marks

<u>Unit</u>	<u>Marks</u>	<u>Periods</u>
Unit-I Know Little Children	04	08
Unit-II Nutrition for Family	08	15
Unit-III Family Finance and Consumer Education	03	08
Unit-IV Our Apparel	08	15
Unit-V Application of Home Science Education Record	05	
Viva	02	
Total	30	46

**Unitwise Distribution of Course contents :****Unit-I : Know Little Children**

**Activity :** Observe a child in neighbourhood or at home for various milestones of physical and motor developments and prepare a chart.

**Practical :** Make an interview schedule for working mother.

**Activity :** Interview three working mothers to find out their arrangements of substitute care in their children in their absence.

**Practical :** Prepare a chart of mile stones and a chart for immunization of a child.

**Unit-II : Nutrition for Family**

**Practical :** Plan meals for the family and carry out modification to suit an individual suffering from fever or diarrhoea, Pregnant and lactating mother. Prepare one dish only.

**Practical :** Preparation of oral dehydration solution.

**Practical :** Simple tests for checking adulteration in common food item (any three) Cereals, Pulses, Milk, Tea leaves Red chillies, Haldi powder, Black Pepper.

**Unit-III Money management and Consumer Education**

**Activity :** Find out the procedure of opening an account in a bank and post office and collect forms.

**Practical :** Fill up the forms of bank/ post office.

**Activity :** Read and evaluate labels of any three items bearing different standardization marks.

**Practical :** Prepare one label each for three items or product bearing different standardization marks.

**Unit-IV : Our Apparel**

**Practical :**

(a) Make a sample of (any three) basic stitches and seams.

(b) Make a sample of Fasteners– buttons & hooks.

Or Make an apron and incorporate all the above (a, b)

**Activity :** Examine quality in ready-made garments.

**Practical :** Removal of stains of (any three) Tea, Curry, Grease, Ball point-ink, lipstick, blood.

**Practical :** Make a soap/ detergent (Liquid/ Powder/ Cake) (any one)

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# ECONOMICS

## SYLLABUS FOR HIGHER SECONDARY COURSE

### Rationale :

Economics is one of the social sciences which has a lot of influence on every human being yet was received little attention in the school curriculum in India. As economic life and the economy go through changes, the need to ground education in children's own experience becomes essential. While doing so, it is imperative to provide them with opportunities to acquire analytical skills to observe and understand the economic realities. Bringing economics as an abstract knowledge in the early stages of school education would promote rote learning of the subject.

At the higher secondary stage, learners are in a position to understand abstract ideas, exercise the power of thinking and to develop their own perception. It is at this stage, the learners are exposed to the rigour of the discipline of economics in a systematic way.

Economics courses are being introduced in such a way that, in the initial stage, the learners are introduced to the economic realities that the nation is facing today along with some basic statistical tools to understand these broader economic realities. In the later stage, the learners are to be introduced to economics as a theory of abstraction.

The economics course also contain many projects and activities. These will provide opportunities for the learners to explore various economic issues both from their day-to-day life and also issues which are broader and invisible in nature. The academic skills that they acquire in these courses would help to develop the projects and activities. The syllabus is also expected to provide opportunities to use information and communication technologies to facilitate their learning process.

### Objectives :

- ❖ Understanding of some basic economic concepts and developing economic reasoning which the learners can apply in their day-to-day life as citizens, workers and consumers.
- ❖ Realisation of learners' role in nation building and sensitive them to the economic issues that the nation is facing today.
- ❖ To equip learners with basic tools of economics and statistics to analyse economic issues. This is pertinent for even those who may not pursue this course beyond the higher secondary stage.
- ❖ To develop an understanding that there can be more than one view on any economic issue and to develop the skills to argue logically with reasoning.

The economics subject should be taught in four semesters at the higher secondary stage. The details of course for each semester are as follows :

**H.S. First year :** (i) Statistics for Economics, (ii) Indian Economic Development.

**H.S. Second year :** (i) Introductory Microeconomics (ii) Introductory Macroeconomics



**Unit-IV Forms of Market and Price Determination**

- ❖ Forms of market– perfect competition, monopoly, monopolistic competition– their meaning and features.
- ❖ Price determination under perfect competition– equilibrium price, effects of shifts in demand and supply.

**Unit-V Simple applications of Tools of demand and supply Curves**

The teachers can be given the flexibility to choose the issues : rationing, floors and ceilings and Food Availability Decline (FAD) Theory (the teachers may also choose alternative examples that are simple and easy to understand).

**Part-B : INTRODUCTORY MACROECONOMICS**

The overall working of an economy and some of its economic theorisation are introduced in this course. The learners will get some basic idea of how the government regulates the functioning of economic aspects of a country through accounting of the production activities, running financial institutions, budgeting and the accounting of its economic interaction with other countries. The impact it will have on citizens is also briefly introduced.

