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Internal Formative Evaluation: Theory and Practice

Class X

Planning & Preparation
Expert Committee on School Education



West Bengal Board of Secondary Education
77/2, Park Street, Kolkata – 700 016

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INTERNAL FORMATIVE EVALUATION: GUIDELINES FOR IMPLEMENTATION

The WBBSE in consultation with the Expert Committee has issued a circular mentioning the framework for evaluation procedure in respect of the revised curricula and syllabi being followed in all affiliated schools of WBBSE from January 2016. On further recommendation of the Expert Committee, the WBBSE is now issuing the following guidelines for smooth implementation of the Internal Formative Evaluation programme for Class-X in the academic session in 2016:

In case of Internal Formative Evaluation, the following six modalities are to be followed:

1. Survey Report, 2. Nature Study, 3. Case Study, 4. Creative Writing, 5. Model Making, 6. Open Text Book Evaluation.

Out of these six options noted above, any three are to be chosen in an academic year vis-a-vis Internal Formative Evaluation in each of the seven subjects. Therefore, each term will have one modality in relation to a particular subject. Subject teacher(s) are expected to correlate the modalities of Internal Formative Evaluation with the learning competencies of the concerned subjects. Marks obtained in the third Internal Formative Evaluation will be considered as the marks for the Internal Formative Evaluation of Madhyamik Pariksha

1. This programme of Internal Formative Evaluation (IFE) should be considered as an integral part of teaching-learning process for enhancement of learning.
2. The IFE programme should be carried out in the classroom scenario in a stress-free manner before the respective summative evaluations for each term.
3. The assessment techniques should be integrated with the classroom processes and should focus on enhancement of understanding and application of knowledge.
4. During implementation of the IFE, innovative teaching-learning processes are expected to emerge. While planning for such processes, the diverse needs and capacities of students should be taken care of and school should ensure that students are able to participate and derive benefit.
5. The teachers in respective subjects in each school will decide the nature and difficulty level of the activities to be carried out under the banner of Survey, Nature Study, Case Study, Creative Writing, Model Making and Open Textbook Evaluation in a student-friendly manner according to the needs of the students of the school and accordingly design such IFE programme. However, some exemplar activities for different subjects for IFE are provided herewith.
6. It will be expected that the assessment will be done on the basis of innovative approaches adopted by the students and not necessarily on the accuracy of the end-results.
7. The written records of activities carried out in the classroom for IFE, duly endorsed and assessed by the subject -teacher and signed by the guardian will be preserved by each student until completion of Class-IX and will have to be produced at the school for any future requirement.
8. A student will be expected to demonstrate her/his abilities in the following manner during the innovative teaching-learning processes adopted for IFE:
 - Describing a case/event/phenomenon/situation/picture in her/his own language.
 - Exploring further a case/event/phenomenon/situation/picture and producing new examples, alternative explanations, new vocabulary in conformity with the respective discipline.
 - Providing innovative opinions and suggestions in conformity with the discipline.
 - Elaborating the clues, ideas, dialogues, conversations etc.
 - Suggesting innovative approach for presentation of a concept and in problem-solving in conformity with the discipline.
 - Drawing conclusions, making inferences, and taking decisions in respect of a case/event/phenomenon/situation in conformity with the discipline.
 - Creating something new on her/ his own.

TOOLS FOR INTERNAL FORMATIVE EVALUATION: A BRIEF NOTE

1. Survey:

The term **survey** is often used to mean collect and interpret information to demonstrate the achievement or otherwise of well-defined goal(s) or specified objective(s) (Devin Kowalczyk,2013). As a part of the Internal Formative Evaluation, the goals or objectives are those expected learning outcomes specified in each subject domain. A survey focuses on factual information and helps surveyors, who are students in the present context, to reinforce their learning under the able monitoring provided by teachers.

2. Case study:

Case studies are stories or contexts. They present realistic, complex, and contextually rich situations and often involve a dilemma, conflict, or problem that students are expected to analyze/solve by applying their acquired learning skills. It provides an in-depth look into a subject/context of study (the case), as well as its related contextual conditions. A case study involves an intensive study of a learning unit and inspires students to examine as condition, situation, or value of the given context.

3. Nature study:

“Nature study, as a process, is seeing the things that one looks at, and the drawing of proper conclusions from what one sees” (Hyde Bailey, 1904). Nature study involves observation of plants, animals, natural phenomena, and human activities as a mode of learning. Nature study attempts to reconcile scientific investigation with spiritual, personal experiences gained from interaction/study with the world/contexts that students live in or are aware of.

4. Model making:

A model connotes a pattern, ideal, reproduction or draft of things (increased, reduced or in actual size). “Apart from real things models can also be mental constructions” (Mueller Science, 1971). Model making is a logical next step in the thinking process for many ideas. It helps students to concretize abstract and complex concepts/ideas through hands-on experience. A model may be a two-dimensional or three-dimensional representation of concepts/ideas. Model making provides scope for reinforcement of critical and creative thinking skills as well as the problem-solving and decision making skills.

5. Creative writing:

Creative writing involves written expression that draws on creative and critical thinking to convey meaning. Creative writing focuses upon learning competencies in the subject domains, while harnessing the CCT skills. It provides scope or students to apply multiple learning strategies vis-a-vis demonstrating clarity of concepts and their application underlined by aesthetic appreciation of value judgements.

6. Open Text Book Evaluation:

OTBE implies an application of theory to real life situations. It is based upon the principle that the whole objective of learning is not about constant delivery. There must be effective transaction of learning, not just content in the classroom. Therefore, OTBE not only reinforces learning competencies, but also provides scope for transference learning skills. It inspires students to use a range of strategies including accurate decoding to read for meaning, to describe, select or retrieve information, events or ideas from texts and to deduce, infer or interpret information, events or ideas from texts.

Marks obtained in the third Internal Formative Evaluation (IFE) in each subject will be considered as the marks obtained in the (IFE) in the Madhyamik Examination.

Methods and Tools for Internal Formative Evaluation

Curriculum Centred and Classroom Learning Based

Name of the Method	About the Method		Process-Methodology	Example
	Learning Objective	Expected Learning Outcome		
Survey	<ul style="list-style-type: none"> ● Collection of information of known and unknown component with specific context. ● Determination of sequence of work and necessary follow-up activities. ● Unification of collected information. ● Analysis of collected information and follow-up explanation. ● Documentation of decision and evaluation. 	<ul style="list-style-type: none"> ● Collection of information. Gaining ability to analyse collected information and take proper decision. 	<ul style="list-style-type: none"> ● Learners would be provided with specific contexts. Learners will collect information (individually/in groups). They will deposit the document, prepared after analysis and evaluation of collected information, to their respective teachers. 	<ul style="list-style-type: none"> ● Examples given in respective subject section.
Nature Study	<ul style="list-style-type: none"> ● Observation of surrounding environment / incidences related to plants, animals, birds and human activities. ● Data recording ● Understanding of recorded data. 	<ul style="list-style-type: none"> ● Construction of observatory and critical attitude. 	<ul style="list-style-type: none"> ● Learners would be provided with specific contexts. ● They will observe minute details of that particular context and prepare a report (individually/in groups). Finally, they will hand over the report to their respective teacher. 	<ul style="list-style-type: none"> ● Examples given in respective subject section.

Curriculum Centred and Classroom Learning Based

Name of the Method	About the Method		Process-Methodology	Example
	Learning Objective	Expected Learning Outcome		
Case Study	<ul style="list-style-type: none"> Understanding of problem or related matter with respect to a particular incidence. Determination of probable solutions. Selection of the most effective solution by judging the demand of the situation. 	<ul style="list-style-type: none"> Analysis of problem (individually/in groups) of related matter. Finding solution Gaining of ability to exchange problem-solving clues. 	<ul style="list-style-type: none"> Learners would solve a problem with respect to given situation / phenomenon / context / circumstances(individually / in groups) 	<ul style="list-style-type: none"> Examples given in respective subject section.
Creative Writing	<ul style="list-style-type: none"> Written expression of creative thoughts after editing and extending. 	<ul style="list-style-type: none"> Learners will gain the ability to express creatively of concept and ideas about any particular incidence / subject. 	<ul style="list-style-type: none"> Learners will be able to construct imaginary conversation, paragraph or narrative etc. 	<ul style="list-style-type: none"> Examples given in respective subject section.
Model Making	<ul style="list-style-type: none"> Concrete any abstract thought or concept in detail. Explain a definite subject area through creative and experimental work. 	<ul style="list-style-type: none"> Ability to express vividly a particular concept with the help of particular example or instance. 	<ul style="list-style-type: none"> Learners will perform different activities like model-making, chart, time-table (two-dimensional / three dimensional structures) 	<ul style="list-style-type: none"> Examples given in respective subject section.
Open Textbook Evaluation	<ul style="list-style-type: none"> Identification of relevant information in context with particular incidence and its effective use. Perceiving meaning of an incidence and working accordingly. 	<ul style="list-style-type: none"> Gaining ability to understand and analyse any particular incidence from a specific point of view. Gaining ability to take effective role in a given context. 	<ul style="list-style-type: none"> Learners will explore answers for given problems (application based and value based) on a given text. 	<ul style="list-style-type: none"> Examples given in respective subject section.

অন্তর্বর্তী প্রস্তুতিকালীন মূল্যায়নের জন্য নির্ধারিত বিষয়ভিত্তিক পদ্ধতিসমূহ ও প্রয়োগকৌশল
বিষয় : বাংলা (প্রথম ভাষা)

১. সমীক্ষা (Survey)

শিক্ষক/শিক্ষিকার জন্য

জয় গোস্বামীর ‘অস্ত্রের বিরুদ্ধে গান’ কবিতাটি আজকের সমীক্ষার জন্য নির্বাচিত পাঠ। শিক্ষার্থীদের পাঁচটি দলে গোটা শ্রেণিকক্ষকে ভাগ করে নেওয়া হলো। শিক্ষার্থীরা ‘অস্ত্রের বিরুদ্ধে গান’ কবিতাটি পড়েছে। এই কবিতাটি একটি যুদ্ধবিরোধী কবিতা। এখানে কবি রক্তক্ষয়ী যুদ্ধের পৈশাচিক দানবতার বিরুদ্ধাচরণ করে মানুষের অমলিন হৃদয়বৃত্তি তথা মানবতার জয়গান ঘোষণা করেছেন। ‘অস্ত্রের বিরুদ্ধে গান’ কবিতাটির নিরিখে, পাঁচটি দলের কাজ হলো পাঠ্য সাহিত্য সঞ্জন বইটির অন কোনো কবিতায় এমন যুদ্ধবিরোধী বস্তু থাকলে তা খুঁজে বের করা এবং পাঠ্য বইয়ের বাইরে অন্যান্য কবির লেখা এধরনের যুদ্ধবিরোধী কবিতার তালিকা নির্মাণ। এই সঙ্গে তারা প্রস্তুত তালিকাটির মধ্যে কোন্ কবিতাটি তার প্রিয় এবং কেন— সে বিষয়ে কম-বেশি ১৫০ শব্দে নিজের মতামত প্রকাশ করবে। (শ্রেণিকক্ষে এই কাজটি হওয়ার পূর্বে শিক্ষার্থীরা প্রাসঙ্গিক কাজের জন্য বিদ্যালয়ের পাঠাগারের সাহায্য নিতে পারে।)

শিক্ষার্থীদের জন্য

দলগতভাবে আলোচনা করে যুদ্ধবিরোধী কবিতার তালিকা নির্মাণ। কবি এবং কবিতার নাম (একটি সংক্ষিপ্ত সংকলনের মতো) লিখে তালিকাটি প্রস্তুত করা। প্রতিটি দলের শিক্ষার্থী এই লিখিত তালিকাটি শিক্ষিকা/শিক্ষকের কাছে জমা দেবে।

প্রতিটি দলের সদস্যেরা দলগত আলোচনার মাধ্যমে যে কোনো একটি কবিতা সম্পর্কে ব্যক্তিগত অভিমত লিখে শিক্ষিকা/শিক্ষকের কাছে জমা দেবে।

[নির্ধারিত সময় : ৪৫/৪০ মিনিট— শ্রেণিকক্ষে এই বিষয়টি আদানপ্রদানের জন্য ১০ মিনিট + দলগতভাবে তালিকা প্রস্তুতের জন্য ১০ মিনিট + ব্যক্তিগতভাবে কবিতা নির্বাচন ১০/৫ মিনিট + এককভাবে নিজের মতামতের লিখিত প্রকাশ ১০/১৫ মিনিট]

২. প্রকৃতিপাঠ ((Nature Study)

শিক্ষক/শিক্ষিকার জন্য

‘পথের দাবী’ পাঠ্যাংশের অন্যতম আকর্ষণীয় চরিত্র গিরীশ মহাপাত্র। পাঠ্যাংশ থেকে তার কার্যকলাপের একটি মুহূর্ত নির্বাচন করা হবে। শিক্ষার্থীরা সেই অংশটি পাঠ করে ‘গিরীশ মহাপাত্র’-এর ব্যক্তিত্বের প্রকৃতি নিরূপণের চেষ্টা করবে।

‘পথের দাবী’ পাঠ্যাংশের নিম্নলিখিত অংশটি শিক্ষিকা/শিক্ষক ব্ল্যাকবোর্ডে লিখে দেবেন।

শিক্ষার্থীদের জন্য

নীচের অনুচ্ছেদটি পড়ে প্রশ্নগুলির উত্তর দাও :

‘তলওয়ারকর ঘাড় ফিরাইতেই বুঝিল, এই সেই গিরীশ মহাপাত্র। সেই বাহারে জামা, সেই সবুজ রঙের ফুলমোজা, সেই পাম্প শূ এবং ছড়ি, প্রভেদের মধ্যে এখন কেবল সেই বাঘ-আঁকা রুমালখানি বুকপকেট ছাড়িয়া তাঁহার কণ্ঠে জড়ানো। মহাপাত্র এই দিকেই আসিতেছিল, সুমুখে আসিতেই অপূর্ব ডাকিয়া কহিল, কি হে গিরীশ, আমাকে চিনতে পারো? কোথায় চলেচ?

গিরীশ শশব্যস্তে একটা মস্ত নমস্কার করিয়া কহিল, আজে, চিনতে পারি বৈ কি বাবুমশায়। কোথায় আগমন হচ্ছেন?

অপূর্ব সহাস্যে কহিল, আপাতত ভামো যাচ্ছি। তুমি কোথায়?

গিরীশ কহিল, আজে, এনাঞ্জাং থেকে দুজন বন্ধু নোক আসার কথা ছিল,— আমাকে কিন্তু বাবু বুটমুট হয়রান করা। হাঁ, আনে বটে কেউ কেউ আপিৎ সিদ্ধি নুকিয়ে, কিন্তু আমি বাবু ধর্মভীরু মানুষ। বলি কাজ কি বাবু জোচ্চুরিতে— কথায় বলে পরোধর্ম ভয়াভয়। লল্লাটের লেখা তো খণ্ডাবে না।’

- আমি বাবু ধর্মভীরু মানুষ — বস্তা কীভাবে তার ‘ধর্ম’ রক্ষা করতে চায়?
- গিরীশ মহাপাত্র বিচিত্র সাজপোশাক পরে এসেছিল কেন?
- উদ্ভূতাংশে গিরীশ মহাপাত্রের চরিত্রের কোন কোন দিক প্রতিফলিত হয়েছে।

[নির্ধারিত সময় : ৪৫/৪০ মিনিট— শ্রেণিকক্ষে এই বিষয়টি আদানপ্রদানের জন্য ১০ মিনিট + কাজটি দলগত/এককভাবে করার জন্য ২৫/২০ মিনিট + সামগ্রিক আদানপ্রদান ১০ মিনিট]

৩. ক্ষেত্র বিশ্লেষণ (Case Study)

শিক্ষক/শিক্ষিকার জন্য

‘জ্ঞানচক্ষু’ গল্প পাঠের পর এই গল্পের চরিত্রগুলির বিভিন্ন দিক সম্পর্কে শিক্ষার্থীদের মনে একটি ধারণা গড়ে উঠেছে। চরিত্রের সেই বিশেষত্বগুলি বজায় রেখে একটি কাল্পনিক ঘটনামুহূর্তের নিরিখে চরিত্রগুলির ভূমিকা বা প্রতিক্রিয়া সম্পর্কে মতামত গঠন।

শিক্ষার্থীদের জন্য

নীচের অনুচ্ছেদটি পড়ে প্রশ্নগুলির উত্তর দাও :

‘সন্ধ্যাতারা’ পত্রিকার সম্পাদককে বলে তপনের নতুন মেসোমশাই তার লেখা ‘প্রথম দিন’ গল্পটা ছাপিয়ে দিলেন। কিন্তু একটু-আধটু কারেকশানের নামে পুরো গল্পটাই তিনি নিজের পাকা হাতে লিখে দিলেন। নিজে একজন লেখক হয়েও তপনের নিজস্বতা ও মৌলিকতাকে তিনি কোনো মূল্যই দিলেন না। তপন গল্পটা পড়ার সময় পুরো ব্যাপারটাই বুঝতে পেরে মেসোমশাইকে তার কষ্টের কথাটা জানাল।

- * মেসোমশাই তপনের লেখা গল্পটা অবিকৃতভাবে ছাপতে দেননি কেন?
- * তপনের মনোকষ্টের কথা শুনে তার মেসোমশাইয়ের সম্ভাব্য প্রতিক্রিয়াটি নিজের ভাষায় লেখো।

(নির্ধারিত সময় : ৪৫/৪০ মিনিট— শ্রেণিকক্ষে এই বিষয়টি আদানপ্রদানের জন্য ১০ মিনিট + কাজটি দলগত/এককভাবে করার জন্য ২৫/২০ মিনিট + সামগ্রিক আদানপ্রদান ১০ মিনিট)

8. সৃষ্টিশীল রচনা (Creative Writing)

শিক্ষক/শিক্ষিকার জন্য

‘আফ্রিকা’ কবিতা এবং ‘পথের দাবী’ রচনাংশের মধ্যে নিহিত ভাবগত ঐক্যের তুলনামূলক আলোচনা।

শিক্ষার্থীদের জন্য :

‘অপরিচিত ছিল তোমার মানবরূপ
উপেক্ষার আবিল দৃষ্টিতে।’
...
‘এল ওরা লোহার হাতকড়ি নিয়ে,
এল মানুষ-ধরার দল’
...
‘সভ্যের বর্বর লোভ
নগ্ন করল আপন নির্লজ্জ অমানুষতা।’
(‘আফ্রিকা’ কবিতা থেকে উদ্ধৃত অংশ।)

‘অপূর্ব প্রথম শ্রেণির যাত্রী, তাহার কামরায় আর কেহ লোক
ছিল না।’
...
‘বর্মা সব-ইনস্পেক্টর সাহেব কটুকণ্ঠে জবাব দেয়, তুমি তো
ইউরোপিয়ান নও।’
...
‘— আমি পুলিশ; ইচ্ছা করিলে আমি তোমাকে টানিয়া নীচে
নামাইতে পারি।’
(‘পথের দাবী’ পাঠ্যাংশ থেকে গৃহীত।)

‘আফ্রিকা’ কবিতায় এবং ‘পথের দাবী’ রচনাংশে, সাম্রাজ্যবাদী শাসকের বর্বর অত্যাচার-শোষণ ও নির্লজ্জতার প্রকাশে কবি ও লেখকের মানসিকতার মধ্যে যে সামঞ্জস্য খুঁজে পাও তা কবিতা এবং রচনাংশটি অবলম্বনে নিজের ভাষায় আলোচনা করো। (কমবেশি ২০০ শব্দ)

[নির্ধারিত সময় : ৪৫/৪০ মিনিট—শ্রেণিকক্ষে এই বিষয়টি আদানপ্রদানের জন্য ১০ মিনিট + কাজটি দলগত/এককভাবে করার জন্য ২৫/২০ মিনিট + সামগ্রিক আদানপ্রদান ১০ মিনিট]

৫. মডেল নির্মাণ (Model Making)

শিক্ষক/শিক্ষিকার জন্য

বাক্যের গঠনগত শ্রেণিবিভাগ সংক্রান্ত মডেল নির্মাণ।

শিক্ষার্থীদের জন্য

একটি বড়ো আর্ট পেপারে ‘বাক্যের গঠনগত শ্রেণিবিভাগটি দেখাবে। প্রত্যেকটি ভাগের একটি করে উদাহরণ দেবে এবং প্রতিটি উদাহরণের গঠনরীতিটি রেখাচিত্রের মাধ্যমে বুঝিয়ে দেবে।

[নির্ধারিত সময় : ৪৫/৪০ মিনিট—শ্রেণিকক্ষে এই বিষয়টি আদানপ্রদানের জন্য ১০ মিনিট + কাজটি দলগত/এককভাবে করার জন্য ২৫/২০ মিনিট + সামগ্রিক আদানপ্রদান ১০ মিনিট]

৬. পাঠ্যপুস্তক ও শিখন সামগ্রীর সহায়তায় মূল্যায়ন (Open Textbook Evaluation)

শিক্ষক/শিক্ষিকাদের জন্য

‘বহুরূপী’ গল্পটিতে বহুরূপী বিষয়টি সঙ্গে শিক্ষার্থীরা পরিচিত হয়েছে। এক্ষেত্রে একই ব্যক্তি বিভিন্ন সময়ে বিভিন্ন বেশ ধরে

হাজির হয়। এই রকম আরেকটি তুলনামূলক আলোচনার সাপেক্ষে এবং প্রশ্নোত্তরের নিরিখে শিক্ষার্থীদের মতামতের প্রতিফলন ঘটাতে হবে।

নীচের গল্পাংশটি পড়ে প্রশ্নগুলির উত্তর দাও :