**Unit-VI National Income and Related Aggregates– *Basic Concepts and Measurement***

- ❖ Macroeconomics : meaning.
- ❖ Circular flow of income, concepts of GDP, GNP, NDP, NNP (at market price and factor cost), National Disposable Income (gross and net); Private Income, Personal Income and Personal Disposable Income.
- ❖ Measurement of National Income– Value Added method, Income method and Expenditure method.

**Unit-VII Determination of Income and Employment**

- ❖ Aggregate demand, aggregate supply and their components.
- ❖ Propensity to consume and propensity to save (average and marginal)
- ❖ Meaning of involuntary unemployment and full employment.
- ❖ Determination of income and employment : two sector model.
- ❖ Concept of investment multiplier and its working.
- ❖ Problems of excess and deficient demand.
- ❖ Measures to correct excess and deficient demand– availability of credit, change in government spending.

**Unit-VIII Money and Banking**

- ❖ *Money* : meaning, evolution and functions
- ❖ *Central bank* : meaning and functions.
- ❖ *Commercial banks* : meaning and functions
- ❖ *Recent significant reforms and issue in Indian Banking System* : privatisation and modernisation.

**Unit-IX Government Budget and the Economy**

- ❖ Government budget– meaning and its components.
- ❖ Objective of government budget.
- ❖ Classification of receipts– revenue and capital; classification of expenditure– revenue and capital, plan and non-plan and developmental and non-developmental.
- ❖ Balanced budget, surplus budget and deficit budget : meaning and implications.
- ❖ Revenue deficit, fiscal deficit and primary deficit : meaning and implications; measures to contain different deficits.
- ❖ Downsizing the role of government : meaning and implications.

**Unit-X Balance of Payments**

- ❖ Foreign exchange rate– meaning (fixed and flexible), merits and demerits; determination through demand and supply.
- ❖ Balance of payments accounts– meaning and components.
- ❖ A brief analysis about recent exchange rate issues.

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## LOGIC AND PHILOSOPHY

### SYLLABUS FOR HIGHER SECONDARY COURSE

#### Objective :

Philosophy enquires into the meaning and significance of life and the world. It is called a second order discipline in so far as it enquires into the foundations and presuppositions of various disciplines. Logic is a Science which deals with forms of arguments. In an extended sense it studies the methodology of deductive as well as inductive Science. Modern logic is a fastly developing Science and it is closely related to mathematics. It does not cancel the Aristotelian logic but points out its limitations. So in the syllabus, we intend to acquaint the students with the elements of traditional logic, modern logic and scientific method. The syllabus will also acquaint students with a few essential problems of Western and Indian Philosophy.

## LOGIC AND PHILOSOPHY

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper Time : Three Hours Marks 100

#### Unitwise Distribution of Marks and Periods :

Unit No.	Title	Marks	Periods
<b>GROUP-A : LOGIC (Marks-60)</b>			
Unit-1	Induction, Its kinds	15	20
Unit-2	Grounds of Induction	15	20
Unit-3	Hypothesis and its kinds	15	20
Unit-4	Mill's Methods of Experimental Enquiry	15	20
<b>GROUP-B : PHILOSOPHY (Marks-40)</b>			
Unit-5	Realism- Native Realism	10	15
Unit-6	Idealism- Subjective Idealism	10	15
Unit-7	Ethics- Its meaning and Nature	10	15
Unit-8	Religion- Its meaning and Nature, Religion and Morality	10	15
Total		100	140

#### Unitwise Distribution of Course contents :

##### GROUP-A : LOGIC (Marks-60)

#### Unit-1 : Induction :

Its kind- Scientific Induction Unscientific  
Induction and Analogy

#### Unit-2 : Grounds of Induction :

Formal ground and Material ground,  
Paradox of Induction

**Unit-3 : Hypothesis and its Kinds, :**

Conditions of valid Hypothesis

**Unit-4: Mills Method of Experimental Enquiry :**

**GROUP-B : PHILOSOPHY (Marks-40)**

**Unit-5 : Realism :**

Native and Realism and scientific Realism

**Unit-6 : Idealism :**

Subjective Idealism and Objective Idealism.

**Unit-7 : Ethics–** Its meaning and Nature,

Object of Moral judgment

**Unit-8 : Religion–**

Its meaning and nature, Religion and Morality.

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# ENGINEERING DRAWING

## SYLLABUS FOR HIGHER SECONDARY COURSE

### OBJECTIVE :

- ❖ To enable the student to understand and develop clear concept and perception of form, proportion and purpose and connect these to daily life phenomenon.
- ❖ To enable the student to develop the skill of expressing the two-dimensional and three-dimensional objects into professional language and vice versa.
- ❖ To enable the student to acquire to readily draw neat sketches often needed in “on-job-situations”.
- ❖ To prepare the student to develop a clear understanding of plane and solid geometry and to some extent machine drawing so as to apply the same in relevant practical fields such as technology and industry
- ❖ To enable the student to acquire speed and accuracy in use of drawing instruments,
- ❖ To equip the student to apply theoretical knowledge of graphics fruitfully in other areas in the future.

### CURRICULUM FOR +2 STAGE IN SCIENCE & ARTS

#### Infrastructure :

(a) SPACE : 2m<sup>2</sup>/ Student

(b) FURNITURE :

- (i) One Drawing board for each student (700×1000, Thickness = 25 mm) of well-seasoned soft wood.
- (ii) The black board measuring 1.5m × 3 m.
- (iii) A typical almirah to keep the drawing sheets and other accessories required for drawing.

(c) DRAWING TOOLS FOR STUDENTS

- (i) T-square
- (ii) Set-square (30°/ 60° & 45°)
  - a) 30°/ 60° -set square of 25 cm length.
  - b) 45° set square of 20cm length.
- (iii) Protractor- Circular on semicircular of 100 mm diameter.
- (iv) DRAWING INSTRUMENT BOX, CONTAINING
  - a) Large-size compass with inter-changeable pencil and pen legs.
  - b) Large size divider.
  - c) Small bow pencil.
  - d) Small bow pen
  - e) Small bow divider.
  - f) Lengthening bar.
  - g) Inking pen.

(v) SCALES : Made of wood, steel celluloid or plastic

15 cm long and 2 cm wide or, 30 cm long and 3 cm wide fiat scales are in common use.

- (vi) French curves:
- (vii) Drawing paper:
- (viii) Drawing pencils:
- (ix) Rubber eraser:
- (x) Drawing pins:
- (xi) Small-paper-block.
- (xii). Duster

**BOOKS RECOMMENDED :**

1. Engineering Drawing: by N.D.Bhatt and V.M. Panchal ISBN-81-85594-58-9.  
Publication : CHAROTAR PUBLISHING HOUSE.
2. Engineering Graphics; by A.M.Chandra and Satish Chandra, Publication : NARORA

**ENGINEERING DRAWING****SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE****One Paper (Theory)****Three Hours****Marks 50****Periods 90****Unitwise Distribution of Marks and Periods :**

Unit No.	Title	Marks	Periods
Unit-1	Pictorial drawing ,isometric sketching, isometric projection of solids.	10	18
Unit-2	Graphical representation of information	8	12
Unit-3	Orthographic projection of machine blocks and machine elements.	10	21
Unit-4	Thread profiles	4	9
Unit-5	Screwed fastenings	3	9
Unit-6	Rivets	3	9
Unit-7	Free hand sketch of bearing rod-joint pipe joint Couplings, pulleys, keys, gears, screw jack.	12	12
Total		50	90

**Unitwise Distribution of Course contents :**

- Unit-1** Pictorial drawing (isometric sketching) of cubes, rectangles (simple variation), circles and irregular curves, objects having planes all parallel to the corresponding pictorial planes, objects in planes which are not parallel to them, corresponding pictorial planes, objects having hole, cylindrical feature or rounded corners, dimensioning, free hand pictorial drawing from models and multi view projection drawings.
- Unit-2** *Graphical representation of information* : Bar charts, pie charts, rectilinear chart, triangular chart, polar charts, semi-log and log-log graphs, Nomography, concurrency charts, alignment charts, BIS and ISO conversion.
- Unit-3** *Orthographic projection* : Orthographic projection of standard machine elements. Conversion of pictorial views into orthographic views and vice-versa (1<sup>st</sup> and 3<sup>rd</sup> angle projection systems) Sectional views.

- Unit-4** Thread profiles for (i) for power transmission, for fastenings (ii) ISO Metric screw thread profile IS-4218, (iii) B S W, BSF, BSP, BA (iv) IS-2643, IS 554, etc. (v) unified thread, (vi) knuckle thread.
- Unit-5** *Screwed fastenings* : (i) Sectional representation of external and internal threaded assembly (IS-696), (ii) Hexagonal and square nut and bolt, their proportional dimensional standards, (ii) Different types of bolts and nuts as used in practical fields and screw head.
- Unit-6** Rivets: (i) Sanap head, pan head, Flat countersunk head (60), (ii) Joints lap, butt, double riveted double strap butt joint, (iii) Zigzag riveting offset full section, (iv) proportions.
- Unit-7** Free hand sketch of bearing, rod-joint, pipe-joint Couplings, pulleys, keys, gears, screwjack.