‘সে রাত্রেও ঘরের বাইরে ঐ জমাট অশ্বকার এবং বারান্দায় তন্দ্রাভিভূত সেই দুটো বুড়োও? ভিতরে মৃদু দীপালোকের সম্মুখে গভীর-অধ্যয়নরত আমরা চারিটি প্রাণী।

ছোড়া ফিরিয়া আসায় তুল্লায় আমার একেবারে বুক ফাটিয়া যাইতে লাগিল। কাজেই টিকিট পেশ করিয়া উন্মুখ হইয়া রহিলাম। মেজদা তাঁহার সেই টিকিট-আঁটা খাতার উপর ঝুঁকিয়া পড়িয়া পরীক্ষা করিতে লাগিলেন— তুল্লা পাওয়াটা আমার আইনসঙ্গত কি না, অর্থাৎ কাল-পরশু কি পরিমাণে জল খাইয়াছিলাম।

অকস্মাৎ আমার ঠিক পিঠের কাছে একটা ‘হুম’ শব্দ এবং সঙ্গে সঙ্গে ছোড়া ও যতীনদার সমবেত আতর্কণের গগনভেদী রৈ-রৈ চীৎকার—ওরে বাবা রে, খেয়ে ফেল্লে রে! কিসে ইহাদিগকে খাইয়া ফেলিল, আমি ঘাড় ফিরাইয়া দেখিবার পূর্বেই মেজদা মুখ তুলিয়া একটা বিকট শব্দ করিয়া বিদ্যুৎবেগে তাঁহার দুই-পা সম্মুখে ছড়াইয়া দিয়া সেজ উল্টাইয়া দিলেন। তখন সেই অশ্বকারের মধ্যে যেন দক্ষযজ্ঞ বাধিয়া গেল। মেজদা’র ছিল ফিটের ব্যামো। তিনি সেই যে ‘আঁ-আঁ করিয়া প্রদীপ উল্টাইয়া চিৎ হইয়া পড়িলেন, আর খাড়া হইলেন না। ঠেলাঠেলি করিয়া বাহির হইতেছি দেখি পিসেমশাই তাঁর দুই ছেলেকে বগলে চাপিয়া ধরিয়া তাহাদের অপেক্ষাও তেজে চাঁচাইয়া বাড়ি ফাটাইয়া ফেলিতেছেন। এ যেন তিন বাপ-ব্যাটার কে কতখানি হাঁ করিতে পারে, তারই লড়াই চলিতেছে।

এই সুযোগে একটা চোর নাকি ছুটিয়া পলাইতেছিল দেউড়ির সিপাহীরা তাহাকে ধরিয়া ফেলিয়াছে। পিসেমশাই প্রচণ্ড চীৎকারে হুকুম দিতেছেন— আউর মারো—শালাকো মার ডালো ইত্যাদি।

মুহূর্তকাল মধ্যে আলোয়, চাকর-বাকরে ও পাশের লোকজনে উঠান পরিপূর্ণ হইয়া গেল। দরওয়ানরা চোরকে মারিতে মারিতে আধমরা করিয়া টানিয়া আলোর সম্মুখে ধাক্কা দিয়া ফেলিয়া দিল। তখন চোরের মুখ দেখিয়া বাড়িসুন্দর লোকের মুখ শুকাইয়া গেল!— আরে এ যে ভট্‌চাষিমশাই।

তখন কেহ বা জল, কেহ বা পাখার বাতাস, কেহ বা তাঁহার চোখে মুখে হাত বুলাইয়া দেয়। ওদিকে ঘরের ভিতরে মেজদাকে লইয়া সেই ব্যাপার!

পাখার বাতাস ও জলের ঝাপটা খাইয়া রামকমল প্রকৃতিস্থ হইয়া ফুঁপাইয়া কাঁদিয়া উঠিলেন। সবাই প্রশ্ন করিতে লাগিল, আপনি অমন করে ছুটেছিলেন কেন? ভট্‌চাষিমশাই কাঁদিতে কাঁদিতে কহিলেন, বাবা বাঘ নয়, সে একটা মস্ত ভালুক—লাফ মেরে বৈঠকখানা থেকে বেরিয়ে এলো।

ছোড়া ও যতীনদা বারংবার কহিতে লাগিল, ভালুক নয় বাবা, একটা নেকড়ে বাঘ। হুম্ ক’রে ল্যাজ গুটিয়ে পাপোশের উপর বসেছিল।

মেজদা’র চৈতন্য হইলে তিনি নিমীলিতচক্ষে দীর্ঘশ্বাস ফেলিয়া সংক্ষেপে কহিলেন ‘দি রয়েল বেঞ্জল টাইগার’।

কিন্তু কোথা সে? মেজদা’র দি রয়েল বেঞ্জল’ই হোক আর রামকমলের ‘মস্ত ভালুক’ই হোক, সে আসিলই বা কিরূপে, গেলই বা কোথায়? এতগুলো লোক যখন দেখিয়াছে, তখন সে একটা কিছু বটেই!

তখন কেহ বা বিশ্বাস করিল, কেহ বা করিল না। কিন্তু সবাই লণ্ঠন লইয়া ভয়চকিত নেত্রে চারিদিকে খুঁজিতে লাগিল।

অকস্মাৎ পালোয়ান কিশোরী সিং ‘উহ বয়ঠা’ বলিয়াই একলাফে একেবারে বারান্দার উপর। তারপর সেও এক ঠেলাঠেলি কাণ্ড। এতগুলো লোক, সবাই এক সঙ্গে বারান্দায় উঠিতে চায়, কহারো মুহূর্ত বিলম্ব নয় না। উঠানের এক প্রান্তে একটা ডালিম গাছ

Internal Formative Evaluation : Theory and Practice

ছিল, দেখা গেল, তাহারই ঝোপের মধ্যে বসিয়া একটা বৃহৎ জানোয়ার। বাঘের মতই বটে। চক্ষুর পলকে বারান্দা খালি হইয়া বৈঠকখানা ভরিয়া গেল—জনপ্রাণী আর সেখানে নাই। সেই ঘরের ভিড়ের মধ্য হইতে পিসেমশায়ের উত্তেজিত কণ্ঠস্বর আসিতে লাগিল—সড়কি লাও— বন্দুক লাও। আমাদের পাশের বাড়ির গগনবাবুদের একটা মুঞ্জেরী গাধা বন্দুক ছিল; লক্ষ্য সেই অস্ত্রটার উপর। ‘লাও’ত বটে, কিন্তু আনে কে? ডালিম গাছটা যে দরজার কাছেই; এবং তাহারই মধ্যে যে বাঘ বসিয়া! হিন্দুস্থানীরা সাড়া দেয় না—তামাশা দেখিতে যাহারা বাড়ি ঢুকিয়াছিল, তাহারাও নিস্তম্ভ।

এমনি বিপদের সময় হঠাৎ কোথা হইতে ইন্দ্র আসিয়া উপস্থিত। সে বোধ করি সুমুখের রাস্তা দিয়া চলিয়াছিল, হাঙ্গামা শুনিয়া বাড়ি ঢুকিয়াছে। নিমেষে শতকণ্ঠ চীৎকার করিয়া উঠিল—ওরে বাঘ! বাঘ! পালিয়ে আয় রে ছোঁড়া, পালিয়ে আয়!

প্রথমই সে খতমত খাইয়া ছুটিয়া আসিয়া ভিতরে ঢুকিল। কিন্তু ক্ষণকাল পরেই ব্যাপারটা শুনিয়া লইয়া একা নির্ভয়ে উঠানে নামিয়া গিয়া লণ্ঠন তুলিয়া বাঘ দেখিতে লাগিল।

দোতলার জানালা হইতে মেয়েরা বুদ্ধনিঃশ্বাসে এই ডাকাত ছেলেটির পানে চাহিয়া দুর্গানাম জপিতে লাগিল। পিসিমা ত ভয়ে কাঁদিয়াই ফেলিলেন। নীচে ভিড়ের মধ্যে গাধাগাদি দাঁড়াইয়া হিন্দুস্থানী সিপাহীরা তাহাকে সাহস দিতে লাগিল এবং এক-একটা অস্ত্র পাইলেই নামিয়া আসে, এমন আভাসও দিল।

বেশ করিয়া দেখিয়া ইন্দ্র কহিল, ‘দ্বারিকবাবু, এ বাঘ নয় বোধ হয়। তাহার কথাটা শেষ হইতে না হইতেই সেই রয়েল বেঙ্গল টাইগার দুই থাবা জোড় করিয়া মানুষের গলায় কাঁদিয়া উঠিল। পরিষ্কার বাঙলা করিয়া কহিল, না বাবুমশাই, না। আমি বাঘ-ভালুক নই-ছিনাথ বউরুপী। ইন্দ্র হো-হো করিয়া হাসিয়া উঠিল। ভট্‌চাখিমশাই খড়ম হাতে সর্বাঙ্গে ছুটিয়া আসিলেন হারামজাদা! তুমি ভয় দেখাবার জায়গা পাও না?’

* এই দুই বহুরূপীর মধ্যে কাকে তোমার বেশি ভালো লাগল তা যুক্তিসহ লেখো।

* তুমি যদি বহুরূপী সাজো, তাহলে তুমি কী রূপ নেবে? তোমার এই রূপ নেওয়ার কারণ কী?

[নির্ধারিত সময় : ৪৫/৪০ মিনিট—শ্রেণিকক্ষে এই বিষয়টি আদানপ্রদানের জন্য ১০ মিনিট + কাজটি দলগত/এককভাবে করার জন্য ২৫/২০ মিনিট + সামগ্রিক আদানপ্রদান ১০ মিনিট]

বিশেষ জ্ঞাতব্য তথ্য : এখানে বিভিন্ন পাঠ্যবিষয়কে অবলম্বন করে ছয়টি পদ্ধতি-সম্পর্কিত ছয়টি উদাহরণ দেওয়া হলো। এটি নমুনা মাত্র। এভাবে বিভিন্ন পাঠ্যবিষয় অবলম্বনে যেকোনো পর্যায়ক্রমিকের পাঠ্যসূচি অনুসারে বিভিন্ন পদ্ধতির চর্চা করা যাবে। তবে সাহিত্য সঞ্জন এবং ব্যাকরণ অন্তর্ভুক্তি প্রস্তুতিকালীন মূল্যায়নের অন্তর্ভুক্ত হবে, কিন্তু সহায়ক পাঠ ‘কোনি’ এই মূল্যায়নের অন্তর্ভুক্ত হবে না। নিদ্রিষ্ট কোনো বিদ্যালয়ের শিক্ষার্থীদের সর্বলতা ও সামর্থ্যের নিরিখে কার্ঠিন্যমাত্রার তারতম্য ঘটানো যেতে পারে। তৃতীয় অন্তর্ভুক্তি প্রস্তুতিকালীন মূল্যায়নে প্রাপ্ত মান মাধ্যমিক পরীক্ষায় অন্তর্ভুক্তি প্রস্তুতিকালীন মূল্যায়নের মান হিসাবে গণ্য করা হবে।

English (Second Language)

1. SURVEY

Part I (Group Work)

Go through the lesson 'The Snail' by William Cowper. Now, discuss in groups to make a list of poems that deal with activities of animals/insects.