### SYLLABUS FOR ENGINEERING DRAWING PRACTICAL

#### One Paper (Practical)

Three Hours

Marks 50 (Total Periods 75)

#### Part-A (Periods 24)

To perform the following jobs from the two given views of the prescribed machine blocks (two)

##### Marks

- |  |    |
|--|----|
| 1. Copy of the given views                           | 5  |
| 2. Drawing the missing view with hidden lines        | 5  |
| 3. Sketching the Isometric view without hidden edges | 10 |

#### Part-B (Periods:26)

- |   |    |
|---|----|
| 1. Drawing of Bar charts, Pie charts, rectilinear chart, triangular chart polar charts, semi-log and log-log graphs, Nomography, ..... charts, alignment charts from a given problem. (9 Periods) | 5  |
| 2. Drawing of different of thread profiles as prescribed in the theory part. (9 periods)  | 5  |
| 3. Drawing of sectional view of assembly with screwed fosterlings Involving nuts and bolts. (9 Periods)   | 5  |
| 4. Drawing of sectional view of different types of rivets as prescribed in the theory. (9 Periods)  | 5  |
| 5. Free hand drawing of bearing. Rod-joint, pipe, couplings ..... keys, gears, screw jack. (15 Periods)   | 10 |

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## MULTIMEDIA AND WEB TECHNOLOGY

### SYLLABUS FOR HIGHER SECONDARY COURSE

#### Objectives :

1. To get proficiency in Handling Computer Networks and the web.
2. To get proficiency in creating and Managing Web site.
3. To be able to write server & client scripts.
4. To design Graphical images using Image-Editing tools.
5. To get proficiency in audio & video capture and editing using software tools.
6. To get proficiency in creating presentation with Audio and Video clips.
7. To become an entrepreneur in IT field.

## MULTIMEDIA AND WEB TECHNOLOGY

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

#### One Paper (Theory)

Time : Three Hours

Marks 70

Periods 100

#### Unitwise Distribution of Marks and Periods :

Unit No.	Title	Marks		Periods	
		Theory	Practical	Theory	Practical
Unit-1	Advanced Computer System	10		20	08
Unit-2	Advanced Networking	10		20	06
Unit-3	Advanced Web Technology	25	15	50	18
Unit-4	Multimedia Authoring Tools	25	10	50	18
	Viva Voce		05		
Total		70	30	140	50

#### Unitwise Distribution of Course contents :

##### Unit-1 : ADVANCED COMPUTER SYSTEM :

Periods 20

Database Terminology : Data, Record/ Tuple, Table, Database

Concept of Keys : Candidate Key, Primary Key, Alternate Key and Foreign Key;

Database Tool : Using MS-Access, Creating and Saving Table, Defining Primary Key, Inserting and Deleting Column, Renaming Column, Inserting records, Deleting Records, Modifying Records, and Table Relationship

Introduction to RDBMS : Various types or RDBMS

Introduction to SQL

Creation of database, tables and views

Introduction to Stored Procedures, and Triggers

Backup and Restoring of database

Introduction of replications

Connecting to a back end database using connection string and other ways.

**Unit-2 : ADVANCED NETWORKING :**

**Periods 20**

Internet Protocol (IP) : IP Classes, IPV4, IPV6, CIDR, Subnetting.

Mobile Computing/ Communication, GSM, CDMA, WLL, SMS, Chat, Video Conferencing. Network Security concepts : Firewall, Cyber law, Encryption/decryption.

**Unit 3 : ADVANCED WEB TECHNOLOGY :**

**Periods 50**

Review of HTML/ DHTML/ XML

WEB-Server : Internet Information Server (IIS) / Personal Web Server (PWS)/Apache Server

Active Server Pages (ASP) : Concept of ASP, features of ASP, other equivalent tools– JSP, PHP;

Constants : String and Numeric ;

Data types : Integer, Floating Point (Single, Double), String, Date, Boolean, Currency, Variant, Object;

Variables : Explicit and Implicit Declaration;

Operators :

Arithmetic : +, - (Unary and Binary), \*, /, \ (integer division) mod, ^;

Comparison : <, >, <=, >=, <>, =;

Logical : AND, OR, NOT, XOR, EQV, IMP;

String Operator : & or + (for Concatenation);

Functions :

Conversion functions: Abs(), CBool(), CByte(), CInt(), CStr(), CSng(), CLng(), CDate(); String Manipulation Functions : UCase(), LCase(), Len(), Left(), Right(), Mid(), LTrim(), InStr(), RTrim(), LTrim();

Time & Date Functions: Date(), Day(), Hour(), Left(), Len(), Minute(), Month(), Monthname(), Now();

Arrays : Declaration and use of 1 dimensional and 2 dimensional arrays;

Controls : IF..THEN, IF..THEN..ELSE..END IF, IF..THEN..ELSEIF..THEN..END IF, SELECT..CASE..END SELECT, FOR..NEXT, FOR EACH..NEXT, DO WHILE..LOOP, DO..LOOP WHILE, DO UNTIL. LOOP;

Procedures and Functions, Passing parameters/arguments;

Concept of object model structure (client to server and server to client);

Objects : Properties, Methods, Events, Setting Object properties, Retrieving Object properties, calling objects/methods;

Types of Objects : Response, Request, Application, Session, Server, ASPError;

Response Object : Write Method, AddHeader, AppendToLog, Binary Write, Using Shortcuts <%=value/expr%>, Controlling information : Buffer, Flush Clear, End;

Request Object : Request Object Collection : QueryString, Form, Server Variables, Cookies, Client Certificate;

Application : Contents, Lock, Unlock, Remove, RemoveAll;

ASP Components : AD Rotator, Content Rotator, Counter, Page Counter, Permission Checker;  
 Text Files : Open and Read content from a text file;  
 Elementary Database Concepts : Concept of Table/Relation, Relationship, Candidate Key, Primary Key, Alternate Key, Foreign Key, Connecting with Databases : Creation of DSN, using OLE DB.  
 Working on Database : Inserting, Retrieving, Modifying/Updation of records from Tables in Databases using server objects (ADODB. Connection, ADODB. Recordset);  
 Server Variables : HTTP\_User\_Agent, REMOTE\_ADDER, REMOTE\_HOST, SERVER\_NAME;

**Unit-4 : MULTIMEDIA AUTHORIZING TOOLS :****Periods 50****Movie File Formats : AVI, MPEG, SWF, MOV, DAT;**

Movie Frames : Concept or Frame, Frame Buffer and Frame Rate;

Authoring Tools; Making Animation, Embedding Audio/Video, and Embedding on the web page;

**Multimedia Authoring Using Macromedia Flash**

Making of Simple Flash Movie, Setting Properties, Frame Rate, Dimensions, and Background Color;

Scene : Concept of Scene, Duplicate Scene, Add Scene, Delete Scene, and Navigating between Scenes;

Layers : Concept of Layer, Layer Properties, Layer Name, Show/Hide/Lock layers, Type of Layer - Normal/Guide/Mask, Outline Color, Viewing Layer as outline, Layer Height,

Adding/deleting a layer;

Frame : Concept or Frame;

Creating a Key Frame, Inserting Text Into the Frame, Inserting Graphical Elements into the frame, Converting Text/Graphics to Symbol, Inserting Symbol into the Frame, Setting

Symbol Property (Graphics/Button/Movie), Inserting Blank Frame, Inserting Blank Key Frame, Inserting Key Frame into the Blank frame, Selecting all/Specific frames of a Layer Copying/ Pasting selected Frames,

Special Effects : Motion Tweening, Shape Tweening, Color effect, Inserting Sound Layer; Testing a Scene and Movie;

Import/ Export (Movie/Sound and other multimedia objects)

Publishing : Publishing A Flash Movie; Changing publish Settings; Producing

SWF (Flash Movie), HTML page, GIF image, JPEG Image (\*.jpg), PNG Image, Windows Projector (\*.exe), Macintosh Projector (\*.hqx), Quick Time (\*.mov), Real Player (\*.smil); Testing with Publish Preview.

**SYLLABUS FOR MULTIMEDIA AND WEB TECHNOLOGY PRACTICAL****Total Marks : 30****1. Advanced Web Technology :****Marks-15 Periods-18**

A website, based on a particular topic, has to be developed by each student using various commands covered in HTML, VB Script and ASP with at least 4 web pages.

Web page should be designed with following features.

❖ HTML Basic Tags (html/head/title/body/B/I/U/BR/HR)

- ❖ Functions
  - ❖ Conditional and Control Statements
  - ❖ Objects : Response/Request/ Application
  - ❖ Session /Server /ASP error
  - ❖ Image Editing using Photo Shop /Corel draw
  - ❖ Merging layers /Moving and Copying Layers
  - ❖ Use of Multimedia Authoring (Using Macromedia Flash)
- (Note : Output as Web page/Flash Movie/ Windows Projector/ Quick Time)

## 2. Multimedia : Marks-10 Periods 18

Create an electronic movie with various pictures, audio clipping, movie clippings, and factual text related to school/ organisation :

- ❖ Introduction to 3D Animation (Using 3D Studio)
- ❖ Embedding video and audio in web pages.
- ❖ An introduction to interactive walk-through.
- ❖ Embedding walk-through into web pages .