Part II (Individual Work)

Now fill in the following chart :

Name of poem(s)	Name of poet(s)	Animal(s)/Insect(s) Mentioned	Activities of Animal(s)/Insect(s)

2. NATURE STUDY

From the Textbook 'Bliss' (Class – X), pick out sentences to fill in the following table :

Sl. No.	Sentences expressing surprise	Sentences expressing order/Command	Sentences expressing query	Sentences expressing prayer/wish

3. CASE STUDY

Read the following case :

KOLAHPUR : The city based environmental activists, and schools have welcomed the decision of the school education department to organise mandatory tree plantation drive on Independence Day. The school education department in its notification on July 15 has made it mandatory for government schools to hold tree plantation drives on campus. Private schools will also have an option to undertake the programme.

According to the notification, the school will be given a pack of at least 20 plant saplings for the drive and the initiative has to be organised on August 15. The package will consist of fruits and flower-bearing trees, shade-giving trees and any others that may be selected by the schools depending on their locations. Private schools can procure the saplings at subsidised prices from the department. (TNN. Jul 20, 2015)

Answer the following questions :

- a) Why did the environmental activists welcome the decision?
- b) What steps did the education department take to ensure tree plantation?
- c) How, do you think, are the steps taken by the education department helpful for the people?

4. CREATIVE WRITING

In the story 'The Passing Away of Bapu', Nayantara Sehgal describes a sense of loss and how she overcame her grief. Now, write a page in her diary showing her journey from sadness to optimism.

5. MODEL MAKING

Go through the lesson 'Our Runaway Kite' (Unit 1 & Unit 2) by Lucy Maud Montgomery. Make a chart showing names of any two characters, their age, their hobbies, and their sorrow.

6. Open Text Book Evaluation

Read the following poem :

A life on the ocean wave,
A home on the rolling deep,
Where the scattered waters rave,
And the winds their revels keep!
Like an eagle caged, I pine

On this dull, unchanging shore:
Oh! give me the flashing brine,
The spray and the tempest's roar!

Once more on the deck I stand
Of my own swift-gliding craft:
Set sail!farewell to the land!
The gale follows fair abaft.
We shoot through the sparkling foam
Like an ocean-bird set free; -
Like the ocean-bird, our home
We'll find far out on the sea.

The land is no longer in view,
The clouds have begun to frown;
But with a stout vessel and crew,
We'll say, Let the storm come down!
And the song of our hearts shall be,
While the winds and the waters rave,
A home on the rolling sea!
A life on the ocean wave!

(A poem by Epes Sargent)

1. Choose the correct alternative to complete the following sentences:

- (a) The poet compares himself to a/an
- (i) crow
 - (ii) eagle
 - (iii) sparrow
 - (iv) owl
- (b) The poet wishes to find his home out on the
- (i) island
 - (ii) tree
 - (iii) sea
 - (iv) sea-shore

Internal Formative Evaluation : Theory and Practice

(c) The vessel was

- (i) stout
- (ii) lazy
- (iii) weak
- (iv) proud

2. (a) After reading the poem 'Sea-Fever' and the above poem, suggest a title to the poem.

.....

(b) Give reasons for your answer.

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Mathematics

1. Survey

Selected text : Linear quadratic equation with one variable (chapter -1)

Step I: The teacher will instruct the students to read the chapter -1 carefully. Every student will have to set a question paper individually on the mentioned chapter. The questions should be set on different sections of this chapter i.e. all the 5 questions should not be of the same type. Each paper setter will write his/her name and roll number on his/her question paper.

A sample question paper is given below:

- (i) The total amount will be Rs.35 if each of x students contributes Rs. x and our teacher contributes Rs. 10. Express the above statement in the form of linear quadratic equation with one variable.
- (ii) Form a quadratic equation whose two roots are 3 and 4
- (iii) Solve the equation $x^2 - 7x + 10 = 0$
- (iv) If the roots of the equation $2x^2 + 3x + 5 = 0$ be m and n , then find the value of $m + n$ and mn .
- (v) For what condition of a, b, c the roots of the equation $ax^2 + bx + c = 0$ will be real and equal ?

Step II: According to the instruction of teacher each student will form an answer script of his/her question paper by any other student.

Step III: The paper setter will evaluate the answer script of his/her question paper . He/She will give (✓) mark for correct answer and (×) mark for wrong answer.

Step IV: All the students will submit the question papers set by them and the answer scripts of those question papers to the teacher at the same time .

Step V: The teacher will award marks to the paper setter after assessing his/her question paper and answer script.

Allotment of marks :

Paper setting : 5 marks

Evaluating the answers correctly : 5 marks

Time allotted : 2 periods.

2. Nature Study

Selected text: Right circular cylinder (Chapter - 8)

Step I: The teacher will tell the students to think about the right circular cylinder shaped objects which can be seen in environment i.e. around their surrounding where they live. After that the teacher will instruct the students to read the chapter carefully.

Step II: The teacher will write down some questions on the black board

A sample question paper is given below :

- (i) Write four right circular cylinder shaped objects seen in environment.
- (ii) Draw the pictures of any two of the above named objects.
- (iii) Find the volume and total surface area of any one drawn picture.

Step III: Every student will have to prepare his/her answer script and submit it to the teacher after writing his/her name and roll number. The teacher will award marks after assessing his/her answer script.

Allotment of marks:

2 Marks for number (i) of the sample question paper

3 Marks for number (ii) of the sample question paper

5 Marks for number (iii) of the sample question paper.

Time allotted : 2 periods

3. Case study

Selected text : Quadratic surd (Chapter - 9)

Step I: The teacher will instruct the students to read the chapter carefully.

Step II: The teacher will write down same questions on the black board on the concept of quadratic surd.

A sample question paper is given below:

- (i) If $x^2 = 5$ then what is the value of x ? Are two values of x rational numbers or irrational numbers?
- (ii) We know that $\sqrt{a^2} = |a|$. What is the value of $\sqrt{(-5)^2}$?
- (iii) Add: $(3\sqrt{7} + 3\sqrt{2}) + (4\sqrt{7} - 3\sqrt{2})$
- (iv) Write a number by which $(2 + 3\sqrt{2})$ be multiplied so that the product will be a rational number.
- (v) What will be the quotient when $(\sqrt{12} + \sqrt{48})$ is divided by $\sqrt{3}$? Is the quotient a rational number or irrational number?

Step III: Every student will have prepare his/ her answer script and submit it to the teacher after writing his/ her name and roll number. The teacher will award marks to each student after assessing his/ her answer script.

Allotment of marks:

2 marks for each question.

Time allotted: 2 periods.

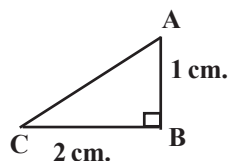
4. Creative Writing

Selected text: Pythagoras Theorem (Chapter -22):

Step I: The teacher will write the question given below on the black board and discuss with the students.

We have seen that in a right angled triangle if the lengths of the sides containing the right angle are rational numbers the length of the hypotenuse may be an irrational number.

For example, the figure given at the right side, ABC is right angled triangle and the lengths of the sides containing the right angle are 1 cm. and 2 cm.



But the length of the hypotenuse $AC = \sqrt{1^2 + 2^2}$ cm. = $\sqrt{1 + 4}$ cm = $\sqrt{5}$ cm., which is an irrational number.

Step II: The teacher will instruct the students to write examples of three right angled triangles of which

- (i) The lengths of the sides containing the right angle are rational numbers and the length of the hypotenuse is also a rational number.
- (ii) The lengths of the sides containing the right angle are irrational numbers and the length of the hypotenuse is a rational number.
- (iii) The length of one side containing the right angle is a rational number but the length of the other side is an irrational number and the length of the hypotenuse is a rational number.

The teacher will write the above statements on the black board and instruct the students to draw rough sketches of the triangles on their answer scripts.

Step III: Every student will have prepare his/her answer script and submit it to the teacher after writing his/her name and roll number. The teacher will award marks to each student after assessing his/ her answer script.

Allotment of marks:

3 marks for question number(i)

3 marks for question number(ii)

4 marks for question number(iii)

Time allotted : 2 periods.

5. Model making

Selected text: Cuboid (Chapter -4):

Step I: The teacher will instruct each student to make a cuboid in the class room by cutting a piece of card board. (There should be arrangement of cellotapes, scissors, card boards etc.) The teacher will also instruct the students to measure the length, breadth and height of the cuboid made by him by the ruler. Then each of them will write the length, breadth, height, total surface area and volume on the surface of the cuboid or in a separate paper.

Step II: The teacher will award marks to each student for the constuction of the model correctly finding the total surface area and volume.

Allotment of marks:

- (i) 5 marks for construction of cuboid
- (ii) 2 marks for finding volume. 1 mark will be deducted for wrong/ without unit.
- (iii) 3 marks for finding total surface area. 1 mark will be deducted for wrong/ without unit.

Time allotted : 2 periods.

6. Open textbook Evaluation (OTBE)

Selected text: Linear quadratic equation with one variable (Chapter -1):

Step I: The teacher will solve two equations on the black board.

For example:

$$\begin{aligned}
 (1) \quad & x^2 + 4\sqrt{2}x + 6 = 0 \\
 \Rightarrow & x^2 + \sqrt{2}x + 3\sqrt{2}x + 6 = 0 \\
 \Rightarrow & x(x + \sqrt{2}) + 3\sqrt{2}(x + \sqrt{2}) = 0 \\
 \Rightarrow & (x + \sqrt{2})(x + 3\sqrt{2}) = 0 \\
 \Rightarrow & x + \sqrt{2} = 0 \quad \text{or} \quad x + 3\sqrt{2} = 0 \\
 \Rightarrow & x = -\sqrt{2} \quad \text{or} \quad x = -3\sqrt{2}
 \end{aligned}$$

Two roots of the equation are $-\sqrt{2}$ and $-3\sqrt{2}$

Internal Formative Evaluation : Theory and Practice

$$2) \quad x^4 - 17x^2 + 16 = 0$$

$$\Rightarrow y^2 - 17y + 16 = 0 \quad (\text{Let, } x^2 = y.)$$

$$\Rightarrow y^2 - 16y - y + 16 = 0$$

$$\Rightarrow y(y - 16) - 1(y - 16) = 0$$

$$\Rightarrow (y - 16)(y - 1) = 0$$

$$\Rightarrow y - 16 = 0 \quad \text{or} \quad y - 1 = 0$$

$$\therefore y = 16 \quad \text{or} \quad y = 1$$

$$\therefore x^2 = 16 \quad \text{or} \quad x^2 = 1 \quad (\because y = x^2)$$

$$\therefore x = \pm\sqrt{16} \quad \text{or} \quad x^2 = \pm\sqrt{1}$$

$$\therefore x = \pm 4 \quad \text{or} \quad x = \pm 1$$

$$\therefore \text{Four roots of the equation are } 4, -4, 1, -1$$

Step II: Ask each of the students carefully notice and understand the solutions of two equations. Give them time for understanding.