## 4. Viva Voce : Marks-5

Five questions from topics covered in the curriculum

### Reference Books :

1. HTML Complete– Sybex (BPB)
2. Mastering HTML 4 Premium Edition– Ray (BPB)
3. HTML Example Book– Farrar (BPB)
4. Mastering WEB DESIGNING– Maccoy (BPB)
5. Inside Adobe Photoshop 6– Bouton (BPB)
6. Multimedia on the PC– Sinclair (BPB)
7. Multimedia Magic– Gokul, S (BPB)
8. Mastering CorelDraw 9– Altman (BPB)
9. CorelDraw 9 - Training Guide– Lotia, M (BPB)
10. Effective Web Design– Navarro (BPB)
11. ASP, ADO and XML Complete– Sybex (BPB)
12. Mastering Active Server Pages 3– Russell (BPB)
13. Inside Flash 5– Kea thing (BPB)
14. MP3 Complete– Hart (BPB)
15. Computer Science Vol-I by P. H. Talukdar & Utpal Bhattacharjee.
16. Computer science and Applications vol-II, by P.H. Talukdar NS Mr S. Kalita.

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# BIOTECHNOLOGY

## SYLLABUS FOR HIGHER SECONDARY COURSE

Biotechnology, in its broadest sense, is the technology that provides goods and services by industrial processes using biological organisms, systems and processes. It comprises a number of technologies based upon increasing understanding of biology at the cellular and molecular level. The techniques of biotechnology includes recombinant DNA technology (genetic engineering), hybridoma technology and monoclonal antibody preparation, cell and tissue culture, DNA fingerprinting, protoplast fusion, protein engineering, immobilized enzyme technology, cell catalysis, biosensor and several others. Biotechnology has emerged as one of the frontline technologies in recent times. Biotechnology with its most recent offshoot Bioinformatics is being projected as the technology that would have the greatest impact in the coming years worldwide.

With the exponential growth of human population, it becomes urgent to improve the production process and capabilities for the increased production of food, fuel, medicine, enzymes, fermented items, fibers, vaccines and biofertilizers. It also becomes important to ensure protection, conservation and sustainable utilization of our natural resources. Biotechnology has the answer for these problems. Application of biotechnology has been proved to be fruitful for meeting the need of the modern human society,

Inclusion of Biotechnology in higher secondary level courses is considered as important to create a base and interest among the students for higher education, training and research in Biotechnology. In view of this the present syllabus is designed to cater needs of the Biotechnology education for the higher secondary students of Assam. The theoretical topics and experiments are selected and organized such a way so that the students can earn basic concept and interlink the various topics and techniques. It is expected that the student will gain appropriate knowledge and acquire practical skill on the subject. It is also anticipated that the course will make the students competent to meet up the challenges of both academic and professional courses beyond the secondary level.

### **Objectives :**

The objectives of teaching Biotechnology at Higher Secondary level are :

1. To create an interest among the students of H.S. Classes to study Biotechnology courses.
2. To help the students to know and acquire basic information and concept in the subject.
3. To expose the students to understand the basic techniques and their utilization in various production and service industries.
4. To familiarize the learners to understand the importance and applications of Biotechnology in everyday life.
5. To develop conceptual competence of the students so as to cope-up with technical and professional in future carrier.

## BIOTECHNOLOGY

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

**One Paper** **Time : Three Hours** **Total Marks-70**  
**Pass Marks-21**

#### Unitwise Distribution of Marks and Periods :

Unit No.	Title	Marks	Periods
Unit-1	Protein Engineering and Bioinformatics	15	23
Unit-2	Genetic Engineering and genomics	15	32
Unit-3	Environmental Biotechnology & Bioethics	10	20
Unit-4	Microbial Technology	10	25
Unit-5	Plant Cell Culture Technology	10	25
Unit-6	Animal Cell Culture Technology	10	25
Total		70	150

#### Unitwise Distribution of Course contents :

	Marks
<b>Unit-1 : Protein Engineering and Bioinformatics :</b>	<b>15</b>
Protein based products and designing	
Proteins	
Proteomics : an introduction	
Introduction to Bioinformatics	
Sequences and Nomenclature	
Information Sources	
Analysis using Bioinformatics tools	
<b>Unit-2 : Genetic Engineering and Genomics :</b>	<b>15</b>
Recombinant DNA technology- definition and tools	
Making recombinant DNA	
Construction of DNA library :	
Genomic and CDNA	
Cloning vectors	
Polymerase Chain Reaction (PCR)	
DNA probes	
Hybridization techniques : Southern, Northern and Western	
DNA sequencing	
Genomics : an introduction	
<b>Unit-3 : Environmental Biotechnology &amp; Bioethics :</b>	<b>10</b>
Bioremediation of oil pollution reducing environmental impact of chemical herbicides & fertilizers; biosensors to detect environmental pollution.	
Biofertilizers-definition and uses.	
Biofuels : definition and application	
Genetically Modified Organisms and Ethical Issue	
Intellectual Property Rights-Patenting Life forms	
<b>Unit-IV : Microbial Technology</b>	<b>10</b>
Classification of microorganism	
Microbial culture techniques	
Measurement and kinetics of microbial growth	
Strain Isolation and Isolation of microbial products	

Application of microbial culture	
<b>Unit-V : Plant cell culture Technology</b>	<b>10</b>
Introduction; Cellular Totipotency	
Plant cell and tissue culture techniques and media	
Application of plant tissue culture	
Gene transfer methods in plants	
Transgenic plants for crop improvement	
<b>Unit-VI : Animal Cell Culture Technology</b>	<b>10</b>
Introduction	
Animal Cell Culture Technology and media	
Characterization of cell lines	
Scale up of animal cell culture process	
Application of animal cell culture	
Stem cell technology	

## SYLLABUS FOR BIOTECHNOLOGY PRACTICAL

**Total Marks-30**

<b>Scheme of Evolution :</b>	<b>Marks</b>
<b>1. Two Experiments</b>	<b>8 + 8 = 16</b>
(One computer based Practical)	
❖ Data retrieval and data search using Internet site of NCBI	
❖ Download a DNA protein sequence from Internet, analyze and comment over it	
❖ Ion-exchange chromatography for protein	
❖ Estimation of DNA	
❖ Isolation of microbes from a given biological sample	
❖ Sterilization techniques : Dry heat and moist heat sterilization, Chemical sterilization and ultra filtration	
❖ Determination of bacterial growth curve	
❖ Determination of blood groups	
❖ Estimation of blood glucose by enzymatic method	
❖ Demonstration of plant tissue culture technique	
❖ Isolation of bacterial plasmid DNA and its detection by gel electrophoresis	
❖ Minor project work/Seminar	
<b>2. Viva on practical</b>	<b>4</b>
<b>3. Practical Record</b>	<b>4</b>
<b>4. Seminar/Minor project</b>	<b>6</b>

**Recommended Books**

1. CBSE publication for class XI and XII

### ANNEXURE

**Laboratory Requirements :**

**A. Must include the following components for Laboratory:**

- (a) One small lab with Laminar Air flow cabinet and Single working desk
- (b) Working Laboratory with working table & Chairs, Washing facilities, light arrangement.
- (c) Essential equipments : Autoclave, oven, Refrigerators, Incubator, Water distillation, Centrifuge.
- (d) Glassware's, measuring equipment etc.
- (e) Small Culture room (air conditioned) and culture racks.

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## ENTREPRENEURSHIP DEVELOPMENT

### SYLLABUS FOR HIGHER SECONDARY COURSE

**Introduction :** Introducing of Entrepreneurship in the course curriculum of class XI & XII of Assam Higher Secondary Education Council is the need of the hours. Students are the potential sources of entrepreneurs of the future. The process of entrepreneurship will effectively imbibe a positive mindset among the budding students. Realizing the need and importance of entrepreneurship in the formal education system, the entrepreneurship curriculum has been designed keeping in mind of the following objectives.

**Objectives :**

- ❖ To make students aware about need and importance of entrepreneurship in the changing scenario.
- ❖ To encourage the self-analysis (thinking) process.
- ❖ To generate a spirit of work and self-employment.
- ❖ To develop attitudes, interest and values among the students towards entrepreneurship development and its contribution in the growth of individual as well as nation building.
- ❖ To enable them to make realistic choice of entrepreneurship activities.
- ❖ To promote entrepreneurship as a career option.
- ❖ To enable them to launch, manage and grow an enterprise.

## ENTREPRENEURSHIP DEVELOPMENT

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

**One Paper**

**Time : Three Hours**

**Marks 100**

**Unitwise Distribution of Marks and Periods :**

Unit No.	Title	Marks		Periods	
		Theory	Practical	Theory	Practical
Unit-1	Importance and launching of an enterprise	20	-	35	-
Unit-2	Project implementation	20	-	35	-
Unit-3	Managing Enterprise	20	-	30	-
Unit-4	Review of Govt. Policies and Act	10	-	20	-
		70	30	120	50

**Unitwise Distribution of Course contents :**

**UNIT-1 : IMPORTANCE AND**

**LAUNCHING OF AN ENTERPRISE**

**Marks**

**20**

- ❖ SME sector and its role in economic development.
- ❖ Enterprise and its classification.
- ❖ Identification of the project.
- ❖ Enterprise planning & business module formulation.
- ❖ Preparation of detail project report (DPR).