Step III: The teacher will give two equations, the solution of which will require the concept of the previous two equations. The problems should not be in the text book. For example,

$$\text{i) } x^2 + 113\sqrt{3}x + 3636 = 0$$

$$\text{ii) } x^3 - 173x^2 + 676 = 0$$

Step IV: The students will try to solve the two equations on their answer script.

Step V: The teacher will award marks to each student after assessing his/her answer script. Correctness in every step of the solution should be considered.

Allotment of marks:

5 marks for question number (i)

5 marks for question number (ii)

(The students can take the help of their text book in the class)

Time allotted : 2 periods.

Note: Some examples of Internal Formative Evaluation on six different areas are given here with reference to certain chapters of the mathematics text book *Ganit Prakash* for Class X. In this way the teachers will assess the learners in reference to *Ganit Prakash* in a much better way.

Life Science and Environment

Survey

Topic : Sound Pollution in daily life : Source and influence

Theme 5 : Environment, its resources and their conservation (Sub-theme : Environmental pollution)

Time required : One period

Desired learning outcome

- i) Identify the sounds that cause sound pollution.
- ii) Locate the sources of sound pollution in a locality.
- iii) Understand the influence of sound pollution over human and other animals.
- iv) Comprehend the need to adopt specific measures for preventing sound pollution.
- v) Become interested in programmes aimed at increasing local awareness about preventing sound pollution.

Instruction for the students

With your classmates conduct a survey of sound pollution in your locality. The survey should include sources (eg. transport, factory etc.) of high intensity sounds, the effects of sound pollution on human body (eg. ear, heart), the effects of sound pollution on animals, and the necessary steps to reduce sound pollution. Discuss in groups and express your opinion about the necessity for adhering to the legal restrictions imposed on fire-crackers and its effect on human health.

Teacher's role

- i) To divide students into groups of six and allocate duties.
- ii) To explain the questions students should ask one another within the survey, as well as cite example questions.
- iii) To assess the students' work at the end of the class.

Students' activities

Part I (Group Activity)

- Collection of data, exchange of opinions and formation of views regarding sound pollution.

Part II (Individual Activity)

Students should write down in their copies the collected information, opinion and analyses and submit them to the teacher.

Criteria for Evaluation

To assess the extent to which each student has been able to acquire the desired learning competencies.

Nature Study

Topic : The impact of air pollution in daily life

Theme 5 : Environment, its resources and their conservation (Sub-theme : Environmental pollution)

Time required : One period

Desired learning outcome

- i) Identify the impact of air pollution in daily life.
- ii) Identify the possible causes of air pollution.
- iii) Understand the necessity of measures undertaken to prevent air pollution and its application in daily life.
- iv) Become interested in programmes aimed at increasing awareness about preventing sound pollution.

Instruction for the students

Write about the causes of air pollution in your locality and also the probable impact of such pollution on the health and well-being of people.

Teacher's role

- i) To explain the work to students and cite certain examples pertaining to the influence of air pollution in daily life.
- ii) To assess the students' work after class.

Students' activities

Part I (Group Activity)

- To write about the impact of air pollution in the students' locality
- Write about the possible causes of air pollution in the locality.

Part II (Individual Activity)

Opinion , analysis, and inference to be written in a copy and submitted to the teacher.

Criteria for Evaluation

To assess the extent to which each student has been able to acquire the desired learning competencies.

Case Study

Topic : Thalassaemia and Genetic Counselling

Theme 3 : Heredity and common genetic diseases (Sub-theme : Some common genetic diseases)

Time required : Two periods

Desired learning outcome

- i) Identify thalassaemia as a genetic disease.
- ii) Explain how thalassaemia can be transmitted from one generation to another.

Internal Formative Evaluation : Theory and Practice

- iii) Understand the importance of blood test in thalassemia.
- iv) Understand the importance of genetic counselling in prevention of thalassemia.
- v) Become interested in programs aimed at increasing awareness about prevention of thalassemia.

Instruction for the students

Read the passage below and solve the problem :

Amulyababu has fixed his son Ajay's marriage . One day during discussion Ratanbabu said to conduct blood test of his son before marriage. Amulyababu inquired the reason, since his son is normal and healthy. Ratanbabu explained that the carrier of thalassemia disease is undetected from outside. If both the nuptial couple have the disease then it includes a chance of infection of the same in their child. Amulyababu took Ajay to a doctor and the doctor inspected him carefully. Then he recommended blood test. Blood test reports divulged that Ajay is a thalassemia carrier. The doctor informed that there was no cause for alarm. Ajay can go through a healthy and normal life. The doctor added that Amulyababu had done a judicious thing by going for medical consultation before the wedlock, for thalassemia is a genetic disease. This means that the child born from parents both carrying this disease has a chance of having the same disease. If Ajay's wife is also a thalassemia carrier then their child will have a 25 % probability of suffering from thalassemia. For this reason, blood tests of Ajay's wife also need to be conducted.

You have read the story. Now answer the questions given below :

- i) Why is it necessary to conduct blood test for thalassemia before marriage?
- ii) If two thalassemia carriers marry can their offspring have thalassemia? Write your opinion about the same.
- iii) What are the symptoms of thalassemia ?

Teacher's role

- i) To raise various issues related to diseases and society.
- ii) To bring forth a topic related to the syllabus.
- iii) Discuss about various examples of genetic diseases.
- iv) Present a problem related to the selected topic to the students and ask them to solve the problems.
- v) To divide students into group and explain their work.
- vi) To access the students' work.

Students' activities

- i) To carefully read the presented matter.
- ii) To discuss the problem with other group members.
- iii) To reflect upon a solution to the problem through discussion and noting it down in individual copy.

Criteria for Evaluation

To assess the extent to which each student has been able to acquire the desired learning competencies.

Creative Writing

Topic : Adaptation of Cactus and Camel in arid and desert region

Theme 4 : Evolution and adaptation (Subtheme : Survival strategies-adaptation)

Time required : One period

Desired learning outcome

- i) Give examples of some plants and animals of desert and arid region.
- ii) Identify the problems of the dwellers of arid and desert region. (eg. cactus and camel)
- iii) Ascertain the inter-relationship between the adaptive characteristics of the organisms dwelling in arid and desert region (eg. cactus and camel)
- iv) Explain how cactus adapts to hostile environment.
- v) Able to mention the adaptive characteristics of cactus leaves.
- vi) Explain how a camel adapts to hostile environment by drinking less or no water.
- vii) Able to mention the adaptive characteristics of the camel as related to its tolerance of water loss.
- viii) Able to cite evidence of the skill of writing coherently and succinctly on any given topic.

Instruction for the students

"The adaptation of camel and cactus in arid and desert region" — express your thoughts on this topic.

Teacher's role

- i) To inform the students of how much they should write.
- ii) If necessary the teacher may hold discussion with the students regarding the topics to be included in their writing.
- iii) To properly assess the students' work.

Students' activities

- i) To discuss their writing assignments with the teacher and other students.
- ii) Before starting to write the students should chalk out an outline of the topic to be included in their writings.
- iii) To express one's opinion in accordance with the above.

Criteria for evaluation

To assess the extent to which each student has been able to acquire the desired learning competencies.

Model Making

Topic : Drawing labelled diagrams of different stages of animal or plant cell mitosis.

Theme 2 : Continuity of life (Sub-theme : Cell division and cell cycle)

Time required : Two periods

Desired learning outcome

- i) Identify the characteristics of various stages of mitosis in plant and animal cells.
- ii) Determine the inter-relationship between different stages of plant and animal cell mitosis.

Internal Formative Evaluation : Theory and Practice

- iii) Able to diagrammatically represent the characteristics of the stages of plant and animal cell mitosis.
- iv) Demonstrate the skill of drawing diagrams and labelling the same.
- v) Make models by using readily available materials

Instruction for the student

Draw a labelled diagram or make a model of an animal or a plant cell mitosis.

Teacher's role

- i) To explain how to diagrammatically represent the various stages of animal or plant cell mitosis.
- ii) To acquaint the students with the rules of labelling a diagram.
- iii) To assess the labelled diagrams in the students' copies.
- iv) To assess the labelled diagrams or the models constructed by the students.

Students' activities

- i) To draw diagrams of various stages of animal or plant cell mitosis.
- ii) To properly label the diagrams of various stages of animal or plant cell mitosis.
- iii) To make a model on various stages of animal or plant cell mitosis.

Criteria for Evaluation

To assess the extent to which each student has been able to acquire the desired learning competecies.

Open Textbook Evaluation

Topic : To work for long hours at the computer and eye problems

Theme 1 : Control and coordination in living organisms (Sub-theme : Response and physical coordination in animals — nervous system)

Time required : Two periods

Desired learning outcome

- i) Understand the importance of ciliary muscles in accomodation of eye.
- ii) Identify the visual problems that arise from working long hours at the computer.
- iii) Identify physical complications other than eye problems which arise from working long hours at the computer.
- iv) Able to apply the acquired knowledge related to the process of accommodation of eye.
- v) Devolop a concept as to how to take care of the eye while working long hours at the computer and the application of such knowledge in practical life.

Instruction for the students

Read the passage below and answer the following questions .

Computer is a boon in the twenty-first century. There is no doubt about the overwhelmingly nature of this invention. Nowadays it is hardly possible to complete any work without the help of computer. But the nectar of this boon has also been accompanied by a curse. Due to long hours spent before the computer the normal

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functionings of the eye are getting hampered. Along with computers, tablets and smartphones are adding to the complication. If one does not immediately take preventive steps, the eye may give various problems in near future.

Eye specialists are telling us that during the time that is spent before a computer, the ciliary muscles of the eye are exercised the most. As a result, these muscles get exhausted. There are many who take a break from the computer only to read magazines or to glance through the mobiles. Therefore these muscles get no opportunity to relax. As a result, the eyes get extremely stressed. This leads to various problems of the eye. Complications of the eye are accompanied by neck pain, back pain and other symptoms. — From a newspaper report.

- i) How do the ciliary muscles help in accommodation of eyes?
- ii) What eye problems can arise from working at the computer for long hours?
- iii) What measures can be taken to avoid the eye problems that arise from working long hours at the computer?
- iv) Why do symptoms such as neck pain, back pain and other symptoms arise after working long hours at the computer? What means can be availed to get relief from these symptoms?

Teacher's role

- i) To collect a paragraph regarding working at the computer for long hours and eye problems. If necessary to create a paragraph related to this. The teacher should keep in mind that the paragraph selected should bear relevance to the topics included in the syllabus.
- ii) To design such questions bearing relevance to the syllabus which would influence the students to think on the topic.
- iii) To assess the answers to the questions as given by the students.

Students' activities

- i) To study attentively the paragraph regarding working long hours at the computer and eye problems.
- ii) To be able to identify the relation between the content of the paragraph regarding working for long hours at the computer and eye problems with the relevant portion of the syllabus.
- iii) To write down the answers to the given questions in their individual copies.

Criteria for Evaluation

To assess the extent to which each student has been able to acquire the desired learning competencies.