<b>UNIT-2 : PROJECT IMPLEMENTATION :</b>	<b>20</b>
<ul style="list-style-type: none"> <li>❖ Sources of assistance available : <ul style="list-style-type: none"> <li>(i) Promotional</li> <li>(ii) Financial</li> <li>(iii) Technical</li> <li>(iv) Marketing</li> </ul> </li> <li>❖ Market strategy</li> <li>❖ Project funding</li> <li>❖ Input on resource mobilization.</li> <li>❖ Registration, licensing and other legal formalities.</li> </ul>	
<b>UNIT-3 : MANAGING ENTERPRISE</b>	<b>20</b>
<ul style="list-style-type: none"> <li>❖ Management : Concept &amp; process</li> <li>❖ Financial management : <ul style="list-style-type: none"> <li>(i) Term finance</li> <li>(ii) Short term finance</li> <li>(iii) Cost of production &amp; pricing</li> </ul> </li> <li>❖ Marketing management : <ul style="list-style-type: none"> <li>(i) Channel of distribution</li> <li>(ii) Sales promotion technique</li> <li>(iii) Product mix</li> </ul> </li> <li>❖ Human resource management.</li> <li>❖ Operational management.</li> <li>❖ Record &amp; Account management.</li> <li>❖ Taxation (Income tax/ VAT, CST, Excise duty etc.)</li> </ul>	
<b>UNIT-4 REVIEW OF GOVERNMENT POLITICS AND ACT :</b>	<b>10</b>
<ul style="list-style-type: none"> <li>❖ Industrial policies (since liberalization, 1991).</li> <li>❖ MSME Act 2006</li> </ul>	
<b>EVALUATION :</b>	<b>30</b>
<ul style="list-style-type: none"> <li>❖ <b>Internal Assessment : (Practical)</b> Preparation of individual bankable project report, Case Study on successful as well as unsuccessful entrepreneur, industrial profile, performance of local SME, marketing strategies of consumer durable etc.</li> <li>❖ <b>External Assessment : (Theory)</b> Written examination on the content of <b>UNIT-1 to 4</b>. Marks of each <b>UNIT</b> should not be allocated so as to evaluate the total course as a whole.</li> </ul>	

### **CREATING ENTREPRENEURSHIP AWARENESS**

This is the path-breaking stage as it aims at making the students look at Entrepreneurship as an effective alternative to a 'White-collar job'. The following activities could be taken up for creating awareness about entrepreneurship among the XII year students so that from very initial stage, they can focus their attention on the option of setting up their own enterprises.

**Creative Corner :** A prominent place of the institution may be allotted to display information about product, success stories of 'high achievers' and salient features of an Entrepreneurship Development Programme.

**Forming an Entrepreneurship Forum :** Those students, who are interested in Entrepreneurship, can club-together and form a forum with the support from the faculty of the institutions. The forum can organize on a continuous basis activities such as i) inviting achievers and successful entrepreneurs to talk to the students, ii) elocution & essay competitions, iii) exhibitions on new products/ process and iv) video films on success stories, products/ process, etc.

**Trade Fair Visit :** Interested students can be taken to trade fairs to collect information on industrial products of their interest.

**Seminars :** One day seminars on 'I can do it' can be organized on business opportunities based on available resources & skills and how these can be utilized in establishing business ventures.

**Institutional Visit :** Students visit to financial institutions, promotional organizations, industry associations, research institutions and banks would help them in collecting information on availability of finance, technology, raw-materials and export potentials.

**Establishment of a Commercial Activities Centre :** The educational institutions can take up the initiative to establish a 'Commercial Activities Centre' (CAC) within the institution. Such a centre may include a stationery shop, canteen etc. to be run by the students or the members of Entrepreneurship forum. The main objective of the CAC is to provide students 'hand-on-experience' of managing a commercial activity. Later on, the Centre can extend its role by providing market opportunities for the products designed and produced by the students. This will promote not only new initiatives among the students but also experimental learning in Entrepreneurship.

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## SANSKRIT

### SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper Times : Three Hours Marks 100

#### Unitwise Distribution of Marks and Periods :

Unit No.	Topics	Marks	Periods
Unit-1	Selected portions from poetry	40	45
Unit-2	Selected portions from drama and prose	35	40
Unit-3	Grammar	15	25
Unit-4	Composition	10	20
Total		100	130

#### Unitwise Distribution of Course Contents :

*Text Book* : Sanskrit Pathachayanam, Published by Assam Higher Secondary Education Council

#### Unit-1 : Poetry:

- (a) रघुवंशम् Canto XIII 20 Marks  
1st 57 Verses only  
(annotated by Prof. S.M. Bhadra)
- (b) श्रीमद् भगवद् गीता CantoII 20 Marks  
(annotated by Prof. U.c. Bhattacharyya)

#### Unit-2 : Drama and Prose :

- (a) शरीरं क्षणविध्वंसि कल्पान्तं स्थायिनो गुणाः (from नागानन्दम्) 15 Marks  
annotated by Sri H.M.D. Goswami
- (b) असमराज्ये संस्कृत चर्चा 20 Marks  
by Prof Dr. R.N. Sarma

#### Unit-3 : Grammar :

परस्मैपद विधान, आत्मनेपद विधान, कारक-विभक्ति, समास and knowledge of gender

#### Unit-4 : Composition in simple Sanskrit on

a particular topic

10 Marks

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