Physical Science and Environment

SURVEY

- 1) **Theme :** 6 Current Electricity
Sub-theme : 6.4 Electrical Power
- 2) **Title of the assignment :** Survey on the domestic uses of electric energy and their consumption.
- 3) **Time :** One to two periods.
- 4) **Expected Learning Outcome :**
 - a) To measure the consumption of electric energy by the electrical appliances.
 - b) To able to observe the power of the electrical appliances.
 - c) To increase the ability of the students to compute independently by using information.
 - d) To develop the habit of completing an assignment through group activity.
- 5) **Role of the teacher :**

Teacher will

 - a) Divide the students into small groups.
 - b) Ask the students to copy the table from the blackboard or chart displayed in front of them.
 - c) Describe how to complete the assignment and ask the students to collect the necessary information to complete the given table. Ask the students who have no electricity in their home to collect those information from the school or from the friends.
 - d) Analyse the real objective to perform this work.
 - e) Instruct the students to do their assignment collectively within their groups but the data put in the prescribed table should be of their own collected data.
 - f) Instruct every student to write their conclusion by themselves in the space provided in the prescribed table.

Example of the table :

Name of the electrical appliances	Approximate power of the electrical appliances	Average time of using the appliances daily	Total consumption of electric energy for one month (B.O.T)

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Total consumption of electric energy per month = _____ unit.

According to the rate of electric charges mentioned in the electric bill, amount of consumption charges per month = Rs. _____

Actual bill amount = Rs. _____

Difference of amount in the above two cases = Rs. _____

According to the above data your conclusion : _____

6) Activity for the learners :

Learners will,

- Discuss about the answer of the table within the group.
- Help one another by giving necessary data and analysing the data collectively.
- Complete the table properly.
- When the writing session is over, one member from each group will read out one of the survey reports aloud. Rest of the class will listen to it and give their opinion so that there will be an improvement of the work of every group.
- After the group discussion, do the necessary modification, development, refining and addition.

7) Evaluation :

Evaluation has to be done by considering the presentation, individuality of analysis, competency to compute the measurable quantity, scientific approach of the content.

NATURE STUDY

Time: 40 minutes

(1) Title of the assignment : Biodegradable and non-biodegradable polymers – a short assessment

(2) Theme: 8. Physical and chemical properties of matter

Sub-theme: 8.6 Organic Chemistry

Key Concept: 8.6.10 Some synthetic polymers and 8.6.11 Biodegradable polymers

(3) Desired Learning Outcome :

Through this activity the learners will:

- be able to understand the importance of various decomposers (fungi and bacteria) in nature.
- be able to understand the use of various biodegradable and non-biodegradable polymers and its impact on the environment.

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- c) be able to appreciate the necessity for controlling the indiscriminate and unmindful use of non-biodegradable polymers. This will make them understand how the society can forge ahead towards the goal of sustainable development.
- d) be aware of the harmful effects of non-biodegradable polymers on the environment. This will enable them in building social awareness about the problem.

(4) Role of the teacher :

The teacher will divide the class in small groups of 4-5 learners. He/she will ask them to complete the given table on the basis of their experience and group discussion. He/she will answer relevant questions of the learners, listen to the group discussion, encourage them during discussion and participate in the discussion if necessary. This is a post-instructional activity, so the learners should embark upon it only when they have been exposed to instructions on the relevant concepts and models.

(5) Activity for the learner :

On the basis of their experience, the learners will classify the objects/materials mentioned in the given table according to their biodegradability (or otherwise). After this, they will have to answer some questions on the basis of their group discussion. Each learner will have to write the answers to these questions in his/her own language.

Complete the following table on the basis of your experience and discussion within the group.

Familiar object/substance	Major polymer(s) present in it	Can it be degraded by natural processes (yes/no)	Biodegradable/ Non-biodegradable
Thin, semi-transparent carry bags seen in the market	Polythene		
Pieces of fish or meat	Various proteins		
Coating on an electrical wire	Polyvinyl chloride (PVC)		
Straw	Cellulose (carbohydrate)		
Used refill of ball point pen	Polythene		
Cotton	Cellulose		
Vegetable peel	Various carbohydrates		
Flexible water pipe	PVC		

- (1) Have you ever seen fungi growing on a moist tree stump during the rainy season?
- (2) Which one — a piece of dry wood or a moist one — is more susceptible to fungal attack? What is your opinion about it?
- (3) What do you think is the importance of the decomposers in nature?
- (4) What is your idea about the mode of degradation of biodegradable polymers in nature?
- (5) How do the molecular weights of polymers and those of the compounds obtained through their biodegradation compare? Which should be larger?

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- (6) Which of the things mentioned in the table can be used to make organic fertilizers?
- (7) How does the indiscriminate and unmindful use of non-biodegradable polymers harm the environment?
- (8) If you are concerned about the environmental impact of indiscriminate use of non-biodegradable polymers, which one of the following would you use: plates made from thermocol or those made from *Sal* leaves?

(6) Evaluation :

Assessment should be based upon the extent to which each individual learner has acquired the desired analytical skill.

CASE STUDY

Time: 40 minutes

(1) **Title of the assignment :** Use of ammonia and remedial as well as preventive measures to be taken in case of an accidental leakage.

(2) **Theme:** 8. Physical and chemical properties of matter

Sub-theme: 8.4 Inorganic Chemistry in the laboratory and in industry

Key Concept: 8.4.2 Properties of ammonia

(3) Desired Learning Outcome :

Through this activity the learners will:

- a) know and be able to understand an important industrial use of ammonia.
- b) be able to correlate the various physical properties of ammonia with different aspects of the problem. For example the odour of ammonia provides the means for its early detection while rapid evaporation of liquid ammonia in open air explains why so many people are affected in a short time. Finally they will be able to correlate the preventive measures taken in case of an accidental leakage with high solubility of ammonia in water. The acquired knowledge will help them build social awareness about the problem.

(4) Role of the teacher :

The teacher will divide the class in small groups of 3-4 learners. He/she will ask the learners to read the given text and give them time for group discussion. The teacher will answer relevant questions from the learners, listen to the group discussions and encourage them. This is a post-instructional activity, so the learners should embark upon it only when they have been exposed to instructions on the relevant concepts.

(5) Activity for the learner :

An imaginary incident is reported below. Occasionally such reports appear in newspapers.

Analyse the report and answer the question following it in your own language :

Yesterday morning, an accident in a cold storage near National Highway 34 released a gas in the locality. Farmers in nearby villages store vegetables in this cold storage. Mechanical failure in the storage led to the accidental release of a pungent-smelling gas over a large area. Many people were taken ill with symptoms like eye irritation, severe breathing problems and cough. Dispersal of the gas took a long time due to dense morning fog and traffic on the nearby National Highway had to be suspended for a long time. Three engines from fire brigade finally brought the situation under control. The severity of the problem lessened somewhat after sunrise. On behalf of the administration, the affected persons have been advised to wash their eyes with plenty of water and keep off from the factory. Severely affected persons are now being provided with medical support.

Questions :

- (1) Which liquid is commonly used as a cheap refrigerant in cold storage facilities?
- (2) What happens when this liquid is kept in open air? Why?
- (3) What do you think the pungent-smelling gas mentioned in the report is?
- (4) Why have people been advised to wash their eyes with plenty of water?
- (5) Why did dense fog aggravate the problem?

(6) Evaluation :

Assessment should be based upon the extent to which each individual learner has acquired the desired analytical skill and is able to write in his/her own language.

CREATIVE WRITING

- 1) **Theme :** 5. Light 6. Current Electricity
- 2) **Title of the assignment :** Develop two pages as Science Dictionary choosing words from the chapter on light and current electricity.
- 3) **Time :** 1-2 periods.
- 4) **Expected Learning Outcome :**
 - a) To learn different concepts regarding light and current electricity more thoroughly.
 - b) To develop the interest regarding the different application of light and current electricity .
 - c) To improve the ability to write independently .
 - d) To develop the habit of completing an assignment through group activity .
- 5) **Role of the teacher :**
 - a) The teacher will divide the students into small groups.
 - b) Describe how to do the assignment and show the sample of Science Dictionary to the students.
 - c) Explain how the assignment has to be done through group discussions.

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- d) Assign the task to each group. Ask the students to write in their own language the meaning of the selected words for this assignment and to draw the necessary diagrams.
- e) The teacher will ask each group to describe the process in the class.
- f) Analyse the information obtained from each group.

6) Activity for the learners :

- a) Students will divide the given work within their group.
- b) Bring out the meaning of the selected words and their explanation through discussions.
- c) Write in their own language the plan of the assignment, the new words, meaning of those new words and their explanation in their own exercise book individually.
- d) Verify their work after developing two pages of their Science Dictionary with the friends of other groups and seek their opinion.
- e) Do the necessary corrections of their work.

7) Evaluation :

- a) Evaluation has to be done by considering the presentation, individuality of analysis and scientific approach of the content.
- b) The students will write the meaning and explanation of most of the words in their own language, illustrated with diagrams. They will ensure that their work will not have any scientific error and by participating in group activity, completing the whole work within time. Producing an excellent presentation will score maximum. According to the above parameters a four step rubric can be designed.

Note : This type of activity should be done after completion of teaching-learning process regarding light and current electricity in the class.

MODEL MAKING --- ---

1) **Theme :** Current Electricity

Sub-theme: 6.2 Ohm's Law

2) **Title of the assignment :** Model making for understanding the difference between the series combination and parallel combination of resistances.

3) **Time :** One to two periods.

4) **Expected Learning Outcome :**

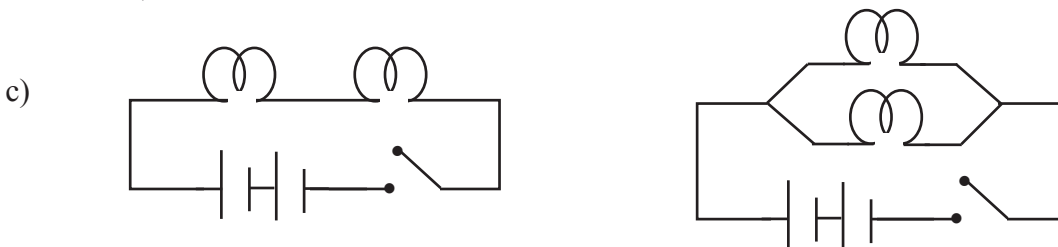
- a) To make model out of low-cost throw away materials.
- b) To draw the circuit diagram.
- c) To able to prepare models to explain series and parallel circuits.
- d) To compare two types of circuits.

5) **Role of the teacher :**

- a) Divide the students into small groups.

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- b) Ask the students to bring the necessary component for the construction of this model. The components are : bulbs, holders, conducting wire, battery, switch, safety-pins, big sized hard-board, screw-driver etc.



The teacher will draw the circuit diagrams on the blackboard given above and ask the students to draw the circuit diagrams in their exercise book. He/She will ask the students to prepare the model by using the components in the class room.

- d) Ask the students to plan for the assignment collectively.
- e) Ask the students to prepare a similar model individually after the group discussion.
- f) Give emphasis on the individual difference of making the models.
- g) Help the students if necessary.
- h) Give oral demonstration about their experiences of doing the assignment from each group.
- i) Ask every student to write in their own language in their exercise books about the working experience to make this model and the reason behind the differences of the observation, got from two different combination of resistances.

6) Activity for the learners :

- a) Draw the circuit diagram into their exercise book.
- b) Construct the model.
- c) Observe the differences of series and parallel combination of resistances when they are connected with the same battery.
- d) Write the description of the process of construction of the model. Write the reason behind the different effects obtained for series and parallel combination of resistances with proper explanation.
- e) One from each group will demonstrate their model in the class.

7) Evaluation :

- a) Evaluation has to be done by considering the presentation, individuality of analysis, individuality of selection of materials, competency to use own language for explanation, scientific approach of the content.
- b) Rubric has to be fixed according to the expected learning outcome.

Note : This sort of assignment can be done after the completion of teaching-learning process on the sub-unit 'Ohm's law' in the class.

OPEN TEXTBOOK EVALUATION

Time: 2×40 minutes

(1) Title of the assignment : Greenhouse effect and its impact on the environment

(2) Theme: 1. Concern about environment

Sub-theme: 1.1 Physical Science and environment

Key Concept: 1.1.3 Greenhouse effect and Global Warming

(3) Desired Learning Outcome :

Through this activity the learners will be able to

- a) understand and describe the physical reason behind greenhouse effect ;
- b) identify the source of greenhouse gases ;
- c) understand the possible effects of global warming ;
- d) suggest measures to reduce emission of greenhouse gases that can be implemented in domestic settings ;

(4) Role of the teacher :

The teacher will divide the class in small groups of 3-4 learners. He/she will ask the learners to read the given text and give them time for group discussion. The teacher will answer relevant questions from the learners, listen to the group discussions and encourage them. This is a post-instructional activity, so the learners should embark upon it only when they have been exposed to instructions on the relevant concepts.

(5) Text:

In sunlight there is a kind of invisible radiation called infra-red. Infra-red radiation is primarily responsible for the sensation of heat. Gas molecules in the atmosphere cannot absorb the solar Infra-red, so it heats up the earth. Some of the absorbed energy gets dissipated through molecules in soil, water and environment. The rest of the energy is given off by the earth as relatively low-energy Infra-red radiation. Most of this thermal energy given off by the earth escapes to outer space. A part of this energy is absorbed by the molecules of various greenhouse gases (CO_2 , N_2O , CH_4 , O_3 , CFC) ; atmospheric water vapour also absorbs Infra-red radiation given off by the earth. As a result of this absorption and emission of Infra-red radiation by these molecules, some heat cannot reach the outer space and gets trapped in the atmosphere. Large amount of carbon dioxide reach the atmosphere through burning of fuels like coal, oil, natural gas and also from cement factories. Denitrifying bacteria and methanogenic bacteria living in various natural habitats generate respectively nitrous oxide and methane that finally reach the atmosphere. In the past sixty years or so chlorofluorocarbon (CFC) compounds used in various purpose found their way to the atmosphere. Although methane and nitrous oxide are produced by various natural

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processes, our principal concern is the steadily rising levels of carbon dioxide in the atmosphere. Scientists are worried that sometime in near future the greenhouse effect due to the steadily rising levels of atmospheric carbon dioxide will increase the mean temperature of the atmosphere. This global warming may cause drought in many parts of the world and may lead to melting of polar ice caps. If the polar ice caps melt, many coastal cities will be submerged. Global warming may severely reduce biodiversity. It may also reduce absorption of CO_2 by the world's oceans. While discussing greenhouse effect and global warming, one must remember the fact that in absence of the greenhouse effect, a much larger fraction heat given off by the earth would have reached the space. This would have resulted in a significant decrease in the mean surface temperature of the earth. Rising levels of anthropogenic carbon dioxide is our chief concern.

Questions :

- (1) In relation to earth, Venus is closer to the Sun and contains a much larger amount of carbon dioxide in its atmosphere. Will the mean surface temperature of Venus be higher or lower than that of earth?
- (2) Write the names of two greenhouse gases that reach the atmosphere through various biochemical reactions occurring in nature.
- (3) Cement factories require lime (CaO) which is manufactured from limestone. How does it relate to greenhouse emissions?
- (4) Among the greenhouse gases known to you, there is a gas that has the following attributes. Identify the gas and give reasons in support of your answer.
 - a) It dissolves in water and makes the solution acidic;
 - b) If the gas is not absorbed by the oceans it will speed up global warming;
 - c) Innumerable food webs of the world would collapse if the gas is not available in the atmosphere;
 - d) Molluscs (snails, conches, clams etc.) make their shells because this gas is soluble in water;
- (5) What electrical appliances are used in your home and in your school? Where does the electricity come from?
- (6) Use of what sort of energy generation process can contribute to reduced greenhouse emissions?
- (7) Suggest a plan which could save energy in your domestic setting and thus reduce greenhouse emissions.

(6) Activity for the learner :

The learners will read the given text and engage themselves in group discussion. If essential, they may ask the instructor for a clarification of the central concept. Each participant will have to record the conclusion reached by the group in his/her own notebook.

(7) Evaluation :

The teacher can assess the learners by observing the extent to which each individual learner has acquired the desired thinking and analytical skills.

History and Environment

Survey

You have learnt that History is not simply about names, dates and events. And there are different fields of History. Choose any two fields among them : eg. the history of sports and that of clothing. Now write briefly on the history of sports and clothing based on the locality where you reside.

- Comparative study of different ways / fields of learning history (allotted time : 30 minutes).
- At the very outset, the teacher should try to encourage the students (individually and groupwise) to discuss the significance of studying different facets of history. He/She should here act as a facilitator and the students should be made aware of the different fields and ways of studying history.

Desired Competence and Evaluation

The objective of this activity is to assess whether the students can understand the varied and multifarious fields of studying history. It is also important to note that the students should be made aware of the evolution of history and the ways of studying history. These activities will facilitate the learner to develop a concept of place and time. Simultaneously the learners will be able to comprehend the different areas of historical change that have developed in their locality.

- The teacher will assess the learners on the basis of the above parameters of understanding.

Nature Study

Prepare a chart reflecting the impact of colonial forest laws on the lives of people who depend on nature for their sustenance. Suggest a few proposals that can improve the quality of living of the masses without destroying nature.

- Comparative study about the evolution of history and the integration of nature and man. (allotted time : 30 minutes)
- At the outset, the teacher will motivate the learner to understand the importance of the activity by discussing with them individually and in groups. The teacher will act as a mentor in such group discussions. It is necessary to make the learners realise the importance of studying environment, geography and environmental history.

Desired competence and Evaluation

It is expected that in group discussions various examples of the interdependence of environment and man or society with respect to history would be cited. It is necessary to give emphasis on the impact of man on environment in the various periods of history and the analysis of how critical events in history were caused by

a crisis in environment. This activity will facilitate the learner in developing their ideas regarding environment with reference to time and place in history. Such activity will enable the learner to understand the changes that they have noticed in the relationship between the environment and colonial rule in India.

- The teacher will assess the learners on the basis of the above parameters of understanding.

Case Study

Make a case study on the development of educational structure in your locality from the Basic to Madhyamik levels based on the feedback collected from the students and teachers of your school. Also try to develop a questionnaire on the above topic as a part of your case study.

- Comparative study of the functions of educational institutions and its impact on environment and man. (allotted time : 30 minutes)
- At the outset, the teacher will motivate the learners to understand the importance of the activity by discussing with them individually and in groups. The teachers will act as mentors in such group discussion. It is necessary to make the learners realise the importance of case studies as sources of history and methods of history writing.

Desired Competence and Evaluation

It is expected that through group discussions examples of advancement of teaching-learning process and infrastructure, and its relation with social environment and individual initiative will be raised. The importance of individual and collective responsibility for the upliftment of living conditions of common people and initiatives taken should be analysed and emphasised. In this context it is necessary to lay stress upon understanding the importance of individual and group initiative in colonial educational reforms. This will enable learners to be aware of the development and evaluation of their own society and life. Simultaneously emphasis should be laid on the skill of drawing up relevant questions for survey.

The teacher will assess the learners on the basis of the above parameters of understanding.

Creative Writing

Imagine that, Iswar Chandra Vidyasagar has been roaming different regions of Bengal with the intention of initiating educational reforms. He notes down such experiences in a diary. Reproduce one page of this diary entry covering one week.

- Original and creative comparative study of the works of historical personalities and the influence of the contemporary times on them. (allotted time : 30 minutes)
- At the outset, the teacher will motivate the learners to understand the importance of the activity by discussing with them both individually and in groups. The teacher will act as mentor in such group discussions. It is necessary to make the learners realise the importance of objective evaluation of different literary creations of various authors and other creative writing (diary, letter, autobiography, genealogies) which form sources of history. The learners should be made aware of the importance of objective evaluation and multidimensional study of history.

Desired Competence and Evaluation

It is expected that in the group discussion there will be objective evaluation of the contributions of different persons coming from diverse socio-economic-political backgrounds. It is necessary to emphasise the objective analysis of how history, geography, economics, culture, life experience etc. have an impact on the contributions of an individual. In this context emphasis should be laid on the understanding of how such a diary should be written. Stress should be laid on judging the narrative and intellectual skill of personalities (eg. Rammohan Roy's experience in opposing 'sati', Madhusudan Gupta's experience in dissecting cadavers for the study of medical science). The prescribed Professor Shanku text in class IX could be a specimen of diary writing in developing such concepts in the learner.

Model Making

Try to prepare a chart on the contribution of at least 5 individuals who were involved in the anticolonial women's and student's movements.

- Comparative study of the textual matter. (allotted time : 30 minutes)
- At the outset, the teacher will motivate the learners to understand the importance of the activity by discussing with them both individually and in groups. The teacher will act as a mentor in such group discussions. Instead of a mere biographical discussion, it is absolutely necessary to contextualise the ideas and significant contributions of an individual, that have been instrumental in guiding the entire movement. In other words, historical interest could be generated among the students by encouraging them to engage such analytical discourse.

Desired Competence and Evaluation

- It is expected that in the group discussion the students will be able to locate the individual in the context of his / her economic and social milieu. The manner in which these objective conditions affect individual ideology and mode of operation will be understood in this project.
- The teacher will assess the learners on the basis of the above parameters of understanding.

Assessment with the aid of Reading Material

"Everyone knows that when English education was introduced in our country its objective was to create a category of English-knowing officials for administrative and commercial purposes. This process has been continuing for a long time. As long as the number of students was few, there was a balance between the requirement and the necessary arrangement; hence there was no cause for discontent on either side. From the time that the student strength became too large, one of the main objectives of the education system was lost for the majority of the students. There would have been no room for complaint if the education imparted in our country had equipped the students with the skills necessary for earning a livelihood other than securing office jobs. But looking at ourselves we can see that instead of teaching them such skills, they have been rendered incapable in all other respects.

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So much for extraneous complaints. The basic complaint is that despite years of learning in the schools of the English, we have not been able to shed our student-tags. We seem to have accumulated knowledge from the outside, but contributed nothing from the inside. It is such a crisis; we shall continue filling the pitchers with water, but alas, that water will never be fit for drinking or for any other useful purpose. The student of medicine in the English system faithfully follows his textbook when treating patients, but never makes any new contributions to either physiology or medicine. Likewise, students of engineering diligently practise their craft by the book and draw pensions, but contribute little to the theory of mechanical engineering or make any innovations worthy of note. The importance of this education is clear to us. That we never used our education as our vehicle to propel us forward, rather we allowed it to become a burden. This great sadness has been filling our minds, whether we know it or not". – *Asontosher Karon*, Shantiniketan Magazine, Jestha 1326, Rabindranath Tagore.

Read the above passage and answer the following questions :

1. Why do you think “one of the main objectives of the (colonial) education system was lost for the majority of the students”? What steps would you suggest to avert this futility?
2. What does the writer mean by “we seem to have accumulated knowledge from the outside, but contributed nothing from the inside”? What do you think caused this failure to contribute nothing from the inside?
3. What observations do you make on the problems of carrying the ‘burden’ of education? What measures do you think should be taken for making “education as our vehicle to propel us forward”?
 - The various concepts and ideas included in the syllabus should be reflected in the selected text (allotted time : 30 minutes)
 - At the outset, the teachers will motivate the learners to understand the importance of the activity by discussing with them both individually and in groups the teacher will act a mentor in such group discussion. It is necessary to make the learners realise the importance of analysing such a text with reference to the ideas included in the textbook.

Desired Competence and Evaluation

- The objective of this activity is to observe whether the learners can relate the concept developed in the text book with that of the given text. The activity will facilitate them in the reinforcement of concepts and ideas that they have studied. Besides, it will also help in critical thinking and critical analysis of the text.
- The teacher will assess the learners on the basis of the above parameters of understanding.

N.B. In selecting such texts it should be kept in mind that the text makes no discrimination regarding race, religion, class, region, economy and culture. Care should be taken that the text should not give rise to construction of biased ideas and opinions. It is recommended that the text selection is made from historical research, contemporary text, historical dataset, contemporary newspaper articles, documentaries, films, paintings, poems, stories and essays.

Geography and Environment

Survey

1. **Name** : Management of household waste.
2. **Allotted time** : 40 min [Group discussion 5-10 min, completion of the work, individually/in groups - 20-25 min, exchange of opinion within groups – 5-10 min]
3. **Teacher's Role** : To help the students gather information regarding household wastes and prepare a report.
4. **Student's Role** : To discuss the following points and prepare team/individual reports.

Topic : Waste management

- What are the wastes commonly generated in your household?
- Which of these are biotic and which ones are abiotic?
- Where do you dispose them?
- How does the municipality/panchayat remove these wastes from there?
- Which ones of the wastes generated in your household can you recycle and reuse and how?
- How can you plan for better management of wastes in your household?
- What do you think are the harmful effects of inadequate or inefficient waste management in our lives?

Expected competencies :

- To build a comprehensive concept about waste management
- To create and increase awareness about waste management

Assessment indicator :

1. Primary data collection and integration – 2
2. Analysis and explanation – 2
3. Inference and assessment presentation – 2
4. Ability to relate topics in the syllabus with acquired competency – 4

Nature Study

1. **Name** : Changing Season and us
2. **Allotted time** : 40 min. [Group discussion– 5-10 min., collection of information, inference and report making 20-25 min., exchanges of opinion within groups – 5-10 min.]

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- 3. Teacher's Role :** To divide the students in groups and give each group the task of working on a particular season and demonstrate on the black board how they are supposed to note down their observations.
- 4. Student's Role :** To systematically arrange and write a report on the experiences and different in lifestyles that the changes in seasons bring about.

Topic : India – Physical Environment

A group can be formed for each season. Members of the group can note down their observations and experiences regarding the seasons with relevance to the following points.

- Name of the season – duration, weather in general (sunny/cloudy/rainy).
- Wind direction experienced on most of the days, observable changes in vegetation (shedding of leaves/new foliage/fruits/flowers...etc.).
- Changes in food habits (vegetables, fruits, fish, etc. available in the market).
- Changes in agriculture (sowing, harvesting etc.).
- Changes of dress; whether or not the doors/windows on a particular side of the house are being kept open.
- Festival – local festivals.

Expected competencies :

- To identify and being able to verify the salient features of different seasons in their own areas with reference to seasonality in India.
- To be able to perceive changes in different aspects of daily life in different seasons and understanding the relationship of weather and climate with vegetation or cultivation, food habits, clothings etc.

Assessment indicator :

1. Observation and exchange of experience – 2
2. Tabulation – 2
3. Understanding and matter presentation – 2
4. Ability to establish link/relation between syllabus topics and acquired competency – 4

Case Study ---

- 1. Name :** Different modes of transport and related problems.
- 2. Alloted time :** 40 min [group discussion – 10-15 min, presentation making – 25-30, individual submission of inference – 5-10 min]
- 3. Teacher's Role :** To help the students understand and execute their task and prepare the report.

4. Student's Role : To perceive the problems and suggest probable remedial measures.

Topic : India – Economic Environment.

- Modes of transport in your locality
- Problems related to them and suggested remedies.

Expected competencies : To appreciate the problems related to different modes of transport and express their opinions regarding finding solutions to them.

Assessment indicator :

1. Problem and understanding of the topic of consideration – 2
2. To determine possible solutions – 2
3. To specify the best solution under circumstances – 2
4. To establish a link between syllabus topics and acquired competency – 4

Creative Writing

1. **Name :** The tale of a river
2. **Alloted time :** 40 mins. [Group discussion- 5-10 mins, writing paragraph individually- 20-25 mins, exchange of opinion 5-10 mins.]
3. **Teacher's Role :** To write down the points to be covered by the students while writing the paragraph on the given topic on the black board and supply them with the relevant information.
4. **Student's Role :** To write a paragraph on "The tale of a river", in not more than 100 words, covering the points written on the blackboard.

Topic : Exogenetic processes and landforms

- Name of the river.
- Course of the river treated in the paragraph
- Approximate breadth of the river
- Seasonal variations in volume of water.
- Influence on lives of local people.

Expected competencies : To be able to understand the influence of rivers on lives of the people on its banks.

Assessment indicator :

1. Ability to express thoughts – 2
2. Originality of writing – 2
3. Logical sequence of ideas – 2
4. Ability to apply the competency related to the topic – 4

Model Making

1. **Name :** Concept map of drainage system of India/Model making of land breeze and sea breeze.
 2. **Alloted time :** (40 + 40) = 80 mins. (Two periods) [group discussion and planning - 10-15 mins., work to be done through mutual cooperation- 65-70mins).
 3. **Teacher's Role :** To help the students secure materials and information required to execute the project.
 4. **Student's Role :** To make a model/chart at the lowest practicable cost.
- A. Topic :** India : Physical Environment
- Rivers of India : To draw a map showing rivers of different regions (north, south, west) of India on a chart paper.
- B Topic :** Atmosphere
- Winds : To make models demonstrating the origin of land breeze and sea breeze (to be treated by different teams, if possible) out of thermocol sheets.
 - Shifting of pressure belts :
 - i) Draw an outline map of the world on a chart paper. Make panels of folded paper strips along the left and right hand sides of the chart paper, so that another sheet of paper can be moved up and down these panels.
 - ii) Draw the pressure belts on a tracing paper and also indicate the planetary wind directions with arrow lines. As there is no significant shift of the polar pressure belts, these may not be drawn on the tracing paper.
 - iii) Fit the tracing paper along the panels on the sides of the chart paper and move it up and down to demonstrate the shift of pressure belts. This will also illustrate the areas of the world coming under the influence of different planetary winds in different seasons.

Expected competencies : Clear concept building on the relevant topic.

Assessment indicator :

1. Ability to convert abstract ideas into concrete – 2
2. Interest in creative and experimental work – 2
3. Explanation and presentation – 2
4. Ability to correlate syllabus topics with acquired competency – 4

Open Text Book Evaluation

1. **Name :** Global warming
2. **Alloted time :** 40mins. [group discussion- 5-10 mins, complete the work individually/ in group- 20-25 mins., exchange of opinion- 5-10mts]
3. **Teacher's role :** to supply study material to each group.

4. Student's role : Write a report on (within 100 words) on the basis of the questions given below.

Topic : Atmosphere

In the present day world, we often find ourselves and the people around us talking about global warming. There is a general scientific acceptance of the fact that the temperatures are generally rising in our planet. The Intergovernmental Panel on Climate change (IPCC) has reported that 95% of scientists, in 2014, all over the world, are of the opinion that human activities are the main cause behind the increasing proportion of greenhouse gases in the atmosphere. Most projections suggest that even at the minimum pollution levels, global temperatures are likely to rise by 0.3p to 1.7pC in the 21st century. Otherwise temperatures are slated to rise by 2.6p to 4.8pC.

Precipitation patterns will change, sea levels will rise, deserts will expand in the subtropical regions and glaciers will melt as the global temperatures rise. Extreme weather events like heat waves, droughts, heavy rains and floods, heavy snowfalls, acidification of sea water, extinction of species and lower yields of crops will be rampant. Many coastal lands will be submerged as the sea level rises and the lives of species will be under threat.

- What are the events/occurrences contributing to global temperature increase that you commonly find in your surroundings?
- What extreme weather events have you heard about in the past decade?
- What do you think, can the effects of uncontrolled global warming be on your locality?

Expected competencies : To be able to appraise the causes and effects of global warming in their localities.

Assessment indicator :

1. Identification of subject and analysis-2
2. Understanding of subject-2
3. Use of subject -2
4. Correlating textual objective with acquired competence-4

Note: *Samples of evaluation for formative assessment and its methodologies for class IX are given above. The teachers may change the subject or topic according to the cognitive level of his/her students.*

DIRECTIVE REGARDING EVALUATION

(Full marks for each item is 10. Distribution of marks is given below.)

1) Survey			
Collection of primary data and sequential compilation	Analysis and interpretation	Decision making and demonstration of evaluation	Application of acquired competencies in a subject-specific domain
2	2	2	4
2) Nature Study			
Observation	Documentation	Understanding and demonstration with critical perception	Application of acquired competencies in a subject-specific domain
2	2	2	4
3) Case Study			
Understanding of problem	Determining probable solutions	Selection of best possible solution in a particular situation	Application of acquired competencies in a subject-specific domain
2	2	2	4
4) Creative Writing			
Expression of ideas	Editing and extending relevant points	Originality in writing	Application of acquired competencies in a subject-specific domain
2	2	2	4
5) Model Making			
Quality to convert abstract into concrete	Interest in creative and experimental work	Interpretation and demonstration	Application of acquired competencies in a subject-specific domain
2	2	2	4
6) Open Text Book Evaluation			
Identification and analysis of relevant data	Comprehension of given data	Proper utilization of data and demonstration of critical perception	Application of acquired competencies in a subject-specific domain
2	2	2	4

